Chief Architect® X6
Reference Manual

Professional Design & Drafting Software

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Created in the United States of America.

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Chapter 1:

Program Overview

Chief Architect is specifically designed for the residential and light commercial design professional. It allows you to easily and efficiently produce 3D models and construction documents for your projects. We thank you for choosing Chief Architect and wish you the best in your design work.

Chapter Contents

Chief Architect Premier vs Interiors vs Lite

Not all of the features described in this document are available in the Interiors and Lite versions of Chief Architect. In addition, a few select features are only available in the Lite version.

For a list of the features in each program, visit our website, www.chiefarchitect.com.

Startup Options

When Chief Architect opens, the **Startup Options** dialog displays, allowing you to choose how you want to begin working in the program or access useful resources.

The **Startup Options** dialog can be opened at any time by selecting **File> Startup Options** .

1 Select a **File** command to open a .plan or .layout file.

- Click **New Plan** to open a new, blank plan. See “Creating a New Plan or Layout” on page 52.
- Click **New from Template** to open a new, blank plan based on a template that you select. See “Template Files” on page 82.
- Choose **Open Plan** or **Open Layout** to work on an existing plan or layout file. See “Opening and Importing Files” on page 59.

❷ **Recent Files** lists the full pathnames of the most recently opened files. Click on a name to open the file. You set the number of files in this list in the **Preferences** dialog. See “General Panel” on page 96.


Move your mouse pointer over a name to see the file’s full pathname.

❸ A selection of useful online **Resources** is available here. Select one to launch your default internet browser to a page on our web site, chiefarchitect.com.

- Select **Overview Video** to watch a browsable collection of videos outlining the software’s features and uses.
- Select **Training Videos** to access a searchable collection of videos focused on specific topics.
- Select **Download Catalogs** to visit our 3D Library of downloadable bonus and manufacturer library catalogs. See TODO.

❹ **Getting Started**- Click to launch your default internet browser to the Getting Started page on our web site. There, you will find links to a variety of online resources to help you begin using the program.

❺ Remove the check from **Show Options on Startup** if you do not want this dialog to display when you launch Chief Architect. Instead, a new blank plan opens.

To have the **Startup Options** dialog display at startup again, select **File> Startup Options**  and place a check mark at **Show Options on Startup**.

❻ Your software version’s **Build** number and the first five characters of your **Product Key** display here for reference. If your software license has an expiration date, it will also display here.

The Chief Architect Environment

Object-Based Design

Chief Architect’s parametric, object-based design technology means you place and edit objects, rather than work with the many individual lines or surfaces used to represent them.

You can quickly select and edit the location, size, shape, style and other properties of objects as well as change the materials applied to their surfaces.

Use Chief Architect’s editing capabilities to make the objects you place in a plan match the objects they represent in real life. For example, you can set up your windows and doors to match those available from your supplier.

3D Drafting

In Chief Architect, the entire drawing area is laid out on a Cartesian grid, a three dimensional coordinate system described using the X, Y, and Z axes. The current position of your mouse pointer displays in the Status Bar at the bottom of the program window.

Architectural objects take up space in all three dimensions and their height, width and

depth can be specified in Imperial or metric units. In addition, the location of objects can be precisely defined using coordinates, again specified in Imperial or metric units.

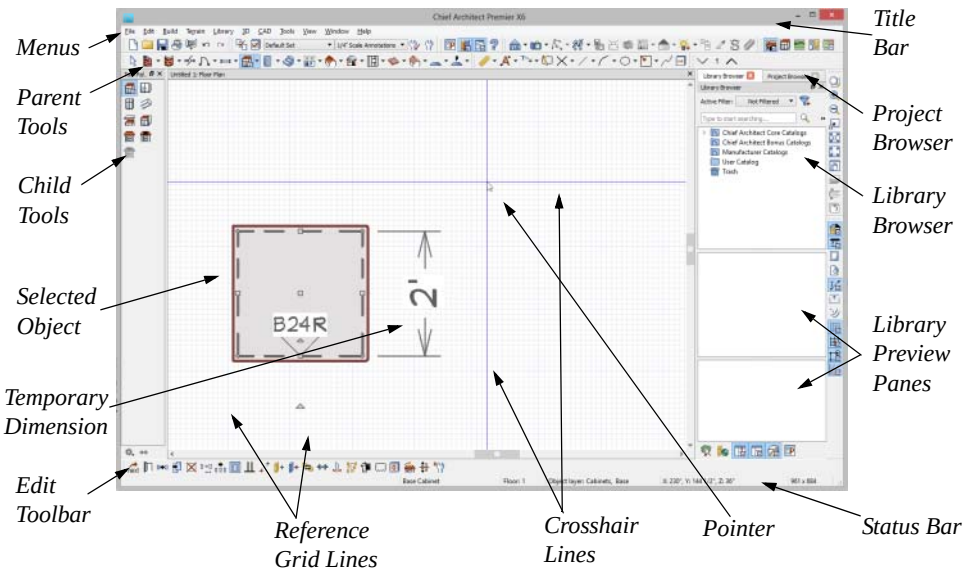
CAD objects such as lines and arcs take up space in two dimensions in the current view. Their dimensions can also be specified in Imperial or metric units and their locations precisely defined using coordinates.

Objects can be rotated relative to the Cartesian grid system, as well. When the program presents the option to rotate to an Absolute Angle, this angle will be measured relative to an imaginary horizontal line drawn in floor plan view from the origin in the positive X direction. See “Rotating Objects” on page 231.

Easy Access to Tools

You can access Chief Architect’s features in various ways using the mouse and keyboard.

- Menus provide access to most tools.
- Convenient toolbar buttons allow fast access to tools and let you customize the interface.
- Keyboard shortcuts are available for most tools and can be customized.
- Contextual menus display with a right-click of the mouse.
- The Status Bar at the bottom of the screen provides tool descriptions and other information about the current task.

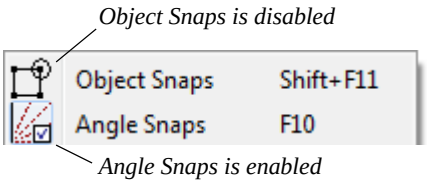


Interface Toggles

A number of useful drawing and editing behaviors, as well as the display of important elements in the interface, can be easily enabled and disabled using the menus and toolbars. For example:

- Object Snaps, Angle Snaps, and Grid Snaps can be toggled on or off as needed. Individual Object Snaps and Extension Snaps can be toggled as well. See “Snap Behaviors” on page 160.
- Display Elements like Print Preview, Show Line Weights, and the Reference Display can be turned on when needed and then toggled off.
- Special Edit Behaviors can be enabled for particular tasks, then replaced by the Default Behavior. See “Edit Behaviors” on page 176.

When a setting is turned on, its icon will display a small checkmark at its lower right corner and have a border around it in both the toolbars and the menu.



Many of these interface elements are global Preferences while others are file-specific default settings. See “Default Settings vs Preferences” on page 72.

Using the Mouse

Many objects, such as doors and cabinets, are created by clicking the left mouse button. Others, such as walls, stairs and dimension lines, are created by dragging the pointer from one end of the object to the other.

The **left button** is the primary button used in Chief Architect. Unless specified otherwise, Chief Architect documentation refers to the left mouse button.

Note: If you are left-handed and have re-programmed your mouse, reverse the instructions for left and right buttons in this manual.

The **Right button** has several uses. Right-click to select any object.

If, for example, the **Straight Exterior Wall**  tool is active, the left mouse button allows you to select only walls. You can select other object types such as cabinets with the right mouse button.

Use the right mouse button to temporarily switch to the Alternate edit behavior. See “Edit Behaviors” on page 176.

You can also use the right mouse button to open a context sensitive menu with additional editing commands.

The **Middle button** can be used to pan in floor plan view or to temporarily use the Move edit behavior. To close a tabbed view window, click on its tab using the middle mouse button. You can also program it to work as a double-click.

If your mouse does not have a middle mouse button, in the Mac version of Chief Architect you can use the left button and the Command key to achieve the same results.

The **Mouse Wheel** can be used to zoom in and out in most view types. See “Zoom Tools” on page 859.

The Back, or X1, button on a 5-button mouse can be used to temporarily enable the Concentric edit behavior. See the documentation for your mouse.

The Forward, or X2, button on a 5-button mouse can be used to temporarily enable the Resize edit behavior. See the documentation for your mouse.

Edit Handles

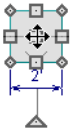
When you select an object, its edit handles display. How each handle behaves when it is clicked and dragged may depend on which **Edit Behavior**  is currently active. See “Edit Behaviors” on page 176.

When you pass the mouse over an edit handles, information about what the handle does displays in the Status Bar and the pointer changes to show how you can use that handle.

- A two-headed arrow indicates that the object, corner or edge can be moved in the direction of the arrows.
- A four-headed arrow indicates that the selected object or edge may be moved in multiple directions.
- A circular arrow indicates that the selected object can be rotated.

Resize handles display along the edges of the object are used to change the size. See “Resizing Objects” on page 226.

The Move handle at the object’s center lets you move the object. See “Moving Objects” on page 217.



The triangular Rotate handle lets you rotate the object. See “Rotating Objects” on page 231.

Object labels also have their own Move and Rotate handles. See “Object Labels” on page 1241.

You can cancel any edit handle operation before it is completed by pressing the Esc key on your keyboard or by pressing any two mouse buttons at the same time.

The edit handles that display depend on the type of object selected, the current view, and how far you are zoomed out.

Edit handles do not resize as you zoom in or out. If you are zoomed out far enough, some edit handles may be hidden so that they do not stack over one another. As you zoom in, these handles become visible again.

Using a Trackpad

In addition to the standard trackpad gestures on your system, in Chief Architect you can pinch to zoom. Panning, however, is not supported in the Windows version of the software.

View and Side Windows

Chief Architect's main program window has a number of important features that let you interact with the program, such as toolbars and menus. It also features two different kinds of windows: view windows and side windows.

View Windows

View windows are sometimes referred to as "the drawing area" because most of them are windows in which you can draw or place architectural and/or CAD objects. There are a number of different types of view windows in Chief Architect:

- Floor plan view
- Camera views and overviews
- Cross section/elevation views
- Ray Trace views
- CAD Details
- Materials Lists
- Layout

View windows can be navigated by panning and zooming; and, they have scroll bars on the right side and on the bottom. You can turn off the display of the scroll bars by selecting **View> Scrollbars**  . See "View Tools" on page 858.

Although only one view window can be active at any given time, there is no limit to the number of view windows that can be open. View windows can be tiled or tabbed, and you can navigate between them in a number of different ways. See "View and Window Tools" on page 857.

You can also tear a view window out of the main program window. This creates a second, separate program window complete with toolbars and menus. Individual view windows can be torn out and transferred between program windows.

Side Windows

Side windows provide access to a variety of tools, content, and information that helps you organize and add detail your drawings.

Side windows are so-named because they are typically docked to either the left or right side of the program window - although, they can also be docked to the top or bottom, or undocked entirely. There are several different types of side window:

- Child Tool Palette
- The Library Browser
- Project Browser
- Aerial View

Each of these side windows can be opened via the **View** menu or by clicking the toolbar button associated with it. Similarly, each can be closed by clicking the **Close** button in its title bar or tab, via the **View** menu, or by

clicking its toolbar button. See “View Tools” on page 858.

To undock a side window, either drag its title bar out into the drawing area or click the Undock button on its title bar. To dock a side window, drag its title bar to any side of the program window. You can also double-click on its title bar to return it to its last docked location.

Two or more side windows can be docked together to form a shared side window, and can be tiled and/or tabbed within that shared window. To create a shared side window, begin by docking a side window to a side of the main program window, then:

- To create tabbed side windows, drag a second side window over the first. When the docked window becomes highlighted, release the mouse button.
- To create tiled side windows, drag a second side window over the first. When the docked window becomes highlighted, slowly drag the mouse towards one of its sides. When a highlighted space is created along that side, release the mouse button.

You can choose to disable **Side Window Drag Docking** in the **Preferences** dialog, and you can also enable **Top/Bottom Docking** See “Appearance Panel” on page 90.

Toolbars and Hotkeys

Using the toolbar buttons is the fastest, easiest way to access many program features. If a tool is active, a small checkmark will display at the lower left of its button icon. You can move the toolbars, customize them by adding or removing buttons, or create your own toolbars from scratch. See “Toolbar Customization Dialog” on page 135.

You can also turn off the display of toolbars entirely or turn them on again by selecting

View> Toolbars .

When you pass the pointer over a toolbar button, a “tool tip” displays the name of the tool and a more detailed description displays in the Status Bar at the bottom of the program window. When you see one of these tool tips, press the F1 key to get more information about that item. See “Getting Help” on page 46.

Chief Architect’s tools are organized into families of related tools which can be accessed using either of two styles of toolbar interface: the Child Tool Palette or Drop Down tools. You can select the interface that you prefer in the **Preferences** dialog. See “Appearance Panel” on page 90.

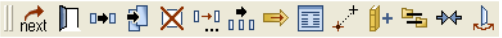
Toolbar Configurations

Chief Architect installs with five Toolbar Configurations, which are sets of toolbars organized for working on specific tasks. Each can be accessed in the **Toolbar Customization** dialog, by right-clicking on a toolbar, or by clicking a Toolbar Configuration button. See “Toolbar Configurations” on page 131.

You can customize these configurations to suit your needs, or you can create your own custom configurations.

The Edit Toolbar

When you select an object, the edit toolbar appears. By default, it is located at the bottom of the program window, just above the Status Bar. The buttons on the edit toolbar can be used to edit the selected object(s). Which buttons display depends on the type of object selected, the current view, and how you selected the object.



The edit toolbar buttons are the same as the options in the contextual menu when you right-click on an object. See “Contextual Menus” on page 36.

Hotkeys

Many commands can be invoked from the keyboard. Press Alt on your keyboard and press the underlined letter in a menu name to access that menu, as well as items in the menus and submenus.

Other keys or key combinations will invoke a variety of program commands. If a Chief Architect menu item has a keyboard shortcut, or hotkey, associated with it, that hotkey will display to the right of its name in the menu. You can assign hotkeys to Chief Architect’s tools to best suit your style of work. See “Hotkeys” on page 138.

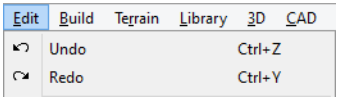
Menus

Chief Architect uses a standard Windows menu format. The menus are located below the title bar in the program window and can be used to access nearly all tools in the program. Click on a menu name to expand it, then click on a menu item to either activate that tool or access the item’s submenu. Items with a submenu have an arrow to the right of the name.

Menu items with an icon to their left have a toolbar button associated with them. Some buttons are not included on the toolbars but can easily be added. See “Toolbar Customization Dialog” on page 135.

The menus can be accessed using the keyboard. Press the Alt key once to enable this functionality - one letter in each menu will become underlined. Press the key associated with one of these underlined letters to expand its menu - one letter in each menu item’s name will be underlined. Press the key associated with one of these letters to activate that tool or access the item’s submenu. Press the Esc key to undo your last selection, or click with the mouse to exit out of this functionality.

Many tools in Chief Architect also have hotkeys associated with them. If a menu item has a hotkey, it will display to the right of the item’s name. See “Hotkeys” on page 138.



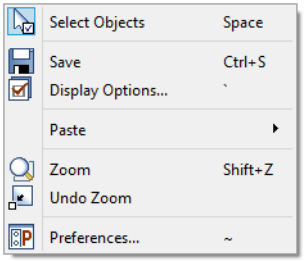
Edit menu items with button icons to the left and hotkeys to the right

In the Chief Architect documentation, menu paths are written in this format: **Build> Window> Box Window**  . An icon image after

the menu path indicates that a toolbar button is also available.

Contextual Menus

Contextual menus are context-sensitive menus that display tools relevant to a selected object or view. To open a contextual menu, right-click on an object, in an empty space in a view window, or in a text field in a dialog box.



Contextual menu for floor plan view

The options in an object's contextual menu are usually the same as those on an object's Edit toolbar. See "The Edit Toolbar" on page 35.

Contextual menus can be enabled or disabled in the **Preferences** dialog. When contextual menus are disabled, right-clicks perform generic object selection, much like when the **Select Objects** tool is active See "Appearance Panel" on page 90.

Dialogs

Default and preference settings, object specifications, display settings, and many other functions are accessed through dialog boxes.

Many dialogs have multiple panels, which are listed in a tree list on the left side of the dialog. Click on a panel name in the list to make it active. In Windows, panels can also be navigated using they keyboard. Press:

- Ctrl + Tab or Ctrl + F6 to navigate forward;
- Ctrl + Shift + Tab or Ctrl + Shift + F6 to navigate backward.

When a panel name is active, you can also navigate the tree list using the Up and Down arrow keys.

By default, dialogs always open to the first panel in the list; if you prefer, you can choose to **Open Dialogs to the Last Panel Visited**. See "General Panel" on page 96,

Dialog panels and settings can be accessed using the mouse. You can also navigate the settings on a given dialog panel using the keyboard. For example:

- Line items in tree lists can be browsed using the arrow keys. Up and Down navigate the list, while Left and Right expand and contract categories.

- Press the Tab key to shift focus from the tree list to the first setting on the selected panel.
- Press the Tab key to shift focus from one setting to the next, or Shift + Tab to go in the reverse direction.
- A checkbox can be checked or cleared by pressing the Spacebar or the + or - keys, respectively, while it is in focus.
- Columns of radio buttons can be navigated using the Up and Down arrow keys; rows can be navigated using the Left and Right arrows. Select a radio button by pressing the Spacebar while it is in focus.
- Settings in list boxes can be navigated using the Up and Down arrow keys. When a checkbox is in focus, it can be checked or cleared by pressing the Spacebar.
- Drop-down lists can be browsed using the Up and Down arrow keys. When the mouse pointer is directly over the drop-down, the mouse scroll wheel can also be used; on a Mac, the list must also be expanded. In Windows only, you can press Tab to select the highlighted item in the list and proceed to the next setting.
- Settings with spin control arrows  can be adjusted by typing in the text field or using the Up and Down arrow keys. When the mouse pointer is directly over the setting, the mouse scroll wheel can also be used.
- Slider bars  can be adjusted by typing in the text field or using the Left and Right arrow keys. When the mouse pointer is directly over the slider bar, the mouse scroll wheel can also be used.
- Line items in tables can be group selected using the Ctrl or Shift keys, or by pressing Ctrl+A.
- Press Enter on your keyboard to close most dialogs and apply your changes.

Note: Keyboard navigation in dialogs may vary somewhat depending on your computer platform.

In the Mac version of the software, Dictation is supported in dialogs. Select **Edit> Start Dictation**, then open a dialog. Say the word “Numeral” before a number to enter it as a numeric value or immediately follow a number with a unit such as “foot” to enter it as a measurement.

The units of measurement used in dialogs are determined by your choice of template files. See “Creating a New Plan or Layout” on page 52.

The number format used in dialogs are set based on your operating system’s defaults. See “Region and Language Settings” on page 73. You can change the number format as well as the angle format in the **Dialog Number Style/Angle Style** dialog. See “Dialog Number/Angle Style Dialog” on page 126.

Dialog Size and Position

Dialog boxes can be both moved and resized to suit your needs. By default, the program will remember both the position and size that you specify for a dialog and use it the next time you open it. You can specify whether the program does this always, per session, or never in the **Preferences** dialog. You can also reset the default sizes and positions. See “Reset Options Panel” on page 125.

- To move a dialog, position your mouse pointer within its title bar and then simply click and drag.
- To resize a dialog, position your mouse pointer on any edge or corner and then click and drag outward or inward. If you drag an edge, only that edge will move; if you drag a corner, the two adjacent edges will move.

When a dialog is resized, some elements within it may resize in response: for example, some list boxes and text fields. Some elements within a dialog box can also be resized independently. See “Dialog Panel Splitters” on page 39.

Note that all dialogs have a minimum size limitation but no maximum size. If a dialog opens on a monitor with resolution too low to display its full extents, it will have vertical and/or horizontal scroll bars.

Note: Some of the dialog box images in the software documentation have been resized smaller than their actual minimum size.

Specification Dialogs

Each object in Chief Architect has a unique specification dialog where you can enter size, style and other information specific to the selected object. To access it, select the object and click the **Open Object** edit button. You can also double-click on an object with the **Select Objects**  tool active to open its specification dialog. See “Selecting Objects” on page 180.

Most objects also have a defaults dialog that lets you specify the initial values in the specification dialog.

You can open the specification dialog for group-selected objects if they are of the same type, such as base cabinets.

- If a particular setting varies among the different objects, its checkbox will have a solid fill instead of a check mark. Click once to clear the box for all selected objects, or click a second time to place a checkmark for all selected objects.
- In some dialogs, if a particular setting varies among the different objects, it will have a “No Change” radio button. Leave this button selected, or choose a different option to apply it to all objects in the selection set.
- If the setting has a text field or drop-down list, it will say “No Change”. Changes made to such a setting can be undone by replacing the value in the text field with the letter N before you click OK.

If you select multiple objects of different types, the **Open Object**  edit button is usually not available. This button may be available if the objects have data in common, but you can only edit the common data.

Dialog Preview Panes

Many specification dialogs have a preview pane that shows how changes affect the selected object. This preview updates when you click in a different field or press the **Tab** key on your keyboard.

If you switch to a panel with settings that affect the selected object’s appearance in a certain view, that view will be shown in the preview. For example, if you select the General panel, a 3D view will be shown; but

if you select the Fill Style panel, floor plan view will be shown.

When you click in the preview pane, your mouse pointer changes to a four-headed arrow and you can rotate around the object as well as zoom in and out using the mouse scroll wheel. Some objects, notably walls, doors, and windows, have Interior and Exterior labels to indicate which side is visible in the preview. Click the **Fill Window** button above the preview pane to zoom in or out so that the object fills the extents of the pane, maintaining the current rotation.

A selection of Rendering Techniques can be applied to the preview: Standard, Vector View, and Glass House. You can also choose to display the object as it appears in floor plan view. See “Rendering Techniques” on page 928.

Click the **Color** button to turn color in the preview off or on. Some objects have additional tools that affect object previews. For example, the **Cabinet Specification** dialogs have a **Select Cabinet Face Item** button. Object specific tools like this are discussed in the documentation for that object type.

Dialog Panel Splitters

Many dialog panels are divided into up to three sections: a list of panels on the left, an object preview on the right, and a central area where settings are located. The vertical splitters separating these sections each have a pale, dotted handle.

To resize the panel list or preview, as well as the area in the middle, move your mouse pointer over the vertical division line: when the splitter cursor can be seen, click and drag to the left or right.

The Status Bar

The Status Bar at the bottom of the main program window displays information about the current state of the program.

This information depends on a variety of conditions such as settings in the **Preferences** dialog, the type of object selected, and the current position of the pointer. The information may include the following:

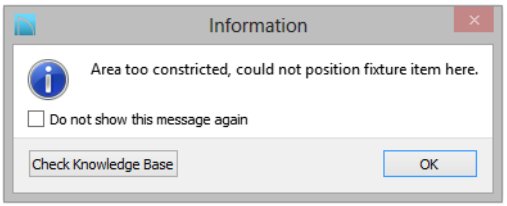
- A brief description of the toolbar button or menu item highlighted by the mouse.
- A description of the selected object or of the edit handle that the pointer is over.
- The total number of objects currently group-selected.
- Basic information about a selected library object, folder, or catalog.
- The layer that the selected object is on.
- The current floor.
- The dimensions of the active window in pixels.
- The current layout page.
- The Current CAD Layer.
- The current CAD coordinates of the mouse pointer.

- The screen redraw time.
- The length and/or angle of an object as it is being drawn.

The number format used in the Status Bar is set in the **Dimension Defaults** dialog, while the angle style can be specified in the **Number Style/Angle Style** dialog. See “Primary Format Panel” on page 965 and “Dialog Number/Angle Style Dialog” on page 126.

Message Boxes

As you work in Chief Architect, the program will occasionally prompt you to examine your settings, alert you if you command it to do something that could potentially cause a problem, or notify you if it encounters a problem that needs your attention



Situations where such message boxes may display include:

- Closing a file or view without saving;
- Modifying an object that is set to rebuild automatically;
- A file referenced outside the program, such as an image or texture, is missing;
- Creating an object in a space too small to contain it.

As with dialog boxes, you can access the options in a message box using the mouse or navigate them using the keyboard.

A few messages have a **Send Report** button. Click this button to anonymously send details regarding the issue that prompted the message to Chief Architect via the internet.

Some message boxes include a “Remember my choice” or a “Do not show this again” checkbox. Check this box to prevent messages of this specific type from displaying in the future. When this box is checked, some options in the message box may become inactive.

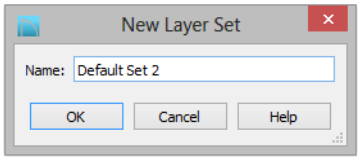
To allow all message boxes to display again, click the **Reset Message Boxes** button in the **Preferences** dialog. See “Reset Options Panel” on page 125.

Name Prompt

In dialogs throughout the program, there are opportunities to create new entities that require a name. Examples include:

- The **Copy** button in the **Saved Defaults** dialog.
- The **Copy Set** button in the **Layer Display Options** dialog.
- The **Rename** button in the **Schedule Specification** dialog.

When you click a **New**, **Copy**, or **Rename** button in a dialog, a **Name Prompt** box will open.



For best results, type a short, descriptive, and unique name and then click **OK**.

Preferences and Default Settings

Preferences and default settings control many aspects of the user interface and tool behavior in Chief Architect. You can use these settings to customize the program to suit your personal work style.

For more information about defaults and preferences, see “Preferences and Default Settings” on page 71.

Preferences

Preference settings let you change program behavior to suit your workflow. For example, you can:

- Turn certain display elements on or off.
- Choose background and editing feedback colors.
- Set frequency of autosaves, maximum number of “undos,” and file locking.
- Set default folders for various files.
- Control the editing behaviors of objects.
- Setup the materials list categories, sub-categories, and report style, as well as manufacturer and supplier information.
- Set rendering specifications to maximize efficiency and quality.

Preference settings are global, affecting all plan and layout files.

Defaults

Most objects in Chief Architect derive their intial properties from their respective default dialogs.

For example, a newly placed **Window** gets its initial values from the **Window Defaults** dialog and a newly placed **Hinged Door** gets its initial values from the **Door Defaults** dialog.

Once an object is placed in a plan, its initial properties can be overridden, but setting up your defaults before you begin drawing can save you considerable time as you build a model in the program.

Default settings, unlike Preferences, are file specific.

Dynamic Defaults

Most default settings are static: if you change one, any objects of that type in the current file will not be affected. A few defaults, however, are dynamic: they are tied to existing objects in the drawing and if you change the default, those objects may be affected. See “Dynamic Defaults” on page 74.

Template Plans

You can set up an otherwise empty plan with the default settings of your choice and use it as your template for new, blank plans. See “Template Files” on page 82.

Drawing a Plan

When you draw a plan in Chief Architect, you are placing 3D objects that represent building components. Chief Architect comes with predefined default settings so you can start drawing plans immediately. You should review these default settings to be sure they match your drawing and building methods. See “Preferences and Default Settings” on page 71.

Set the Defaults

1. Open a new plan using the template of your choice. See “Template Files” on page 82.
2. Set the structural defaults:
   - Floor Defaults. Set the default ceiling height for Floor 1. See “Floor Defaults Dialog” on page 426.
   - Foundation Defaults. Set the foundation specifics such as type, footing size, and stem wall height. See “Foundation Defaults” on page 438.
   - Framing Defaults. Set the floor framing specifications, including type and dimensions. See “Framing Defaults” on page 562.
   - Default Wall Types. Specify the defaults for walls and railings. See “Wall, Railing, and Fencing Defaults” on page 254.
3. Set material defaults for roof, walls, and rooms (optional). See “Material Defaults” on page 852.
4. Set style defaults for doors, windows, molding, cabinets and other objects.

Draw the Floors

1. While the size of the drawing area in Chief Architect is limited only by the resources on your computer, it is best to begin your drawing near the origin, 0,0,0. See “3D Drafting” on page 29.
2. Draw the exterior walls on Floor 1. See “Drawing Walls” on page 270.
3. Adjust the perimeter shape and size as required. See “Using the Edit Handles” on page 279.
4. Place any first floor bearing walls.
5. Define types for special rooms such as garages and decks in the plan. See “Room Types” on page 329.
6. Place perimeter doors and windows. See “Doors” on page 355 and “Windows” on page 383.
7. Build additional floors. See “Adding Floors” on page 427.
8. Specify the default ceiling height for each floor as soon as it is created. See “Floor Defaults Dialog” on page 426.

9. Adjust the perimeter shape of additional floors as needed. See “Editing Walls” on page 278.
10. Align edited or moved walls with those above or below where appropriate. See “Aligning Walls” on page 285.

Entering Dimensions

When using Imperial units, enter distances as inches or feet and inches, in fractional or decimal form. Millimeters are the default unit for all metric distances. See “Dimensions” on page 961.

- To enter feet, include the (') marker or the program assumes inches.
- In most cases, the program allows precision to 1/128th of an inch. Fractions with denominators 2, 4, 8 and 16 are allowed.
- The program usually converts decimals to fractions.
- You can enter angles as decimal degrees, degrees, minutes, and seconds, quadrant bearings, or azimuth bearings. See “Dialog Number/Angle Style Dialog” on page 126.

Build the Foundation

1. Derive the foundation plan from the first floor. See “Building a Foundation” on page 442.
2. Adjust the foundation perimeter shape as needed.
3. Place interior foundation walls as needed for the first floor bearing walls.
4. Place any other foundation walls required.
5. **Align with Above** as needed. See “Aligning Walls” on page 285.

Add Structure and Details

1. Build non-structural interior walls. Begin on floor one and work up in multiple story structures.
2. Add walls where needed to create features such as chimney chases, plumbing walls, or Open Below areas.
3. Finish the relevant interior structure including interior doors, doorways, cabinets, fixtures, and fireplaces.
4. Build the roof planes. If you generate the roof automatically, remember to carry the roof directives in the walls from the first floor up to the top floor for multiple story structures. See “Roofs” on page 461.
5. Build the framing. See “Framing” on page 561.
6. Build the terrain and landscaping. See “Terrain” on page 695.
7. Create the plot plan and plan footprint. See “Plot Plans and Plan Footprints” on page 711.
8. Create any necessary views and print the plan and use **CAD Detail from View** to create 2D elevations and plan details. Use and modify details from the Library, as well. See “CAD Details” on page 1085.

Create the Layout

1. If one does not exist, create a Layout file with a title block, placing the border,

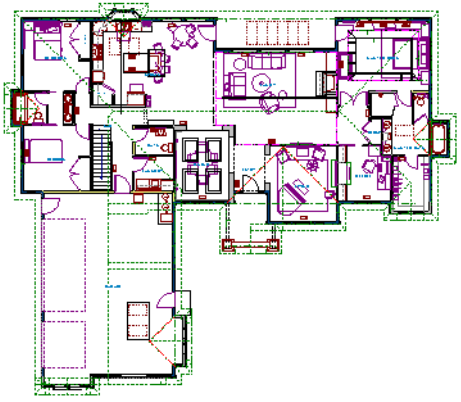
title block, and other text on page 0. See “Layout” on page 1203.

2. Send views to the layout, starting with layout page 1. See “Sending Views to Layout” on page 1208.
3. Print the plan. See “Printing and Plotting” on page 1179.

Viewing Your Plan

You can see your model in a wide variety of different 2D and 3D views. You can display more than one view at a time; and in any view, you can pan or zoom in or out. See “View and Window Tools” on page 857.

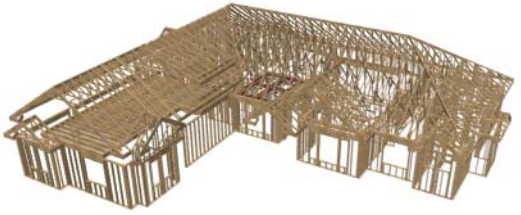
Floor plan view is a 2D view of the model and is most commonly used for drawing and editing. In floor plan view, each floor displays separately and you can only edit one floor at a time; however, you have extensive control over which objects display at any given time, can easily switch between floors, and can also display items on a second floor for reference. See “Multiple Floors” on page 425.



You can create interior and exterior 3D views of your model from any perspective. As in floor plan view, you can select and edit many objects in 3D views and control which objects are visible. See “3D Views” on page 867.

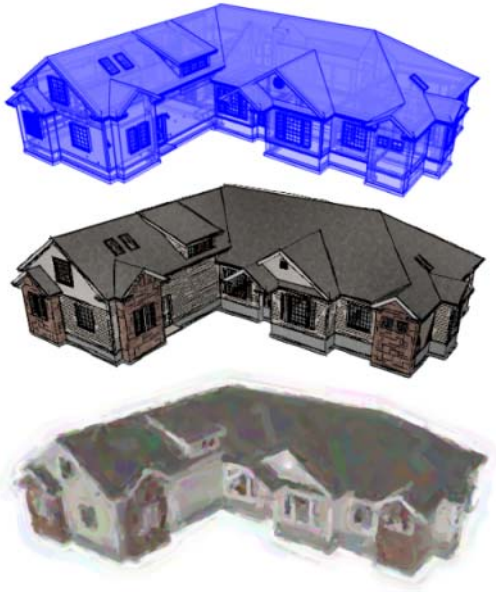
You can also create **Floor Overviews** that show only the current floor plus any floors beneath it. Ceilings on the current floor are omitted so you can see the interior, visualize the relationships between spaces, and plan traffic flow.

Framing Overviews display framing in 3D, provided that framing has been built. You can customize 3D views to serve special purposes such as this.



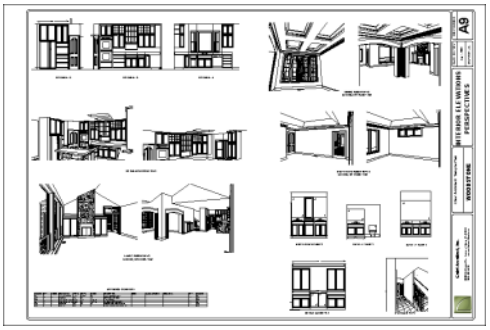
The Cross Section and Elevation camera tools create scaled 2D views of a model's exterior and interior that can be dimensioned and annotated. Just as in other views, you can select and edit objects in a Cross Section/ Elevation view as well as control which objects display.

A variety of rendering techniques let you produce customized 3D views, from detail drawings to photorealistic Ray Trace views to artistic presentation views.



Layout

All plan views can be sent to a layout where they can be arranged to produce full construction documentation. See "Sending Views to Layout" on page 1208.



All views can also be exported as a graphic image. See "To export a picture" on page 1109.

Sharing Your Files with Clients

Chief Architect users have the option of letting their clients review plan and layout files on their own computers, at their convenience, using the Chief Architect Viewer. The Chief Architect Viewer allows clients to open plan and layout files, create 3D views, and add text annotations without making any changes to the actual model.

To share files using the Chief Architect Viewer, first invite a client to request a copy of the viewer at www.chiefarchitect.com.

To ensure that all custom backdrops, images and material textures are included,, use the **Backup Entire Plan** tool when preparing to send files to your client. See “Backup Entire Plan” on page 67.

Getting Help

There are many forms of help available in Chief Architect including: Tool Tips, the Status Bar, and the online Help menu.

All these forms of help assume you have a basic working knowledge of your operating system, including how to use a mouse, open, close and save files, copy, paste, and right-click to access contextual menus. Help also assumes you are familiar with basic computer terminology.

More information is available in the product documentation in both printed and electronic format and on Chief Architect’s official web site, chiefarchitect.com.

See “Additional Resources” on page 1273.

Tool Tips

When you move the pointer over a toolbar button or menu item, a **Tool Tip** displays, offering a brief description of the tool. More information displays in the Status Bar at the bottom of the window.

Contextual Help

Online **Help** is a searchable menu that provides information about all of the tools in Chief Architect. Select **Help**> **Launch Help** to open the program’s Help and explore the table of contents, browse the Index, or Search for keywords.

The Help can also be used to provide instant information about toolbar buttons, menu items, and objects in your plan.

- When you move the cursor over a toolbar button or menu item, a brief summary of that tool displays in the Status Bar. Press the F1 key to open online Help to a page with more information about the tool.
- When an object is selected, edit handles display. Place the cursor over an edit handle and press **F1** to open online Help to a page with information about that handle.
- Press the **Help** button in any dialog box to open online Help to a page describing the options in that dialog.

Chief Architect strives to make our documentation as helpful as possible for all of our customers. Please send any questions, comments, or feedback to documentation@chiefarchitect.com.

About Chief Architect

Select **Help> About Chief Architect** in Windows® or **Chief Architect> About Chief Architect** in Mac OS X® to view information about your software license, the program's version number, and its release date. If your license has an expiration date, it will also display here.

Contact information for Chief Architect, Inc. is available on the **More Information** panel.

Chief Architect Trial Software

Chief Architect Premier X6 and Chief Architect Interiors X6 both have Trial versions available for free download at www.chiefarchitect.com.

The Trial software offers the same functionality as a purchased license with a few limitations:

- File Saving
- Printing
- File Exporting
- Recording of Walkthroughs
- Printing or Exporting of Materials Lists
- Library Browser restrictions
- Use of the Time Tracker utility
- Use of the CAD Detail from View tool
- Creating or saving Plan Database files
- Exporting of Layer Sets

Full details can be found in the software's Help and at www.chiefarchitect.com.

Converting the Trial Version

An installation of the Chief Architect Trial software can be converted into a full working version of the program at any time by purchasing a software license. There are several ways to begin this process in the Trial:

- Click the **Purchase Full Version Now** button in any Trial Restriction message box.
- Select **Help> Purchase Chief Architect**  .
- Select **File> Startup Options**  and then click the **Purchase Full Version Now** button.

Once you have purchased a license, you can activate it while the Trial software is running.

To activate the full version

1. Select **Help> Activate Full Version**.
2. In the **Product Activation** dialog, type or paste the **Product Key** associated with your software license.
3. Click the **Activate Full Version** button.

Chapter 2:

File Management

Chief Architect reads and edits two main document types: **.plan** files and **.layout** files. The complete 3D model of a structure, surrounding terrain and any CAD data associated with it are stored in the plan file. Data used to create working drawings and the links to various views or details are stored in the layout file.

All commands related to opening, saving and closing plans are located in the File menu. You can also open plans from the **Startup Options** dialog. See “Startup Options” on page 28.

Just as with files created in other software applications, you should back up your plan and layout files externally on a regular basis to avoid accidental loss of work.

Chapter Contents

Compatibility with Previous Versions

Plans and layout files produced in the following programs can all be read by Chief Architect X6.

- Chief Architect® 5.0 through X5
- 3D Home Architect® 3.0 and 4.0
- Chief Architect® Home Edition 5.0
- All Better Homes and Gardens Home Designer® products, Interior Designer, and Landscaping and Deck Designer, Versions 6 through 8.
- All Chief Architect Home Designer® products, Interior Designer, and Landscaping and Deck Designer, Versions 9 through 2014.
- Trading Spaces® Design Companion™

Note: 3D Home Architect 5.0 was not developed by Chief Architect, Inc. Plans written using 3D Home Architect 5.0 or later cannot be read by Chief Architect software.

Only the **.PL1**, **.LA1**, **.plan**, and **.layout** files from prior versions can be opened in Chief Architect X6. A number of steps are recommended when migrating plans created in an earlier program version into Chief Architect X6. Before doing so, see “Before You Begin” on page 1285.

Chief Architect automatically archives plans created in prior versions. See “Auto Archive” on page 57.

Files that have been opened and saved in Chief Architect X6 cannot be read by any of the program versions listed above. To continue to read files in the program in which they were created, be sure to create copies of your files before opening them in Chief Architect X6.

Plans and layout files produced in the Windows® version of Chief Architect X6 can be read in the Mac ® version, and vice versa.

Opening Chief Architect Plans in Home Designer Programs

Plans created in Chief Architect Versions 5 through X5 and Home Designer Pro Versions 6 through 2014 can be opened in the latest Home Designer programs for viewing and annotating, but not for general editing or drawing of architectural objects.

Plans created in Chief Architect can be set to allow limited editability in Home Designer programs. When this permission is enabled, a Home Designer user can use all of their program’s drawing tools and can edit objects in the plan that those tools can create. If an object cannot be created in the Home Designer program, however, it will not be editable.

To protect some objects from being edited when a file with editing permission is opened in a Home Designer program, consider locking their layers. See “Locking Layers” on page 145.

Allow Editing in Select Home Designer Products can be enabled or disabled only when the file is opened in Chief Architect. See “General Plan Defaults Dialog” on page 86.

Organizing Your Files

You should keep your plan and layout files separate from the support files needed to run Chief Architect. To keep files organized, you may find it helpful to create a new folder for each project.

Chief Architect files may use imported images, textures and other custom content saved in their own external data files. Consider storing copies of all external files in the same folder as the plan and layout files that use them so that they are easily found. See “Adding Library Content” on page 807.

Here is one way to organize your files:

- Create a folder in your Documents directory called “Chief Architect Plans” or another name you prefer. See your operating system’s Help to learn how to create folders.
- Inside this folder, make a new folder for each client or project. Save all the files for that client or project inside this folder, including plan and layout files and referenced external files. See “Saving, Exporting, and Backing Up Files” on page 53.

Bear in mind, though, that path names exceeding 260 characters cannot be opened by Chief Architect. As a result, it is a good idea to limit the number of embedded folders you use in your file organization method.

Once you understand the file management of Chief Architect, you should decide on a naming convention that suits your needs.

It is recommended that each layout file be saved in the same folder as the plan file(s) associated with it. See “Managing Layout Links” on page 1221.

To specify a default Save As location

1. Select **Edit> Preferences**  , then select New Plans from Category list. See “New Plans Panel” on page 102.
2. Under Open and Save As, click **Use this Folder**. The **Browse** button becomes available.
3. Browse to the folder you plan to save your projects in. Click **OK**.

Chief Architect Data

When Chief Architect X6 is installed, the program automatically creates a folder in the user Documents directory called **Chief Architect X6 Data**. This folder contains important user-specific information saved in the following folders and files and should not be moved, renamed or deleted:

- **Archives** - A folder of automatically archived plan and layout files. See “Auto Archive” on page 57.
- **Backdrops** - A folder of custom backdrop images. See “3D Backdrops” on page 888.
- **Hotkeys** - A folder of hotkey assignments. See “Hotkeys” on page 138.

- **Images** - A folder of custom images. See “Adding Materials and Images” on page 808.
- **lex** - A folder of customized dictionaries. See “Spell Check” on page 1020.
- **Database Libraries** - A folder of user library data. See “Library Content” on page 803.
- **Scripts** - A folder for custom Ruby scripts. See “Ruby Console” on page 1269.
- **Templates** - A folder of plan and layout template files. See “Template Files” on page 82.
- **Textures** - A folder where you can save image files used to create custom material textures. See “Creating Materials” on page 833.
- **Toolbars** - A folder of customized toolbar files. See “Toolbar Customization Dialog” on page 135.
- **mmaster.mat** - The Master Materials List file. See “The Master List” on page 1263.
- **sheetSizes.sheet** - A list of user-created Drawing Sheets. See “Customize Sheet Sizes Dialog” on page 1186.
- **units.dat** - A list of user-created units of measurement. See “Unit Conversions Panel” on page 103.

The name of the Chief Architect X6 Data folder cannot be changed, but you can specify its location on your computer in the **Preferences** dialog. It’s best to use a location on your local hard drive. See “Folders Panel” on page 99.

Just as with your plan and layout files, it is a good idea to back up your Chief Architect X6 Data folder.

If the Chief Architect X6 Data folder is renamed, moved or deleted, the program will automatically replace it using default information from the Chief Architect installation folder. When this occurs, customized user settings and custom user library content will not be available.

Because the Chief Architect X6 Data contains custom user data, it is not deleted when the program is uninstalled. See “Uninstalling Chief Architect” on page 15 of the User’s Guide.

Creating a New Plan or Layout

To create a new, blank plan, select **File> New Plan**.

You can also choose **New Plan** in the **Startup Options** dialog. See “Startup Options” on page 28.

By default, a new layout file will be assigned the same name of the first plan file sent to it, associating the layout files with the plan files used.

Note: Only one layout file can be open at any given time.

New plan and layout files derive their default settings the from currently selected template files. See “Template Files” on page 82.

New, blank plans are called **Untitled.plan** and new, blank layout files, **Untitled.layout**. Unless these files are named and saved, they will be lost when closed. See “Saving, Exporting, and Backing Up Files” on page 53.

Units of Measurement

All plan and layout files save measurements in either Imperial or metric units. New files are created using one or the other, depending on the current setting in the **Preferences** dialog. When the program is first installed, the Windows OS setting for units determines what system is used. See “New Plans Panel” on page 102.

A plan or layout file’s unit of measurement must be specified before it is created and cannot be changed later. If you normally work in one set of units but need to create a new file using the other, select **File> Templates> New Plan From Template** to open a new file using an appropriate template without changing your Preferences settings. See “Opening Template Files” on page 82.

While it is recommended that you create new plans using the type of unit that you plan to use, you can display dimensions using any type of unit. See “Dimension Preferences and Defaults” on page 962.

Template Files

New plan and layout files are created as copies of the current template files specified in the **Preferences** dialog. See “Template Files” on page 82.

Commonly used settings, defaults and other information are included in template files. You can customize the settings in a template file to fit your work style and then save your changes as a new template file. See “To create your own template plan” on page 83.

If no template has been specified in the **Preferences** dialog, new plans and layouts are created using the system defaults. System defaults cannot be modified.

Saving, Exporting, and Backing Up Files

Saving, exporting, and backing up your files are three separate tasks that accomplish different things:

- Saving a plan or layout file retains your work so that it can be later opened in Chief Architect.
- Exporting a file allows you to save certain kinds of data in a format that can be used by a program other than Chief Architect.
- Backing up your files involves taking steps to make sure that your valuable data is protected and available when needed.

Whether you are saving, exporting, or backing up your data, it is important that you select a location on your computer for the files you create, and also specify a short, meaningful name that you will be able to identify in the future.

To save an untitled plan or layout file

1. Select **File> Save** to open the **Save File** dialog.
2. Specify a location on your computer where you would like to save the file. See “Organizing Your Files” on page 51.
3. In the **File name** text field, type a name for the file.
4. Chief Architect automatically assigns the **File of type** and file extension **.plan** to plan files and **.layout** to layout files.
5. When both the Save in location and File name are correct, click **Save**.

Although the program warns you if you try to exit without saving, you should get in the habit of saving plan files before exiting the program.

Saving Plan and Layout Files

When you first save a new, untitled file, you must select a location for it on your computer and give it a name. There are two options for saving plan and layout files: **File> Save** and **File> Save As**.

Both **Save** and **Save As** can be used to save your plan and layout files; however, they accomplish this in two different ways.

- **File> Save** saves the current state of your plan or layout file without changing its name and should normally be used for saving your work.
- **File> Save As** opens the **Save File** dialog, allowing you to save the plan or layout file using a different name or location on your computer.

Initially, all **Open** and **Save As** operations go to the “My Documents” folder of your computer. After that, the location last visited is remembered and subsequent **Open** or **Save As** commands default to the directory last used for that operation. This path is saved when the program exits. The next time Chief Architect is launched, these defaults are used.

If you prefer, you can instead specify a directory to be used for all **Open** or **Save As** operations in the **Preferences** dialog. See “New Plans Panel” on page 102.

Saved Views

Any previously saved camera views and CAD Details associated with the plan are saved with the file.

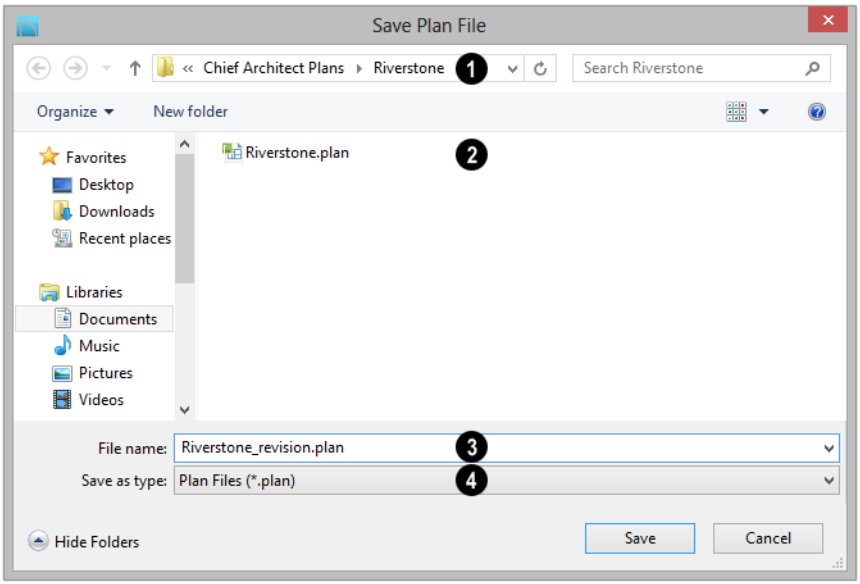
When saving a layout, the program saves all pages of the layout, all the links to the various views saved in the layout, and all the CAD objects added to the **.layout** file.

By default, a new layout file is assigned the same name as the first plan file from which a view is sent to it. It is also saved in the same directory as the plan file. If no view has been sent to a layout, it remains untitled until you save it.

Save File Dialog

The **Save File** dialog uses the operating system's file save dialog format, and is also used when exporting files. The dialog name may vary, depending on the type of file being saved or exported.

A similar **Select Folder** dialog allows you to select a folder to which files can be exported.



1. Choose a location on your local computer for the file you are saving.
2. Any existing folders and/or files in the current location display here.
3. In the **File Name** field, type a name for the file. If you select an existing file from the space above, its name will display here automatically.
4. When saving a file, the program will choose the appropriate file type from the **Save as type** drop-down list. When exporting, you may need to choose a specific file type.

Saving Revision Files

Revisions are a common aspect of any design project. There are a number of possible strategies for organizing revision files:

- Prepending the file name;
- Appending the file name;
- Saving revisions in separate folders.

To avoid confusion and potential mistakes, it is recommended that you always give files unique names - including revision files. If you choose to organize your revisions by saving them in separate folders, you should also give each file a unique name that makes

it impossible to confuse it with another file saved in a different folder.

Exporting Files

Chief Architect has a number of options for exporting and importing information out of and your drawings. See “Importing and Exporting” on page 1133.

Often, file export dialogs are simply versions of the **Save File** dialog.

Similarly, file import dialogs are often similar to the **Open File** dialog. See “Importing Files” on page 61.

Backup Entire Plan

File> Save As is a simple way to transfer a plan or layout to a different location on your computer. Bear in mind, though, that plan and layout files often reference external data files such as imported textures, images, and backdrops. These external files are not affected when **Save As** is used.

If you transfer a plan file from one computer to another, the program will warn you of missing files if the external data files used by the plan cannot be found when you open it.

Layouts are also dynamically linked to plan files. When transferring layout files to another computer, be aware that the plan files are also external file references and are not actually contained in the layout.

When transferring plans or layouts to another computer that does not have these external files, use the **Backup Entire Plan** tool. See “Backup Entire Plan” on page 67.

Backing Up Your Files

It is always a good idea to create backup copies of all your important files on your computer.

It is strongly recommended, however, that you never save directly:

- Across a network, such as onto a server;
- Onto removable media such as a USB thumb drive, CD, or DVD;
- Across the Internet.

Instead, copy your files to such locations only after you have saved them on your computer’s hard drive and exited the program.

Similarly, you should never open files saved in these locations. Copy the files to the local hard drive, and then open them. See “Opening and Importing Files” on page 59.

Archive folders are used by Chief Architect to manage prior versions of your files. You should not view these files as a substitute for your own backup routine, and should never save a file in an archive folder. See “Auto Archive” on page 57.

When backing up your Chief Architect files, consider backing up not only your **.plan** and **.layout** files, but your custom user data, as well - including library content, toolbar configurations, and textures. This custom data is all located in the Chief Architect Data folder, so it can be easily backed up. See “Chief Architect Data” on page 51.

You can, if you wish, create a folder inside the Data folder for your **.plan** and **.layout** files, as well. See “Organizing Your Files” on page 51.

Thumbnail Images

A thumbnail is a miniature image that helps identify a file in the **Open Plan File** dialog in Windows and in the **Find Plan Assistant**. Any view of a plan or any layout page can be saved as the thumbnail. See “Searching for Plans” on page 64.

If thumbnails are enabled in the **Preferences** dialog, the program automatically creates onewhen you first save a new plan or layout. You can choose to generate small or large thumbnails. See “File Management Panel” on page 97.

To create a custom thumbnail image

1. You must save the file and give it a name before you can save a thumbnail.
2. Create the 2D or 3D view that you want to use as a thumbnail for the current file.
3. With the desired view active, select **File> Save Thumbnail Image**.

Thumbnail images are saved in the plan or layout file that they are associated with.

Auto Archive

The first time a plan or layout is saved, Chief Architect creates an Archive folder in the Chief Architect Data folder. The Archive folder contains Auto Save and Archive files.

The program does not create Auto Save and Archive files for untitled plans and layouts. In order for these to be created, a file must have been previously saved and given a name and save location on your computer. Further, Archive files are only updated when you save your work.

Auto Save and Archive files should not be viewed as a substitute for regularly saving your work by selecting **File> Save** or pressing Ctrl + S on the keyboard, nor should they be considered an alternative to your own file backup routine.

Archive Files

Every time a drawing is saved, Archive files that keep a historical archive of your plan are automatically created or updated.

Files can be archived by hour, day or most recent save. They are renamed according to which archiving option is selected in the **Preferences** dialog. See “General Panel” on page 96.

Archive files illustrating all three archive options

> Regardless of what archiving option you select in the Preferences dialog, if you do not save your work regularly, your archive files will not be updated.

Plan, layout and related files from previous versions of the program are automatically moved to the archive folder when the plan is opened and saved in Chief Architect.

Archive files are meant to be for emergency use only. If you must access an archive file, open it as you would any other file. See "Creating a New Plan or Layout" on page 52.

As soon as the file is open, use **Save As** to save this file to another location.

Legacy Archive Files

If you open a Chief Architect plan or layout file from a previous program version and immediately **Save** it (not **Save As**), the Auto Archive utility will create an additional archive file using the original program version format. This archive file is a copy of the original and can still be opened in the original program version.

If you open and **Save** a Chief Architect Version 10 plan or layout file, the legacy archive file name will be appended "_v10" to help distinguish it from other archived .plan or .layout files of the same name, and a copy of its archive folder will be created in the Chief Architect X6 Archives folder.

Manage Archives

Chief Architect offers two convenient ways to access Archive folders.

- Select **File> Manage Auto Archives** to open the current plan's Archive folder.
- Click **Yes** in the **Archived Files** dialog when the program warns you that the number of archive files exceeds the **Auto Archive Files** value.

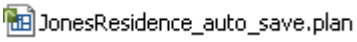
You can also move or delete archived files using your operating system. See your operating system's Help for more information.

Auto Save Files

As you work, Chief Architect automatically creates Auto Save files at regular intervals when changes are made to a file but not saved by selecting **File> Save**.

These Auto Save files are appended **_auto_save.plan** or **_auto_save.layout** and are saved in the Archive folder.

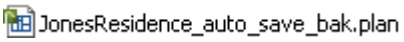
When you close a file normally, its Auto Save file is retained until the next time the file is opened - at which time the Auto Save file is overwritten.



Auto Save file after normal shut-down

You can enable Auto Save and set its frequency in the **Preferences** dialog. See "General Panel" on page 96.

Auto save files created as a result of an improper program shutdown are appended **_auto_save_bak.plan** or **_auto_save_bak.layout**.



Auto Save file after abnormal shut-down

If your computer shuts down accidentally, you can recover some of your work by opening the **_auto_save_bak** file.

> A file is auto saved only if you have saved it previously. Auto Save does not work for unnamed files.

When you reopen a file after a computer shut down or system crash, the program will notify you if an Auto Save file newer than the original file is found and give you the option to one that file.

Even with Auto Save, you should save your work manually on a regular basis using any of the following methods:

- Click the **Save** button.
- Select **File> Save** .
- Press Ctrl + S on the keyboard.

Undo Files

Chief Architect stores a set number of copies of all open plan file changes, known as undo files. Undo files are referenced whenever you select **Edit> Undo** or **Edit> Redo** . See “Undo and Redo” on page 251.

Undo files are stored in the Undo Directory, which can be specified in the **Preferences** dialog. See “Folders Panel” on page 99.

By default, the Undo Directory is the Windows Temporary Directory. When you use Windows system cleanup features, these files can be deleted. Because of this, you should only use these type of utilities when Chief Architect is not running.

The maximum number of Undo files is specified in the **Maximum Undos** value in the Preference settings. If you have **Undo** enabled, be sure to define a directory on a hard drive with enough space for these files.

When Chief Architect is closed normally, any current Undo files are deleted.

Opening and Importing Files

Opening and importing files are often similar tasks, but accomplish two very different things:

- Opening a file refers to opening it in the program in which it was created. Only plan or layout files can be opened in Chief Architect. See “Compatibility with Previous Versions” on page 50.
- Importing a file brings data that was created in a different program into Chief Architect. A number of different file types can be imported into Chief Architect.

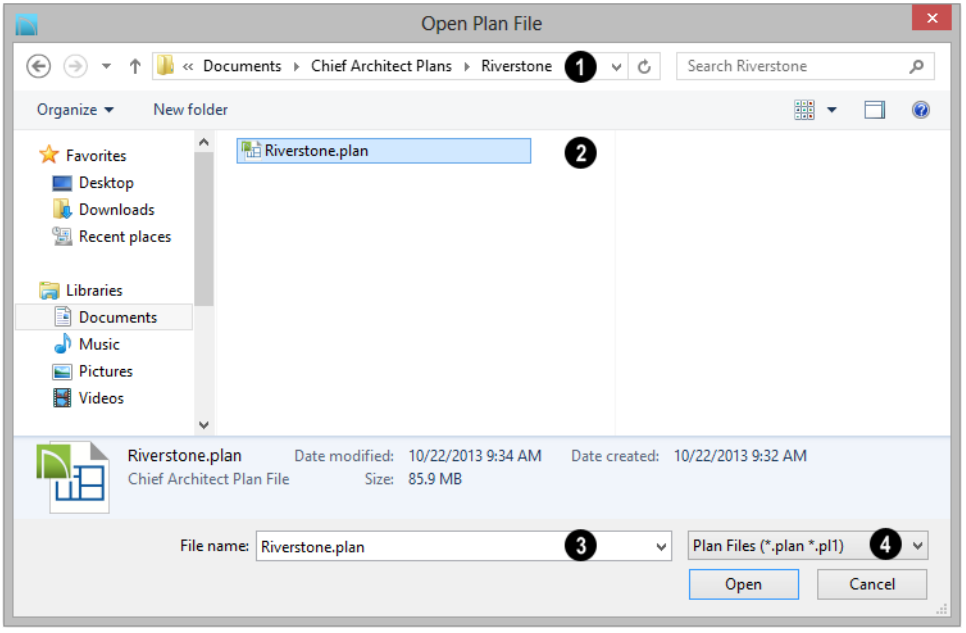
Select **File> Open Plan** to open an existing **.plan** file or **File> Open Layout** to open an existing **.layout** file located on your computer. Chief Architect automatically browses to either the directory last used or to a specific directory, depending on your current Preferences settings. See “New Plans Panel” on page 102.

> ⚠ Never open a file located on a server or other computer on a network, or on a removable storage device. Copy such files to your local machine's hard drive first, and then open the copy.

Open File Dialog

The **Open File** dialog uses the operating system's file open dialog format, and is also used when importing files. The dialog name may vary, depending on your operating system and the type of file being opened or imported.

A similar **Select Folder** dialog allows you to select an entire folder of files to import.



1. Choose the location on your local computer for the file you are opening.
2. Any existing folders and/or files in the current location display here.
3. In the **File Name** field, type the file's name. If you select the file in the space above, its name will automatically display here.
4. When opening or importing a file, the program will usually choose the appropriate file type from the **Save as type** drop-down list. When importing, you may need to choose a specific file type.

Plan files open to the floor that was active when the file was last saved and closed; layout files open to the page that was active.

Importing Files

Chief Architect has a number of options for exporting and importing information out of and into your drawings. Often, file import dialogs are simply versions of the **Open File** dialog. See “Importing and Exporting” on page 1133.

Similarly, file export dialogs are often similar to the **Save File** dialog. See “Exporting Files” on page 56.

Recently Opened Files

A list of recently opened and saved plan and layout files can be accessed by selecting **File> Open Recent Files**. Select one of these files to open it without using the **Open File** dialog.

The maximum number of recent files listed in the **File** menu can be changed in the **Preferences** dialog. You can also specify that the recent files list display at the bottom of the **File** menu rather than in a submenu. See “File Management Panel” on page 97.

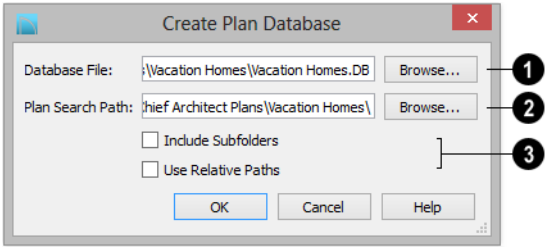
The names of recent files also display in the **Startup Options** dialog. Click on the name of a file to open it. See “Startup Options” on page 28.

Plan Databases

A Plan Database is a collection of plan files along with search information about those files. You can create one or more Plan Databases and share them with your clients to help them browse through your drawings to find plans that meet their needs.

Creating a Plan Database File

Select **Tools> Plan Database> Create Plan Database** to create a new plan database file that can be used to search for plans using the **Plan Find Assistant**. The **Create Plan Database** dialog opens.



❶ Use the **Database File** field to name the plan database file to be created. Click the **Browse** button to save this file at the location of your choice, as well as name it.

❷ Specify the **Plan Search Path**, which is the pathname of the folder where plans to be included in the plan database are saved. Any plan files in this folder will be added to the plan database. Click the **Browse** button to navigate to a folder on your computer.

❸ The **Include Subfolders** checkbox allows you to specify whether or not the search looks only in the Plan Search Path or if it also searches any subfolders found.

- Check **Use Relative Path** if you anticipate moving the folder containing the database and plans to another location. As long as the database and the plans it references remain in the same folder, that folder can be moved to another location.

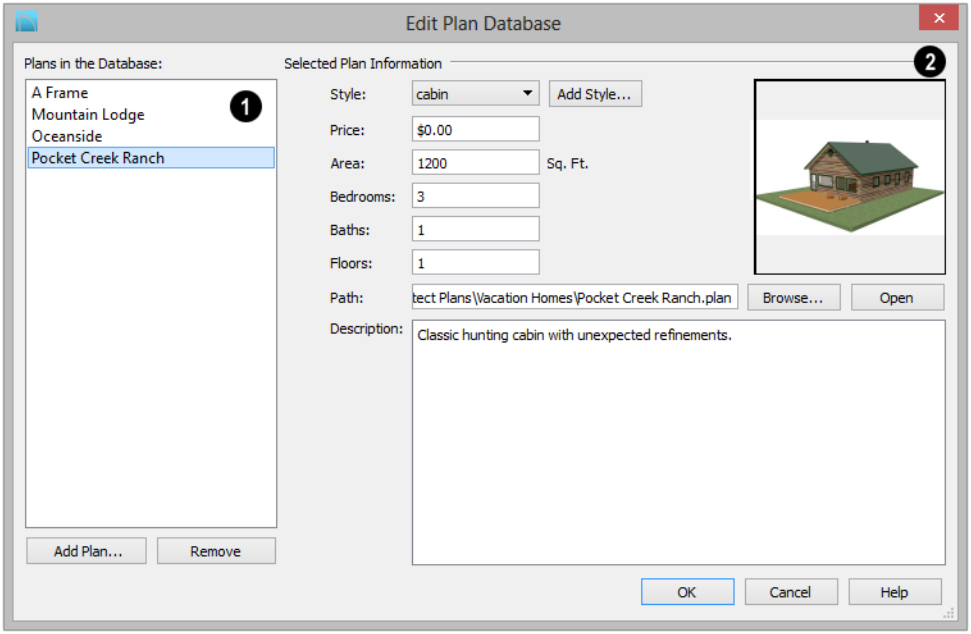
When you click **OK**, the program searches for plan files and adds them to the plan database file. The program must read each plan and analyze it so this process may take some time.

You can **Cancel** the search process at any time. If you do, your plan database will have incomplete information and will not contain entries for all plans in your search folder. When all plans have been found and added to the plan database, the program automatically opens the new plan database file for modification.

Editing a Plan Database File

Once a plan database file is created, it can be modified. Select **Tools> Plan Database> Edit Plan Database**, then select the plan database file you want to modify.

Click **OK** to open the **Edit Plan Database** dialog. You can edit any of the information in the plan database and add and remove plans from the database.



1 **Plans in the Database** - All plans that currently have information stored in the plan database are listed here.

- Click **Add Plan** to select a plan file to add to the plan database.
- Click **Remove** to remove the currently selected plan from the plan database.

2 **Plan Information** - Information about the selected plan displays and can be edited here. This information displays when a plan is found and selected using the **Search for Plans** tool.

- The Thumbnail preview image of the selected plan displays to the right. See “Thumbnail Images” on page 57.
- Select a plan **Style** from the drop down list.
- Click the **Add Style** button to add the name of a style to the list.
- Enter the **Price** range for this plan.
- The **Area** is automatically calculated by the program based on the living area of the plan when it is added to the database. You can enter a different value if you wish.
- The number of **Bedrooms** is automatically calculated when a plan is added to the database. You can enter a different number if you wish.
- The number of **Baths** is automatically calculated when a plan is added to the database. You enter a different number if you wish.
- The number of **Floors** is automatically calculated when a plan is added to the

database. You can enter a different number of floors if you wish.

- The selected plan file's **Path** name displays here.
- Click **Select File** to relink the selected plan to a file on your computer. If a plan file is renamed, moved, or removed from your system, the plan database will be unable to locate it. You must then relink the plan database to the file or remove it to keep the plan database information accurate.
- Click **Open Plan** to open the selected plan. Opening a plan closes the **Plan Database** dialog. If you have not saved any changes you made before clicking the **Open Plan** button, you are asked to do so before you continue.
- Enter a **Description** for the plan, if desired.

Searching for Plans

Select **Tools> Plan Database> Search for Plans** to locate an existing plan to open the **Find Plan Assistant**, which helps you search specific plan database files and define search parameters for plans based on parameters that you define.

At the bottom of each page, the number of plans that match your current search parameters displays. As you modify the parameters, this number increases or decreases as matching plans are found. If this number is zero, the **Next** button will be disabled.

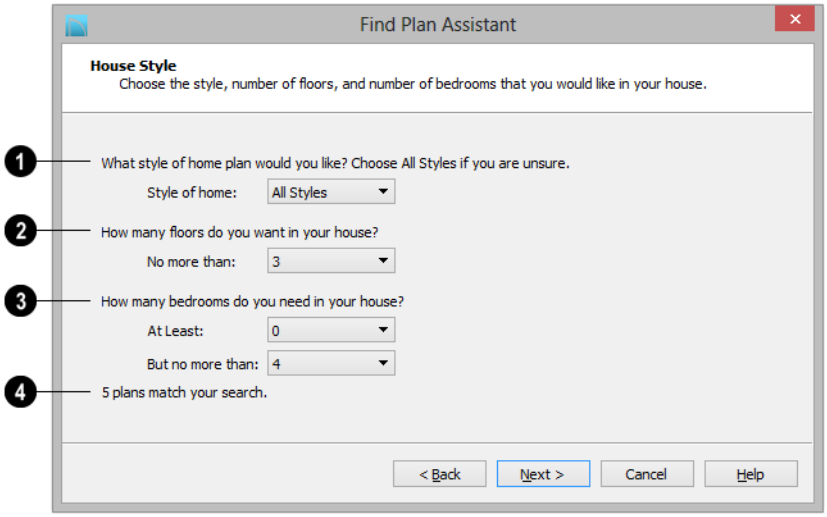
On any page, click the **Back** button to modify any previously selected parameters.

Find Plan Assistant

The **Find Plan Assistant** can be used to search for plans using stored information about each plan, such as the style of construction and the number of bedrooms and other room types.

When you open the **Find Plan Assistant**, choose a plan database to search. Click the **Browse** button to select a plan database. Once a plan database is selected, click **Next** and proceed through the **Find Plan Assistant**.

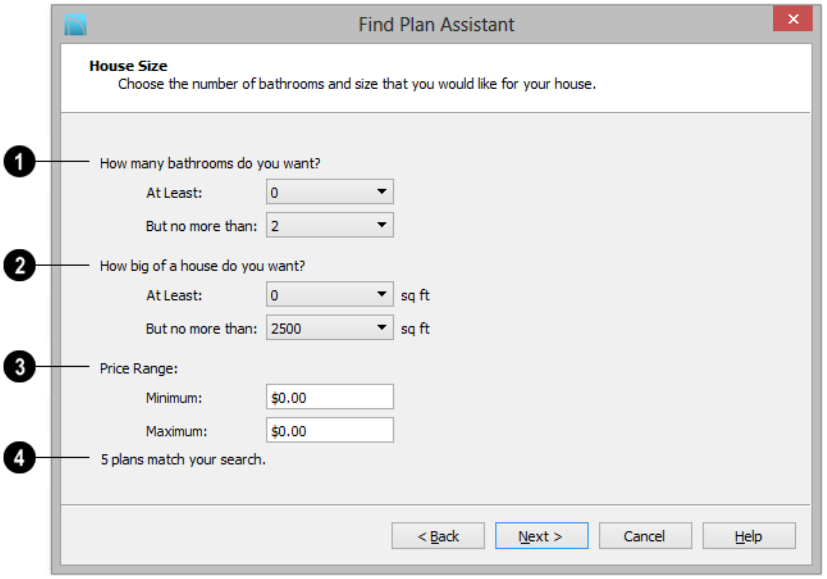
House Style



1. Select a style of house from the drop-down list.
2. Specify the maximum number of floors that you would like.
3. Specify the minimum and maximum number of bedrooms that you would like.
4. The number of plans in the database that match your search parameters thus far displays here for reference.

Click **Next** to continue.

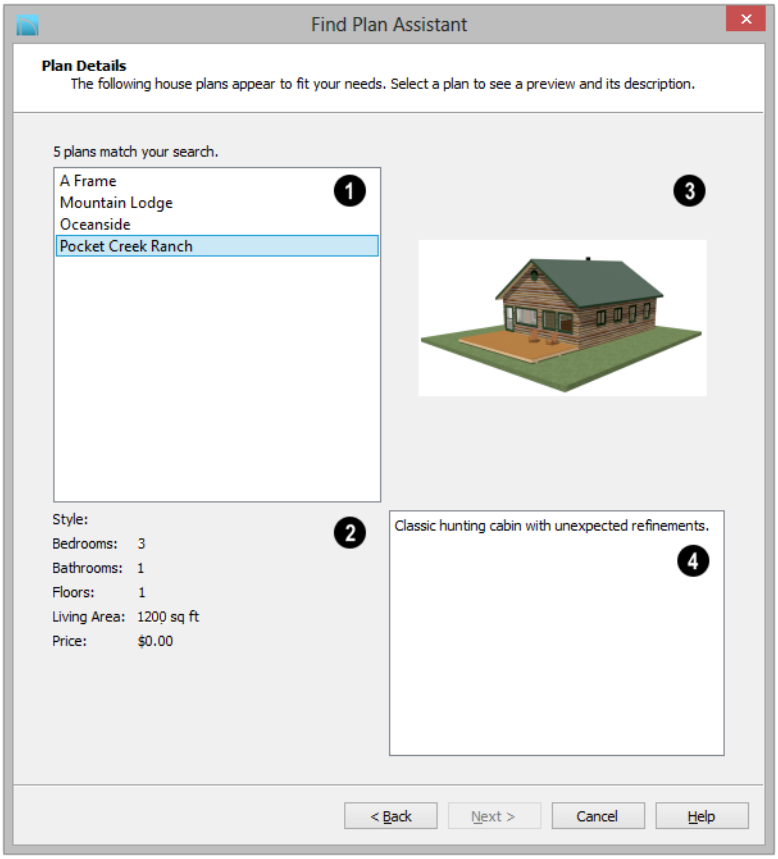
House Size



1. Specify the minimum and maximum number of bathrooms you would like.
2. Specify the minimum and maximum number of square feet that you would like.
3. Define a price range by specifying Minimum and Maximum prices.
4. The number of plans in the database that match your search parameters thus far displays here for reference.

Click **Next** to continue.

Plan Details



1. Click on the name of a plan to select it and view information about it.
2. Basic information about the selected plan display here.
3. A preview of the selected plan displays here.
4. A written description of the selected plan provides additional details displays here.

Click **Next** to continue, then click **Finish** to view the selected plan.

Backup Entire Plan

Because Chief Architect plans and layouts often contain many references to other external files, it is necessary to copy all the associated files to a new location

when a plan or layout is moved. You can do this easily by selecting **File> Backup Entire Plan**.

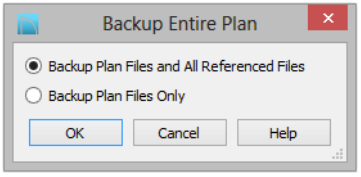
Backing up an Entire Plan is important when:

- Migrating legacy files created in older program versions.
- Transferring files to another computer or sending them to another user.
- Archiving or backing up your work.

Note: Always use File> Backup Entire Plan when sending files to a user of the Chief Architect Viewer to make sure that they have all associated data. See “Sharing Your Files with Clients” on page 45.

To back up a plan or layout

1. To copy all associated plan or layout files to a new directory, select **File> Backup Entire Plan** . The **Backup Entire Plan** dialog opens for you to choose what files are copied.



   - Choose **Backup All Files** to copy all plan or layout files and all externally referenced files such as linked plan files, inserted picture files, metafiles, .pdf files, and texture, image, and backdrop, and bump map graphics files.
   - Choose **Backup Plan Files Only** to copy all associated plan files and any externally linked files and inserted picture files, but no graphics or texture files. This is best used only when transferring a file to a computer that already has the graphics files installed.
   - Click **OK**.
2. The **Select the Plan Backup Folder** dialog opens next. This is a typical Save File dialog. See “Saving, Exporting, and Backing Up Files” on page 53.
3. Navigate to an empty folder on your system and select it. With the destination folder for the backup selected, click **OK**.

You must select an empty folder for the Backup Entire Plan feature to work. If you select an existing folder that is not empty, the backup is cancelled.

Returning Viewer Files

When customers review and annotate files using the Chief Architect Viewer, they only need to return the **.plan** and/or **.layout** files. The associated files do not need to be returned.

Closing Views and Files

There are several ways to close a view window:

- Select **File> Close** to close the active window.
- Press Ctrl + W or Ctrl + F4 on the keyboard to close the active window.
- Click the **Close** button in the active view’s title bar or in any view’s tab.

- A tabbed view can be closed by clicking on its tab using the middle mouse button.
- Select **File> Close All** to close all currently open view windows instead of just the active window.

If a plan has only one view window open and you try to close it, the program will prompt you to save before closing if there are any unsaved changes. Edited cross section/elevation views also prompt you to save before closing.


Although the program warns you if you try to exit without saving, you should get in the habit of saving plan files before exiting.

Exiting Chief Architect

Select **File> Exit** to exit the program. If you have not saved any open plans, you are reminded to do so. It is better to save your work before exiting than to save on exit.

When you exit from the program using **File> Exit**, all Autosave files and Undo files are automatically deleted.

On a Mac, if you click the program window's red **Close** button, the window will close but the program itself will continue to run. To close it down completely, right-click on its icon on the Dock and select **Quit** from the contextual menu.

Chapter 3:

Preferences and Default Settings

Preferences are global settings that affect the functionality and appearance of the Chief Architect environment, while default settings control what objects look like when they are initially created. You can save time and increase your productivity by becoming familiar with these settings and customizing them before you begin a new project or as needed thereafter.

If you use special settings regularly, it is a good idea to save your settings in a template plan. See “To create your own template plan” on page 83.

Chapter Contents

Default Settings vs Preferences

Default and preference settings have important effects on how the tools in Chief Architect function. Default settings are file specific, while Preferences are global, taking effect regardless of what file is open.

Defaults and Preferences can be customized to suit your needs and improve your efficiency, so it is recommended that you become familiar with them and learn how you can use them to your advantage.

Default Settings

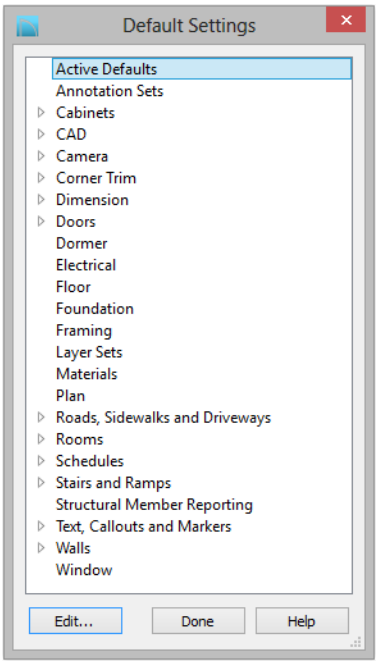
Default settings determine the initial characteristics of objects when they are first drawn. For example, when you place a base cabinet in a plan, its size, materials, front items, hardware and fill style are determined by settings in the **Base Cabinet Defaults** dialog.

Some defaults affect the structure of your model: for example, Floor, Foundation, Framing, and Wall defaults.

Defaults are file-specific, which means that any changes that you make to the default settings in one plan or layout file will have no effect on other plans or layout files. You can, however, import the defaults settings saved in one plan file into another. See “Importing Default Settings” on page 84.

Default settings are an important aspect of template files, which determine the initial settings of new plan and layout files and can be used to save you considerable time. See “Template Files” on page 82.

You can access a complete list of the various default settings in the current plan or layout file by selecting **Edit> Default Settings** from the menu.



- Click the + beside a category to expand it and access the defaults for items related to that category.
- To open the defaults dialog associated with an item in the list, double-click on the line item, or click on the item and then click the **Edit** button.
- General CAD defaults are view-specific and are only available in views where CAD objects can drawn. See “CAD Defaults Dialog” on page 1040.

Many defaults dialogs can also be opened by double-clicking on a parent and/or child

toolbar button of a tool affected by the settings in that dialog. For example, you can:

- Double-click the **Cabinet Tools** parent button to open the **Defaults Settings** dialog for Cabinet tools only;
- Double-click the **Base Cabinet** child button to open the **Base Cabinet Defaults** dialog.

A few defaults dialogs, such as **CAD** and **Layer Set Defaults**, do not have a parent or child tool associated with them. You can add optional buttons to your toolbars to quickly access these dialogs. See “To add a button to a toolbar” on page 132.

You can create Hotkeys to open any of the defaults dialogs listed in the Default Settings dialog. See “Hotkeys” on page 138.

Most items have one defaults dialog that affects all objects of that type. Manual Dimensions and the Text, Callouts, and Markers tools, on the other hand, support multiple Saved Defaults. If you double-click one of these line items, a **Saved Defaults** dialog will open, allowing you to access and manage all defaults associated with that item. See “Multiple Saved Defaults” on page 75.

Preferences

Preference settings influence the overall environment of the program, such as what the interface looks like, how the tools are accessed, and the basic rules governing how objects are drawn and edited. See “Preferences Dialog” on page 88.

Unlike default settings, preferences are global, which means that any changes that you make to them will take effect in all plan and layout files.

To access the **Preferences** dialog, select **Edit> Preferences**  from the menu.

Region and Language Settings

There are a few formatting considerations in Chief Architect that are set based on your operating system’s Region settings:

- **Units of measurement** - When you first install and launch the program, your template plan and layout files will be set to use either Imperial or metric units, depending on your operating system settings. See “New Plans Panel” on page 102.
- **Currency** - The currency associated with your Region settings will be used in the Materials List, **Components** dialogs, and Loan Calculator. See “Materials Lists” on page 1247 and “Loan Calculator” on page 1099.
- **Decimal mark format** - Depending on your operating system settings, either a dot or a comma will be used in dimension lines, dialogs, and anywhere the program can display a numeric value using decimals.
- **Thousands separator** - Depending on your operating system settings, a comma, dot, or non breaking space may be specified as a thousands separator, or digit grouping symbol, for dimension lines.
- **Date format** - Depending on your operating system settings, the format of date text macros will either start with the day followed by the month, or start with the month followed by the day.

Dynamic Defaults

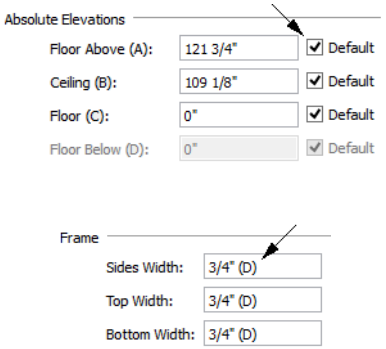
Dynamic defaults are values that can be changed globally throughout a model.

- If you change a dynamic default value in a defaults dialog, all objects of that type that are set to use the default will update automatically to use the new value.
- Any objects of that type that are not using the default value because of editing will not be affected if you change the default.

Dynamic defaults are found in the default dialogs of a variety of objects, including dimension lines, walls, doors, cabinets and rooms.

Materials are another example of an attribute that uses Dynamic Defaults. See “Material Defaults” on page 852.

In object specification dialogs, dynamic defaults are followed by either a (D) in the value field or a Default checkbox.



To edit a dynamic default, delete the (D) or remove the check from **Default** box and type the desired value.

To reset a value back to the dynamic default, type the letter D in the field or click the Default checkbox.

Set as Default

The **Set as Default** edit button allows you to apply the settings in a selected object’s specification dialog to the defaults for that type of object.

Set as Default affects the attributes of both subsequently created objects as well as any objects using Dynamic Defaults. See “Dynamic Defaults” on page 74.

Attributes of already existing objects that are not Dynamic Defaults are not affected when **Set as Default** is used, so it should not be viewed as an alternative to setting up defaults before you begin drawing. See “Default Settings” on page 72.

The **Set as Default** edit tool is not available for Terrain Paths, including Sidewalks, Streams, Terrain Walls and Terrain Curbs. See “Terrain Wall and Curb Tools” on page 707.

Multiple Saved Defaults

While most objects in Chief Architect have one defaults dialog that controls how all objects of that type are created in a given plan, Manual Dimensions, Rich Text, Text, Callouts, Markers, and Arrows can each have Multiple Saved Defaults rather than just one. This lets you set these tools up for more than one requirement or task in advance, and then simply specify which default you want to use as the Active Default at any given time. See “Annotation Sets” on page 78.

Structural Member Reporting and Ray Trace Options also have Multiple Saved Defaults. Rather than affect drawing tools, though, these affect the information in Materials Lists and the properties of ray trace views.

Using Multiple Saved Defaults

There are a couple of different approaches to using Multiple Saved Defaults:

- They can be created for specific tasks. For example, dimension defaults for a site plan can use a large font size and a format using feet, yards, or meters, while the defaults for cabinet elevations can use a smaller font and inches or millimeters.
- They can be set up for use at particular scales, such as 1/4” = 1’ and 1/2” = 1’, or 1 mm = 50 mm and 1 mm = 100 mm.
- You can also use a combination of these two strategies.

A selection of Multiple Saved Defaults are included in the template plans installed with Chief Architect to serve as examples of these two approaches. You can use these sets as they are, customize them, or create new ones.

Saved Defaults are all view-specific. This means that if a Saved Default is active in a particular saved view, and you then **Save** your work and close the view, that Saved Default will be active the next time you open the view - regardless of what is in use in other views.

The settings associated with Saved Defaults are static, which means that objects created while one Saved Default is active are not affected when you switch to another Active Default. See “Dynamic Defaults” on page 74.

Manually-drawn dimension lines are not affected when you switch Active Defaults; however, they do use dynamic defaults inherited from a Saved Dimension Defaults and will be affected if that Saved Dimension Defaults is edited. See “Dimension Defaults Dialog” on page 963.

if an object is placed into a new file, either from the library or by copy/pasting, its association with a Saved Dimension Default and/or a Text Style is preserved. See “Copying and Pasting Objects” on page 168 and “Add to Library” on page 1080.

Text Styles

In addition to multiple saved defaults, objects that include text within them as well as object labels can be assigned a Text Style, which includes properties like font, color and size. See “Text Styles” on page 1030.

Objects that have text within them are not affected if you assign a new Text Style to their Active Defaults. If a given Text Style is modified, however, any objects that it is assigned to will be affected.

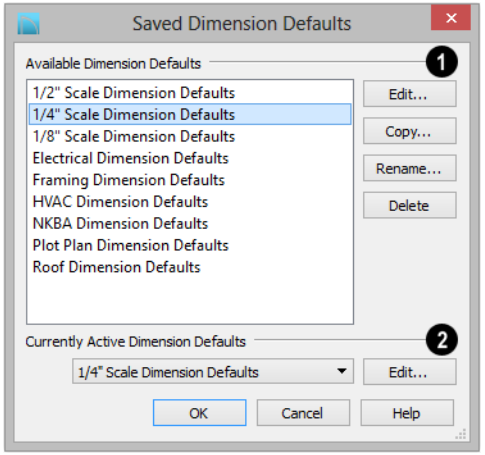
Saved Defaults Dialog

Tools that have Multiple Saved Defaults have a **Saved Defaults** dialog which lets you:

- Make changes to existing Saved Defaults.
- Add and remove Saved Defaults from the list of those available in the current file.
- Specify which Saved Default is active.

To open the **Saved Defaults** dialog for any annotation object type, double-click on its name in the **Default Settings** dialog. See “Default Settings” on page 72.

If **Edit Active Default on Double-Click** is selected in the **Preferences** dialog, you can also access the **Saved Defaults** dialog by double-clicking on the toolbar button for one of these object types. See “General Panel” on page 96.



1 A list of the **Available Saved Defaults** for the selected object type displays and can be managed here.

- Click on the name of a Saved Default for the selected object type in the list to select it.
- Click the **Edit** button to open the defaults dialog for the selected Saved Default.
- Click the **Copy** button to create a new Saved Default. The new Saved Default is a copy of the one selected in the Name field.
- In the **New Default Name** dialog, which opens when you click Copy, type a short, descriptive, unique name for the new saved default. The **Defaults** dialog for the new Saved Default opens next. Make any needed changes to its settings and click OK.
- Click the **Rename** button to open the **Rename Current Default** dialog and type a new name for the current Saved Default. Names are case-sensitive and must be unique.
- Click the **Delete** button to remove the selected Saved Default from the list. Saved Defaults assigned to an Annotation Set in the current file cannot be deleted, nor can a Saved Dimension Default used by a dimension line. See “Dimension Line Specification Dialog” on page 991.

2 The **Currently Active Saved Defaults** for the selected object type displays and can be changed here.

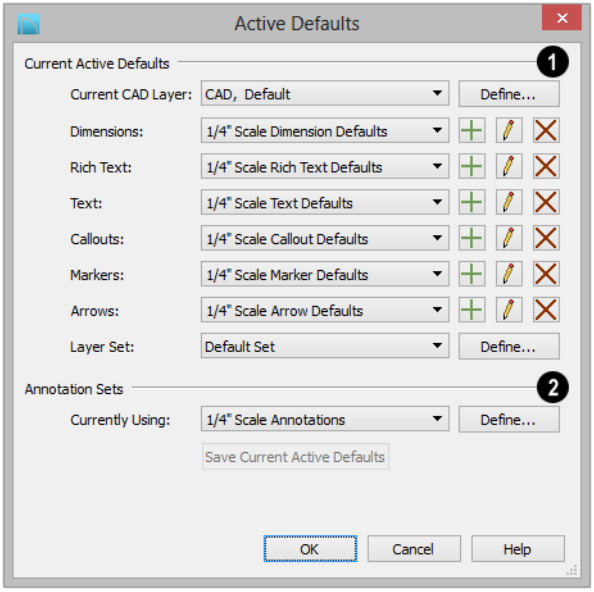
- Select a Saved Default from the drop-down list to make it active when you click **OK**.
- Click the **Edit** button to open the Defaults dialog for the Saved Default selected in the drop-down list.

Note: if you click Cancel or press Esc in the Saved Defaults dialog after editing, renaming, or copying a Saved Default, your changes will not be retained.

Click **Cancel** to close the dialog without retaining any of your changes. Any newly added Saved Defaults will not be retained.

Active Defaults Dialog

You can view and modify the defaults that are currently active by clicking the **Active Defaults** toolbar button to open the **Active Defaults** dialog. This dialog can also be accessed via the Default Settings dialog.



1 The **Current Active Defaults** for each of the annotation object types.display and can be changed here. The Current CAD Layer and active Layer Set can also be specified.

- Select the **Current CAD Layer** from the drop-down list or click the Define button to open the **Layer Display Options** dialog. See “Layer Sets” on page 145.
- Select a Saved Default from the drop-down list associated with any of the annotation object types.
- Click the **Add** button beside any Saved Default to create a new Saved Default for

the object type based on the one that is currently selected. Type a short, descriptive name for the new Saved Default, then modify its settings as needed.

- Click the **Edit** button to open the defaults dialog for the object type and make any changes you may need to the selected Saved Default.
- Click the **Delete** button to remove the selected Saved Default from the list of those available in the plan or layout. Note that if a Saved Default is either in use or assigned to an Annotation Set, it cannot be deleted.
- Select a **Layer Set** from the drop-down list or click the **Define** button to open the **Layer Display Options** dialog.

❷ **Annotation Sets** -

- The Annotation Set that you are **Currently Using** is selected in the drop-down list. If "Active Defaults" is selected, the current collection of Active Defaults settings above is not associated with a saved Annotation Set.
- Select a different Annotation Set from the drop-down list to activate it when you click **OK**.
- Click the **Define** button to open the **Annotation Sets** dialog. See "Annotation Sets Dialog" on page 79.
- When "Active Defaults" is selected, you can click the **Save Current Active Defaults** button to create a new Annotation Set based on the current Active Defaults.


Saved Defaults can also be managed in the Annotation Sets dialog, and can be grouped into Annotation Sets for specific drawing tasks.

Annotation Sets

Annotation Sets are simply a fast, easy way to switch from one collection of Saved Defaults created for one particular purpose to another collection set up for a different task.

Annotation Sets include defaults for: manually-drawn Dimensions, Text, Callouts, Markers, Arrows, the Current CAD Layer, as well as the Active Layer Set. Multiple Annotation Sets can be saved in any plan, each for a specific purpose, and you can quickly switch from one set to another as you work.

Many of the objects included in Annotation Sets can be assigned a Text Style.

Saved Defaults are all view-specific; so by extension, Annotation Sets are as well. This means that if an Annotation Set is active in a particular saved view, and you then **Save** your work and close the view, that Set will be active the next time you open the view - regardless of what is in use in other views.

Using Annotation Sets

As with Saved Defaults, there are a couple of approaches to using Annotation Sets:

- They can be created for specific tasks.

- They can be set up for use at particular scales.
- You can also use a combination of these two strategies.

A selection of Annotation Sets are included in the template plans installed with Chief Architect to serve as examples of these two approaches. You can use these sets as they are, customize them, or create new Sets.

Activating an Annotation Set

An Annotation Set can be selected in any view that supports Dimensions, CAD, and Text: floor plan view, cross section/elevation views, CAD Details, and Wall Details.

Activating an Annotation Set really means activating all of the Saved Defaults and layer settings associated with it. An Annotation Set can be activated in either of three ways:

- Select a set from the **Active Annotation Set Control** drop-down.
- Select an Annotation Set from the **Currently Using** drop-down list in the **Active Defaults** dialog. See “Active Defaults Dialog” on page 77.
- Open a saved view in which the Annotation Set was previously active.

Using Active Defaults

If a particular Annotation Set is active and you switch one of its Saved Defaults to a different Saved Default, the Annotation Set will no longer be considered active and “Using Active Defaults” will display in the the **Active Annotation Set Control** drop-down. This is not a problem: it simply means that you aren’t using all of the defaults that you may have set up for a specific purpose.

You can view and modify the currently active Saved Defaults in the **Active Defaults** dialog. You can also save the current defaults as an Annotation Set for future use, if you wish. See “Active Defaults Dialog” on page 77.

Creating Annotation Sets

There are two ways to create a new Annotation Set:

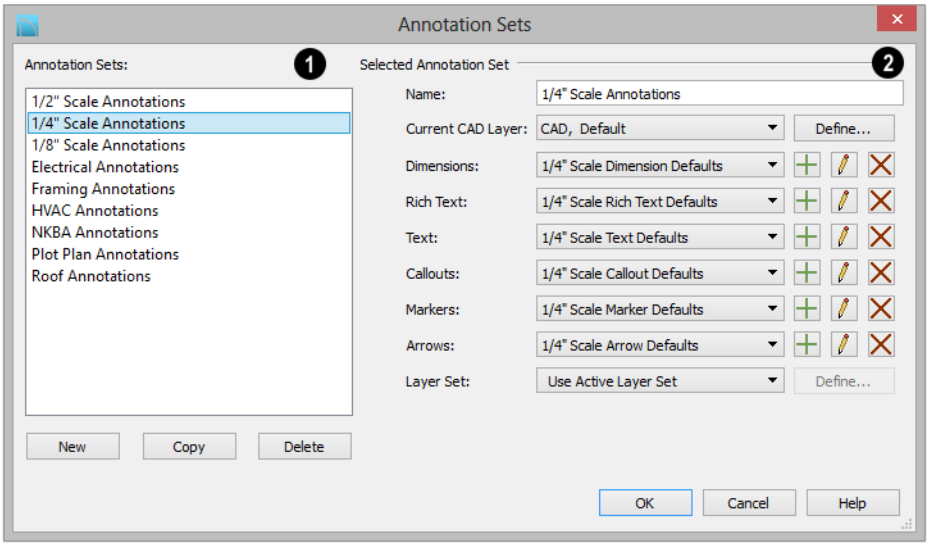
- Click either the **New** or the **Copy** button in the **Annotation Sets** dialog.
- Click the **Save Current Active Defaults** button in the **Active Defaults** dialog.

Annotation Sets Dialog

The **Annotation Sets** dialog lists the Annotation Sets available in the current plan file and lets you add, remove, edit, and save them.

To open the **Annotation Sets** dialog, select **Edit> Default Settings**  from the menu. Select “Annotation Sets” and click the **Edit** button. See “Default Settings” on page 72.

You can also open this dialog by clicking the **Annotation Sets**  button, which you can add to your toolbars. See “To add a button to a toolbar” on page 132.



1 A list of the **Annotation Sets** available in the current plan or layout display here.

- Click on an item in the list to select it.
- The selected set is highlighted and displays in the **Name** field to the right.
- When a set is selected, its name and other attributes can be edited.
- Click the **New** button below the list to a new Annotation Set. Type a short, descriptive name for the new set in the **Name** field to the right.
- Click the **Copy** button below the list to create a copy of the Annotation Set. Type a short, descriptive name for the new set in the **Name** field to the right.
- Click the **Delete** button to delete the selected Annotation Set from the list.

2 Information about the **Selected Annotation Set** displays and can be modified here.

- The name of the **Selected Annotation Set** displays here. You can change the selected set's name by typing in the text field. Names are case-insensitive and must be unique.
- Select the **Current CAD Layer** from the drop-down list or click the **Define** button to open the **Layer Display Options** dialog. See "Current CAD Layer" on page 1044.
- For each annotation object type, select a Saved Default from the drop-down list.
- Click the **Add** button to create a new Saved Default for the object type based on the currently selected Saved Default.. Type a short, descriptive name for the new Saved Default, then modify its settings as needed.
- Click the **Edit** button to open the defaults dialog for the object type and make any changes you may need to the selected Saved Default.

- Click the **Delete** button to remove the selected saved default from the list of those available in the plan or layout.
- Select a **Layer Set** from the drop-down list. See “Layer Sets” on page 145.
- When “Use Active Layer Set” is selected, the layer set in use in the current view does not change when the Selected Annotation Set is made active. This option is the default for installed Annotation Sets.
- Click the **Define** button to open the **Layer Display Options** dialog. Not available when “Use Active Layer Set” is selected. See “Layer Display Options Dialog” on page 148.

Exporting and Importing Annotation Sets

Annotation Sets can be exported out of a plan or layout file and then imported into other plans or layouts.

When you export Annotation Sets, all of the Multiple Saved Defaults in the file are exported, regardless of whether they are used by an Annotation Set. See “Multiple Saved Defaults” on page 75.

Exporting Annotation Sets

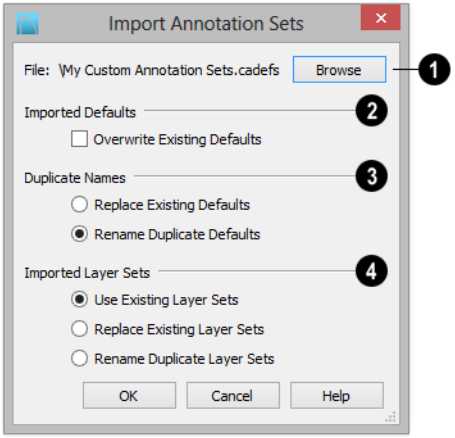
To export a plan or layout’s Annotation Sets, open that file and then select **File> Export> Annotation Sets**. The **Export Annotation Sets** dialog is a typical **Save As** dialog that lets you specify the exported file’s name and its saved location on your computer. See “Exporting Files” on page 56.

Exported Annotation Sets files use the **.cadefs** file format. Information exported in **.cadefs** files includes:

- All Annotation Sets saved in the current file.
- All Saved Defaults for Manual Dimensions, Text, Rich Text, Callouts, Markers, and Arrows.
- All Layer Sets that are associated with an Annotation Set. Layer Sets not associated with an Annotation Set are not exported.

Import Annotation Sets Dialog

To import Annotation Sets into a plan or layout, open that file and then select **File> Import> Annotation Sets**. After you select a file to import, the **Import Annotation Sets** dialog opens.



1 The current **File** pathname displays here. Click the **Browse** button and browse to the location of a different **.cadefs** file you wish to import. If the pathname is

not that of a valid **.cadefs** file, this text will display in red.

❷ Specify how **Imported Defaults** - including Annotation Sets and Layer Sets - are handled.

- Check **Overwrite Existing Defaults** to delete all Saved Defaults for Text, Rich Text, Callouts, Markers, Arrows, and Dimensions in the file and replace them with imported Saved Defaults. When this is unchecked, which it is by default, existing defaults are retained along with those that are imported. See "Multiple Saved Defaults" on page 75.

Note: Saved Dimension Defaults are not overwritten when Annotation Sets are imported - even when Overwrite Existing Defaults is checked - if dimensions are present in the active file.

❸ Specify how Saved Defaults with **Duplicate Names** are handled.

- Choose **Replace Existing Defaults** to replace any Saved Defaults already present in the plan.
- Choose **Rename Duplicate Defaults** to retain existing Saved Defaults and rename imported defaults by appending them with a "2". If subsequent Saved Defaults with duplicate names are imported, the number will increase.

❹ Specify how **Imported Layer Sets** are handled when duplicates are found.

- Select **Use Existing Layer Sets** to retain the sets that are already present rather than overwrite them.
- Select **Replace Existing Layer Sets** to overwrite the sets that are already present, replacing them with imported sets.
- Select **Rename Duplicate Layer Sets** to retain existing layer sets and rename imported sets by appending them with a "2".

Template Files

When Chief Architect opens a new, blank plan or layout file, the new file is actually a copy of a template using either metric or Imperial units of measurement and predefined default settings, layer settings, wall definitions, and page setup information.

Once you are familiar with the default settings in Chief Architect, you can create template files to fit your needs, store them in the Templates directory, and even specify them as the defaults for new files.

If you make changes to a default template file, all subsequently created plans or layouts will use the new default settings.

If a template file is not specified or cannot be found, the program starts new plans using a set of system defined defaults. System defaults are very basic and unlikely to meet your drawing needs, so you should always specify a template plan and layout.

Opening Template Files

If you have more than one plan or layout configuration that you regularly use, you can

create multiple template files and open whichever is needed for a given project.

To create a new plan or layout file using a template other than the current preference, choose **File> Templates> New Plan from Template** or **New Layout from Template**. The program browses to the Templates directory specified in the **Preferences** dialog. See “Folders Panel” on page 99.

Note: Make sure you use the appropriate units of measurement when you create a template plan. The Imperial or metric units used in the new plan are the same as when the template was saved.

Creating Templates

The steps for creating template plans and layouts are similar; although, there are fewer default settings in layout files, and most layout templates include a border and title block whereas most plan templates are blank.

To create your own template plan

1. Select **File> New Plan**.
2. Select **Edit> Defaults Settings** and open and modify the settings in the default dialogs as needed. See “Default Settings” on page 72.
3. Select **Tools> Display Settings> Display Options** and create any custom layers, layer sets, and layer settings that you typically use. See “Layers” on page 143.
4. Select **Edit> Defaults Settings** and create any Annotation Sets that you may require. See “Annotation Sets” on page 78.
5. Select **Build> Wall> Define Wall Types** and create any custom wall types that you often use. See “Wall Type Definitions Dialog” on page 298.
6. If you draw anything in the template plan, it displays in all new plans created with that template.
7. You can insert text macros into the template. See “Text Macros” on page 1033.
8. After modifying all your default settings, select **File> Templates> Save Plan As Template**. Name the template plan and save it in the Templates directory.
9. In the **Change Default Template** dialog, click **Yes** to use the plan as your default template whenever you select **File> New Plan**. Click **No** if you prefer to access this template by selecting **File> New Plan From Template**.
10. The current plan remains untitled, but a copy of it is saved for use as a template.

To create your own template layout

1. Select **File> New Layout**.
2. Select **Edit> Defaults Settings** and open and modify the settings in the default dialogs as needed. See “Default Settings” on page 72.
3. Select **Tools> Display Settings> Display Options** and create any custom

layers, layer sets and layer settings that you typically use. See “Layers” on page 143.

4. Select **File> Print> Drawing Sheet Setup** and specify the desired print settings. See “Drawing Sheet Setup Dialog” on page 1184.

5. Select **Tools> Layout> Page Down** to go to layout page 0 and use the CAD tools to design a border and title block that suits your needs. See “Layout Page Zero” on page 1226.

To set a template as your default

1. Select **Edit> Preferences** and go to the New Plans panel of the **Preferences** dialog. See “New Plans Panel” on page 102.
2. Click **Imperial** or **Metric Units**.
3. Click the **Browse** button for either the plan or layout template.
4. Select a template file from the Templates directory or navigate to a different location and select a template from there.

Updating Template Files

To change the default settings in your template, you must open the template file as though it were a regular plan or layout by selecting **File> Open Plan** or **Open Layout**.

After the necessary changes are made, select **File> Templates> Save Plan as Template**. Select your template from the list of files in the Templates directory. When the program asks if you want to replace the existing file, click Yes.

Importing Default Settings

Default settings are file-specific; however, you can transfer many important default settings from one plan file to another by selecting **File> Import> Default Settings**.

Not all defaults settings saved in a plan can be imported from one file to another. For example, Electrical, CAD, Floor, Framing, Foundation, and General Plan Defaults are not imported.

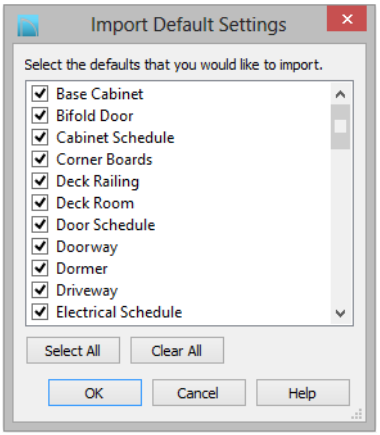
- Defaults associated with Annotation Sets are not imported but can be exported and imported separately. See “Exporting and Importing Annotation Sets” on page 81.
- Layer Sets can be exported and imported, as well. See “Exporting and Importing Layer Sets” on page 155.
- Wall Type Definitions can also be exported and imported. See “Exporting and Importing Wall Types” on page 301.

If the source file that you import from is from an older program version, it may be missing settings available in version X6. If a default setting is missing, the system default will be imported instead. For this reason, it is best to review defaults before importing them and to avoid importing any defaults that are not actually present in the source file. See “Template Files” on page 82.

Bear in mind that some default settings are dynamic and, if changed, can affect existing objects in the plan. See “Dynamic Defaults” on page 74.

To import default settings

1. Open the plan that you would like to import default settings into.
2. Select **File> Import> Default Settings** from the menu.
3. In the **Open Plan File** dialog, browse to and select the plan file that you would like to import defaults from and click **OK**. See “Importing Files” on page 61.
4. In the **Import Default Settings** dialog:

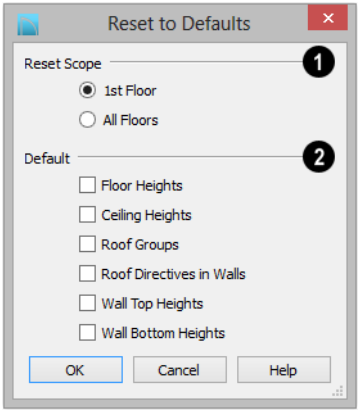


- Uncheck the box beside any defaults that you do not want to import.
- Click the **Select All** button to place checks in the boxes beside all defaults in the list, or click **Clear All** to clear all of the checkboxes.
- Multiple line items can be selected by Shift+clicking or Ctrl+clicking their names. Then check or uncheck the box beside any selected item to affect the entire selection set.
- Use the scroll bar on the right to scroll through the list.
- Click **OK** to close the dialog and import the selected defaults.

Reset to Defaults

Select **Edit> Reset to Defaults** to open the **Reset to Defaults** dialog.

This dialog allows you to clear the special settings you have made in various parts of your plan.



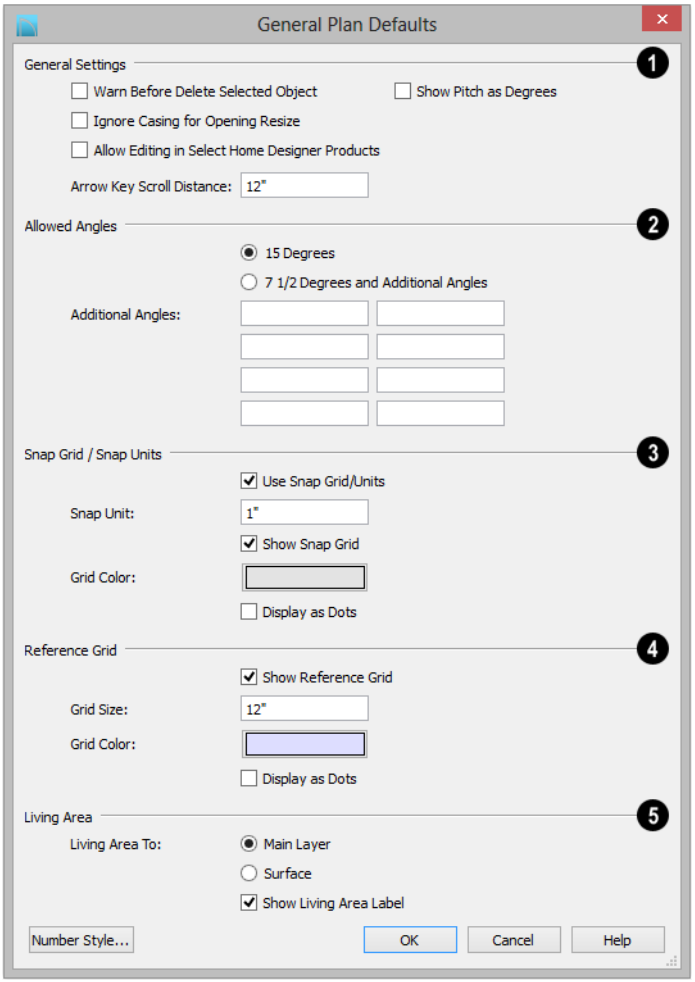
1. The settings can be cleared for the **current floor** or for **All Floors**.
2. Specify which settings you want to reset to **Default**.

- **Floor and Ceiling Heights** - Floor and ceiling heights for any room can be changed in the **Room Specification** dialog. Check to reset the default values as specified in the **Floor Defaults** dialog. See “Floor Defaults Dialog” on page 426.
- **Roof Groups** - You can a room’s roof group in the **Room Specification** dialog. This builds the roof over this room and others in the same roof group independently from the roof built over other parts of the plan. Check to reset to the default roof group, zero. See “Roof Groups” on page 465.
- **Roof Directives** - You can specify how the roof builds above an exterior wall in its **Wall Specification** dialog. When Roof Directives are reset, all items on the Roof panel are unchecked and any value, such as the roof pitch, is reset to the default. See “Roof Directives in Walls” on page 465.
- **Wall Top Heights** and **Wall Bottom Heights** - Wall shape and height can be edited in 3D views. Check to reset wall shapes and heights. See “Editing Walls” on page 278.

General Plan Defaults Dialog

The settings in the **General Plan Defaults** dialog control basic features of the Chief Architect environment in plan files. Just as with other default settings, they are file specific, which means that they can be set differently in individual plan files. To open this dialog, select **Edit> Default Settings**, select **Plan**, and click the **Edit** button, or double-click the **Select Objects** button.

The **General Layout Defaults** dialog is similar to the **General Plan Defaults** dialog, but has fewer settings and is available in layout files only. Its settings, too, are file specific.



1 **General Settings** - Specify the default functionality for a variety of general behaviors in the program.

- Check **Warn Before Delete Selected Item** if you want the program to require confirmation before an item is deleted.
- Check **Ignore Casing for Opening Resize** to allow wall openings such as doors to be positioned against an intersecting wall. Clear this box retain sufficient space for the opening's specified trim width. Not available in layout files.
- Check **Allow Editing in Select Home Designer Products** to allow limited editing of the current file in compatible Home Designer programs. See "Compatibility with Previous Versions" on page 50.

- Check **Show Pitch as Degrees** to display the roof pitch in degrees. Not available in layout files.
- The **Arrow Key Scroll Distance** setting determines how far to scroll in floor plan view when you press an arrow key. The initial default is 12 inches (300 mm). Not available in layout files. See "Using the Arrow Keys" on page 860.

❷ Specify the **Allowed Angles** used when Angle Snaps are enabled. See "Angle Snaps" on page 162.

- Select **15 Degrees** to enable Angle Snaps in 15° increments.
- Select **7 1/2 Degrees and Additional Angles** to enable Angle Snaps in 7 ½° increments.
- You can also enter up to eight **Additional Angles** in the fields provided. Click the Number Style button to specify the format used to enter angles in dialogs. See "Dialog Number/Angle Style Dialog" on page 126.

❸ The **Snap Grid** allows you to snap objects to specific points on-screen as they are moved or resized. See "Grid Snaps" on page 164.

- Check **Use Snap Grid/Units** to enable Grid Snaps.
- Specify the **Snap Unit** you wish to use. The initial default is 1 inch (10 mm).


It may be helpful to change the Snap Unit temporarily when working with large objects such as terrain or small objects such as molding profiles.

- Uncheck **Show Snap Grid** to turn off the display of the Snap Grid, a visual indicator of the location of the snap points.
- Click the **Color** bar to specify the **Snap Grid Color**. See "Color Chooser/Select Color Dialog" on page 853.
- Check **Display as Dots** to display the Snap Grid using dots rather than lines.

❹ You can also click **Grid Snaps**  toggle button to turn on/off grid snapping or click the **Display Reference Grid** toggle button to turn on/off the grid display.

❺ Specify how the **Living Area** label is calculated and whether it displays in floor plan view. Not available in layout files. See "Living Area" on page 333.

- Select **Main Layer** to have the Living Area calculation measure from the walls' Main Layer.
- Select **Surface** to have the Living Area calculation measure from the walls' exterior surface.
- Uncheck **Show "Living Area"** to disable the display of the Living Area label.

Preferences Dialog


The settings in the **Preferences** dialog are global: they apply to all plan and layout files and are preserved between sessions. To access this dialog, select **Edit> Preferences**. in Windows® or **Chief Architect> Preferences** in Mac OS X®. Unlike most dialogs in the program, it is

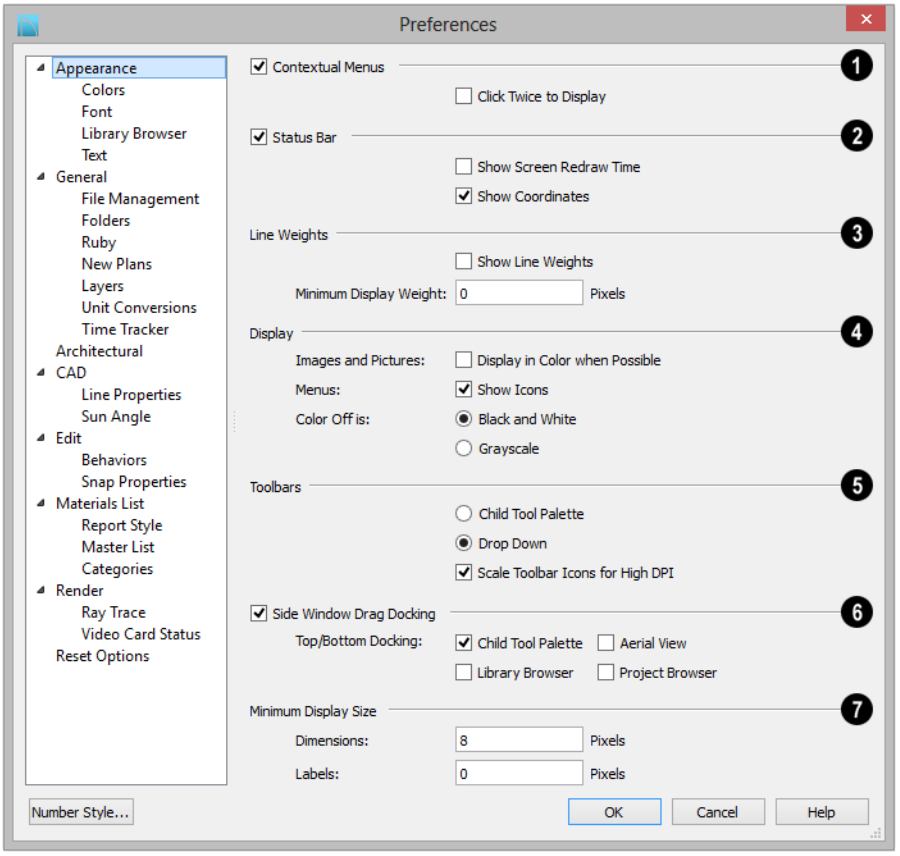
not necessary to have a plan or layout file open to access the **Preferences** dialog.

The **Preferences** dialog's list of panels is organized in a tree structure with categories and subcategories. A "+" next to a category indicates that it has subcategories. Click the "+" to make the subcategories visible; to hide them, click the "-."

Preferences dialog panels:

- Appearance Panel
- Colors Panel
- Font Panel
- Library Browser Panel
- Text Panel
- General Panel
- File Management Panel
- Folders Panel
- Ruby Panel
- New Plans Panel
- Layers Panel
- Unit Conversions Panel
- Time Tracker Panel
- Architectural Panel
- CAD Panel
- Line Properties Panel
- Sun Angle Panel
- Edit Panel
- Behaviors Panel
- Snap Properties Panel
- Materials List Panel
- Report Style Panel
- Master List Panel
- Categories Panel
- Render Panel
- Ray Trace Panel
- Video Card Status Panel
- Reset Options Panel

Appearance Panel



1 Check **Contextual Menus** to activate contextual menus that display when you right-click. See “Contextual Menus” on page 36.

- Check **Click Twice to Display** to require two right-clicks on an object before the contextual menu displays. This allows the first right-click to be used for object selection. See “Selecting Objects” on page 180.

  In 3D views, the two clicks must be on the same object surface in order for the contextual menu to display: Clicking on two different surfaces of the same object is treated like two single-clicks.

2 Check **Status Bar** to activate the Status Bar at the bottom of the main program window. See “The Status Bar” on page 39.

- Check **Show Screen Redraw Time** to display the number of seconds it takes to redraw the current view.

- Check **Show Coordinates** to display the coordinates of your cursor at all times on the right side of the Status Bar.

The coordinates' number style is controlled in the **Number Style/Angle Style** dialog. See "Dialog Number/Angle Style Dialog" on page 126.

❸ Specify the on-screen display of **Line Weights**. See "Line Weights" on page 1191.

- Check **Show Line Weights** to represent line weights on-screen. Depending on your zoom factor and your monitor's resolution, lines may appear to be wider on screen than when they are printed. Zooming closer may reflect a more accurate idea of the actual line width.
- Specify the **Minimum Display Weight**, in Pixels. This is the lowest line weight possible on screen, regardless of how far you zoom out. A Minimum Display Weight of 0 is the same as 1. This setting is ignored when printing or when **Print Preview** is enabled.

❹ **Display** -

- **Images and Pictures** - Check **Display in Color when Possible** to display pictures and images in color even when Color is toggled off. Does not affect the display of images in any 3D views aside from Vector Views. See "Color On/Off" on page 214.
- **Menus** - Check **Show Icons** to display tool icons next to items in the menus.
- **Color Off is** - Specify whether views appear in **Black and White** or **Grayscale** when color is toggled off. Does not apply to any 3D views aside from Vector Views. See "Vector View" on page 928.

❺ Specify how **Toolbars** present child tools when a parent button is clicked.

- Choose **Parent-Child** to display child tools as buttons at the end of the toolbar where the parent button resides.
- Choose **Drop Down** to display child tools when the drop-down arrow to the right of the parent button is clicked.
- Uncheck **Scale Toolbar Icons for High DPI** to prevent toolbar icons from becoming larger on systems using high DPI resolution. When checked, toolbar buttons will increase in size when high DPI is used.

❻ Uncheck **Side Window Drag Docking** to prevent undocked side windows from docking when moved using the mouse. A side window can still be docked to its last docked location by double-clicking its title bar. See "View and Side Windows" on page 33.

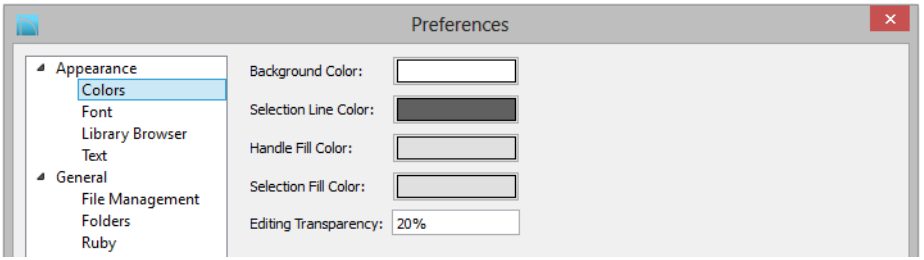
- **Top/Bottom Docking** - Check the box beside a side window's name to allow it to dock on the top and bottom edges of the program window. Does not affect docking to the left and right sides.

❼ Specify the **Minimum Display Size** of **Dimensions** and **Labels**, in pixels. This is the on-screen size and does not affect printed or exported output. To use the printed scale, set these values to 0 or turn on **Print Preview**.

- Dimension sizes are set in the **Dimension Defaults** dialog. See "Dimension Defaults Dialog" on page 963.

- Printed label sizes are set in the **Schedule Defaults** dialogs. See “Label Panel” on page 1239.

Colors Panel



Click a color bar to open the **Select Color** dialog. See “Color Chooser/Select Color Dialog” on page 853.

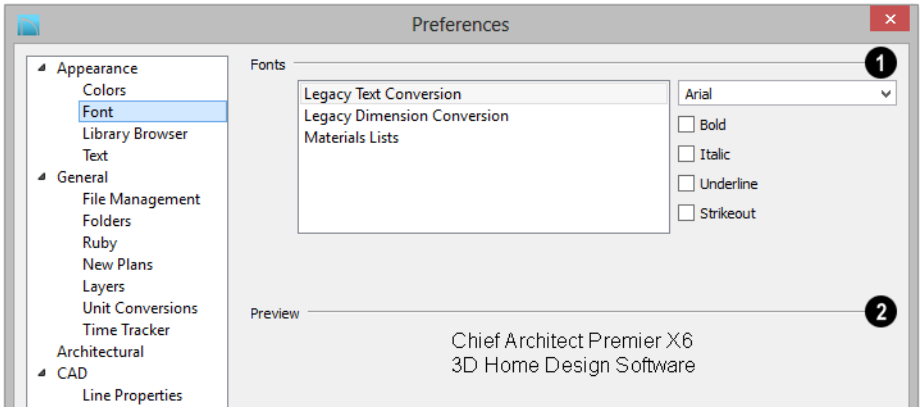
- Specify the **Background Color** for all views except some 3D views. See “Rendering Techniques” on page 928.
  The background color for 3D views that do not use the Vector View Rendering Technique or a backdrop image is set in the **3D View Defaults** dialog. See “Backdrop Panel” on page 875.
- Specify the **Selection Line Color**, which is the color of the lines that represent object(s) and their edit handles when they are selected.
- Specify the **Handle Fill Color**, which is the fill color of the edit handles for selected objects.
- Specify the **Selection Fill Color**, which is the fill color for selected objects. Note that depending on the fill assigned to a selected object, its Selection Fill color may vary.

Note: If the Selection Line and Handle Fill Colors are similar, it may be difficult to distinguish between active and inactive CAD Points.

- Specify the **Editing Transparency**, which is the degree to which the selection fill and edit handles are transparent. The default value is 20%.

Font Panel

The Font panel controls the conversion of text in legacy plans when they are opened in Chief Architect X6 as well as the text used in the Materials List.



1 Specify the **Fonts** for use in Legacy Text Conversion, Legacy Dimension Conversion, and Materials Lists.

- Select **Legacy Text Conversion** from the list to specify the default font for text in legacy files. See “Character Size” on page 1000.
- Select **Legacy Dimension Conversion** from the list to specify the font used by dimensions in legacy files. See “Dimensions” on page 961.
- Select **Materials Lists** from the list to specify the default font used by Materials Lists and the Master List in legacy plans. See “Materials Lists” on page 1247.

> ⚠ Legacy Text and Dimension Conversion settings only affect plans from previous versions when they are opened in Chief Architect X6. Set these values to the default font that you used in previous versions before opening legacy files.

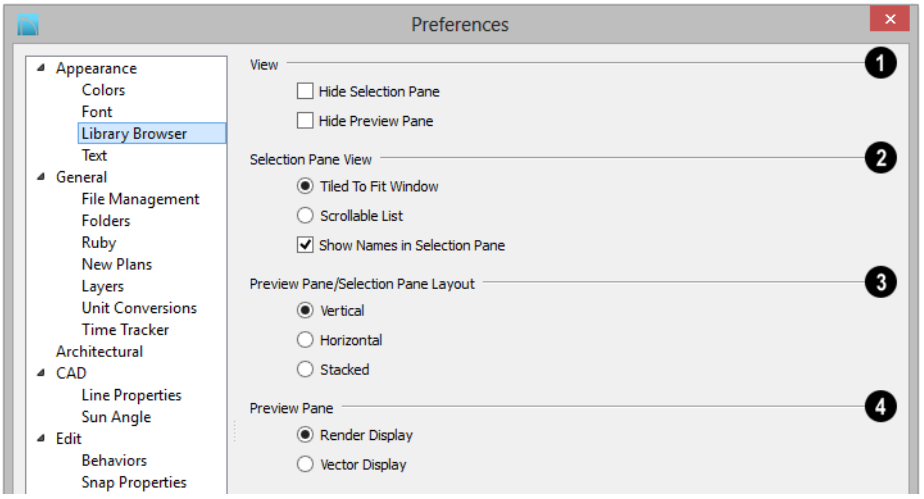
- Select a **Font** from the drop-down list for the use selected to the left. See “Fonts and Alphabets” on page 1000.
- Select one or more font styles to apply to the selected use: **Bold**, **Italic**, **Underline**, and/or **Strikeout**.

2 Sample text displays the selected font and font style.

For information about text in Chief Architect X6 files, see “Text, Callouts, and Markers” on page 997.

Library Browser Panel

The Library Browser panel controls the appearance of the Library Browser window.
See “The Library Browser” on page 798.



1 **View** options control the display of the main sections of the Library Browser.

- Check **Hide Selection Pane** to hide the pane that displays objects in a selected library or library folder.
- Check **Hide Preview Pane** to hide the pane that shows a preview of a selected object.

2 **Selection Pane View** options control how objects in the Selection Pane are presented.

- Select **Tiled to Fit Window** to display all items in a library catalog or folder. If there are many items, their previews may be very small to fit in the pane.
- Select **Scrollable List** to display all items in the selected catalog or folder in a scrollable list. If there are many objects, the list may be very long but each object preview will be sized to fit the pane.
- Check **Show Names in Selection Pane** to display the names of the objects in the Selection Pane.

3 **Preview Pane/Selection Pane Layout** - Select a radio button to change the appearance of the Library Browser.

- **Vertical** - Displayed sections of the Library Browser are divided vertically.
- **Horizontal** - Displayed sections are divided horizontally.
- **Stacked** - Displayed sections are divided both horizontally and vertically.

4 Specify how selected library items look in the **Preview Pane**.

- **Standard View Display** - Library items previews display textures and appear as

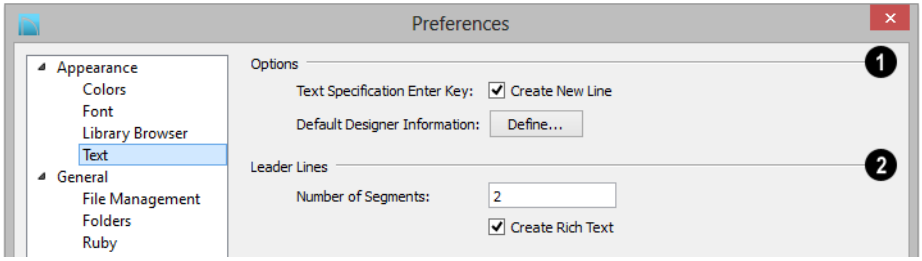
they do in rendered 3D views. See “Types of 3D Views” on page 868.

- **Vector View Display** - Library item previews are line-based and display patterns as they do in 3D Vector Views.

To restore the original size and position of the Library Browser and other side windows, click the **Restore Side Windows** button on the Reset Options Panel.

Text Panel

The settings on the Text panel control some behaviors affecting text objects. See “Text, Callouts, and Markers” on page 997.



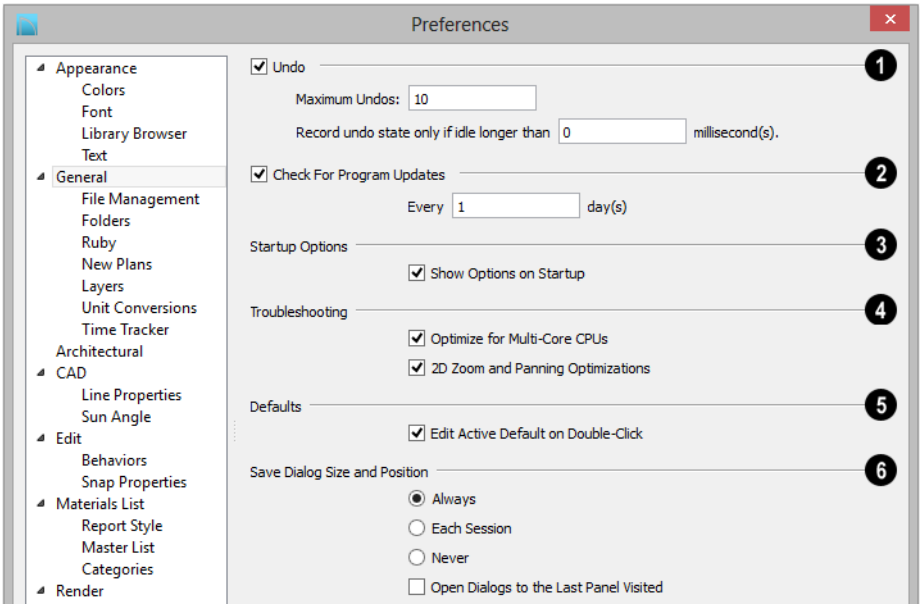
1 **Text Specification Enter Key** -

- Uncheck **Create New Line** to close the **Text** and **Rich Text Specification** dialogs when the Enter key is pressed. When this is checked, a new line of text is created when Enter is pressed and the dialog remains open.
- **Default Designer Information** - Click the **Define** button to enter designer information that applies to all plans drawn in Chief Architect. This default may be overridden for individual plans. See “Designer Information” on page 1095.

2 Specify how the **Leader Lines** tool functions. See “The Text Tools” on page 1001.

- Specify the **Number of Segments** that text Leader Lines have. Changes to this setting affect subsequently drawn Leader Lines: existing lines are not affected.
- Uncheck **Create Rich Text** to create **Text** objects when the Leader Line tool is used. When checked, **Rich Text** is created.

General Panel



1 **Undo** - Click in the **Enable** check box to enable Undos and Redos. See “Undo and Redo” on page 251.

- **Maximum Undos** - Specify how many levels of Undo and Redo you want available, from 1 to 100. Undo files are saved in the Undo Directory.
- **Record undo state only if idle longer than** - Use this setting to control how often undo states are recorded. If set to 0 milliseconds, an undo state is recorded every time a change is made to a plan.

If set to a number larger than 0, an undo state is recorded if the specified amount of time has elapsed since the last change was made. Depending on the time specified and the speed work is being done, multiple changes might be reversed with one undo. This setting can have a significant effect on the performance of the undo feature when working with large plans.

2 **Check For Program Updates** - Check **Enable** and specify a frequency in days to check for program updates. By default, Chief Architect will check for program updates once a day, whenever the program is launched.

3 Check **Show Options at Startup** to open the **Startup Options** dialog when Chief Architect is launched. See “Startup Options” on page 28.

4 **Troubleshooting** -

- Uncheck **Optimize for Multi-Core CPUs** to turn off program optimizations for multi core processors. This box is

checked by default and should only be unchecked for technical troubleshooting purposes.

- Uncheck **2D Zoom and Panning Optimizations** to turn off program speed optimizations for zooming and panning in 2D views.

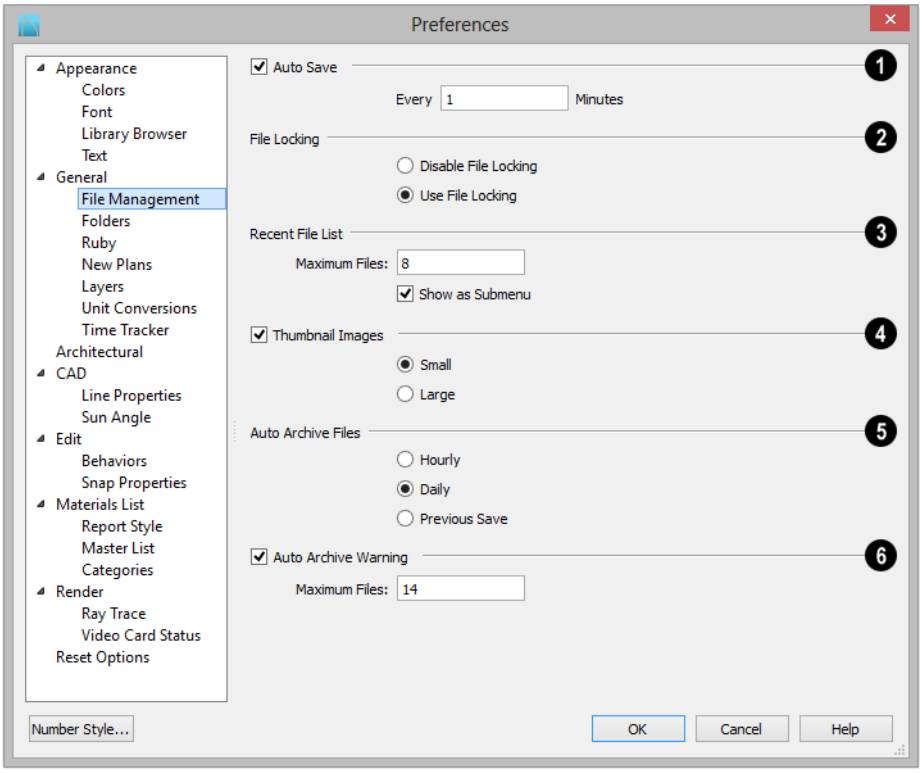
❺ Uncheck **Edit Active Default on Double-Click** to open the **Saved Defaults** dialog when you double-click the toolbar button associated with a drawing tool that has multiple saved defaults. When this boxis checked, the defaults dialog for the currently active saved default opens. See “Multiple Saved Defaults” on page 75.

❻ Specify when the program should **Save Dialog Size and Position**: **Always**, **Per Session**, or **Never**. See “Dialog Size and Position” on page 37.

- Check **Open Dialogs to the Last Panel Visted**.to open panelled dialogs to the last panel that you accessed during the current program session. When unchecked, dialogs always open to the first panel. See “Dialogs” on page 36.

File Management Panel

The settings on the File Management panel let you modify functions related to the program’s plan and layout file management.



❶ Check **Auto Save**, then enter a value greater than zero in the text field to specify the frequency in minutes that Auto Save files are created. Auto Save files are stored in the Archive folder. See “Auto Save Files” on page 58.

> ⚠ Even with Auto Save active, you should frequently save your work to the hard drive by selecting File> Save.

❷ **File Locking** - Choose whether or not to lock **.plan** and **.layout** files when they are open. File Locking prevents another program or copy of Chief Architect software from opening and modifying the same file at the same time and is recommended in nearly all circumstances.

- Select **Use File Locking** to lock files.
- Select **Disable File Locking** to disable this feature.

❸ Specify the maximum size and location of the **Recent File List**.

- Specify the maximum number of recently opened files to list in the **Startup Options** dialog and at **File> Open Recent Files**. You can open any of the files in this list by selecting it, making it a quick way to access your most recent work.

- Uncheck **Show in Submenu** to display the Recent File List at the bottom of the File menu rather than in a submenu.

❹ Check **Thumbnail Images** to automatically create thumbnail images of files that display when opening or searching for saved files.If this option is disabled, you can still create thumbnails manually. See “Thumbnail Images” on page 57.

- Select either **Small** or **Large** thumbnails. Large thumbnails provide a higher quality image but result in larger file sizes.

❺ Select an **Auto Archive Files** option. Every time a file is saved, the current archive file is overwritten. See “Archive Files” on page 57.

- Select **Hourly** to save and append archive files based on an hourly format.
- Select **Daily** to save and append archive files based on a daily format.
- Select **Previous Save** to archive only the most recently saved file, unappended.

❻ Uncheck **Auto Archive Warning** to prevent the program from prompting you to manage archive files. When checked, you will be reminded to manage the current file’s archives when they reach the number specified below.

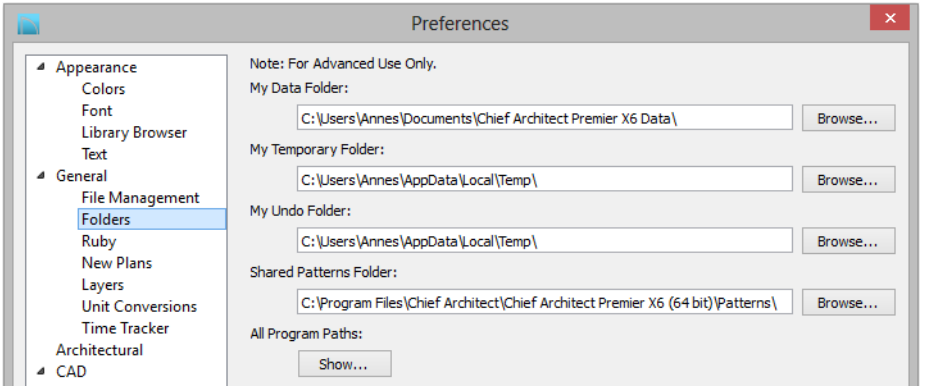
- Enter the **Maimum Files**, which is the number of files that must be in a file’s Archive directory before the Manage Archives warning will display. See “Manage Archives” on page 58.

Folders Panel

Chief Architect stores many support files in various folders on your computer. The default locations of these directories are listed and can be redefined on the Folders panel if necessary.

You do not need to change default locations under normal circumstances, but sometimes it may be preferable to locate certain files in another location. To specify a new default folder for a particular purpose, click the **Browse** button to the right of that item.

⚠ Changing the settings on the Folders panel can result in unexpected program functionality.



Important user-specific information is saved in a folder on your computer called **Chief Architect X6 Data**. This folder contains custom library content, toolbars, template files, archive files, and other important data and is located in My Documents by default. See “Chief Architect Data” on page 51.

While you cannot change the name of this directory, you can change its location. To avoid unexpected results, it is best to use a location on your local hard drive.

If you move this folder on your computer without specifying its location here, the program will automatically replace it using default information from the Chief Architect installation folder. The same result will occur if you specify a location on a network or removable device and this location becomes inaccessible. When this occurs, customized user settings will not be used and custom library content will not be available.

By default, **Temporary** files and **Undo** files are stored in the same folder: by default, the Windows Temporary Directory. If you wish to use a different folder, you must specify a directory on a hard drive with sufficient space to hold these files.

You can specify any directory as your Chief Architect temporary folder, but you should never relocate the Windows Temporary Directory nor use it for anything other than temporary files.

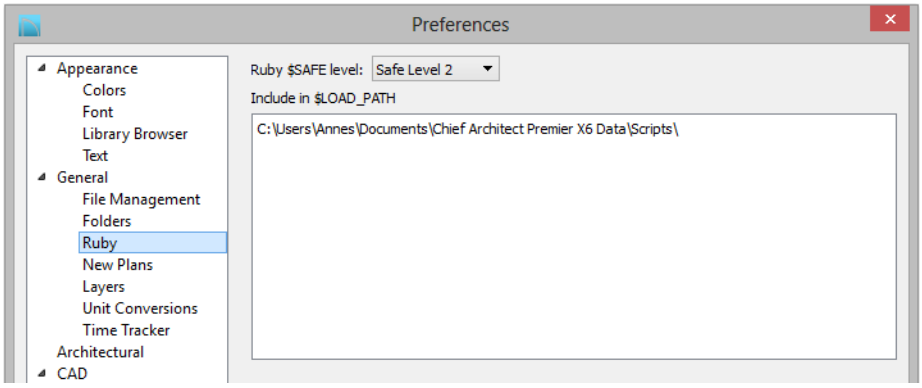
Chief Architect will not let you save your work to or open files saved in the Temporary or Undo folder. See “Undo and Redo” on page 251.

You can share **Patterns** with other users by copying these items into the appropriate Shared Folder in an operating system window. Click the **Browse** button to select a location on your computer that other users can access. See “Patterns and Textures” on page 828.

All Program Paths - Click the **Show** button to open the **Program Paths** dialog, where you can find the location of files that may be needed for troubleshooting purposes. See “Program Paths Dialog” on page 1283.

Ruby Panel

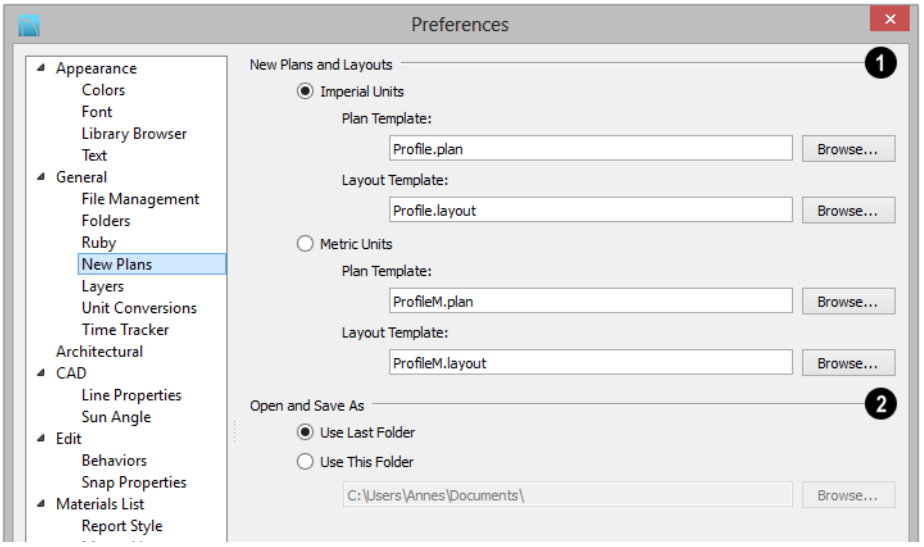
The settings on the Ruby panel let you specify the Ruby safe level and the location of any Ruby files you may run in the Ruby Console. See “The Ruby Console” on page 1270.



Select the **Ruby $SAFE level** you wish to use from the drop-down list. A level of 0 is unprotected and could allow a malicious script to be run, while a level of 5 may prevent you from using the Ruby Console productively. Level 2 is chosen by default.

In the **Include in $LOAD_PATH** field, specify the pathname of the directory where your Ruby scripts are stored. Separate multiple locations with a semi-colon.

New Plans Panel



1 Specify what system of measurement **New Plans and Layouts** use, as well as what files are used as the templates for new plans and layouts. See “Template Files” on page 82.

- Select the **Imperial Units** or **Metric Units** radio button to determine the units used in your new files. Once a new plan or layout is created, its measurement system cannot be changed.

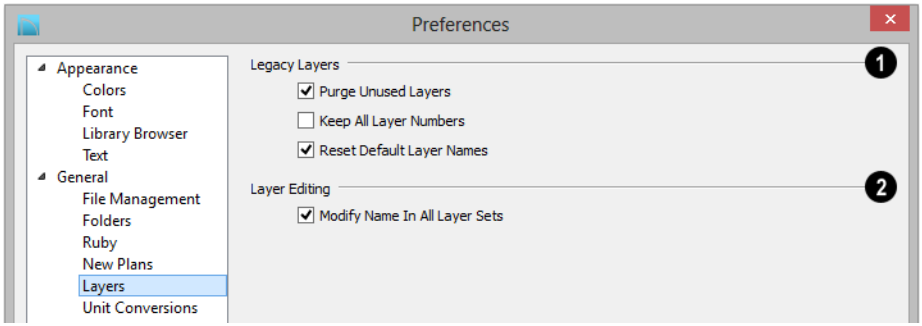
> ⚠ Be sure that you use imperial files for your imperial templates and metric files for your metric templates. When a new file is created, it uses units of the template file regardless of your Preference setting.

- **Plan Template** - Displays the template file the program uses when you open a new plan. Click the **Browse** button to select a new plan template.
- **Layout Template** - Displays the template file the program uses when you open a new layout file. Click the **Browse** button to select a new layout template.

2 **Open/Save As Directory** - Control how the program behaves when a new plan is opened or an existing plan is saved.

- **Use Last Directory** refers the program to the directory last used to save or open a plan file.
- **Use This Directory** refers the program to a particular location specified by you.
- Click the **Browse** button to define a particular directory when **Use This Directory** is selected.

Layers Panel



1 **Legacy Layers** - Specify how layers are handled in legacy files when they are opened in Chief Architect X6.

- Check **Purge Unused Layers** to delete any layers that do not have a name and contain no objects.
- Check **Keep All Layer Numbers** to keep all layers that were on the System and User tabs in version 9 and prior and use their layer numbers as names.
- Check **Reset Default Layer Names** to change the names of layers that were on the Architectural and System tabs in version 9 and prior to the default names used in Chief Architect X6.

To make no changes to layers when legacy files are opened in Chief Architect X6, uncheck **Purge Unused Layers**, check **Keep All Layer Numbers**, and uncheck **Reset Default Layer Names**.

Note: When legacy plans are opened, there may be a noticeable delay while layers are converted.

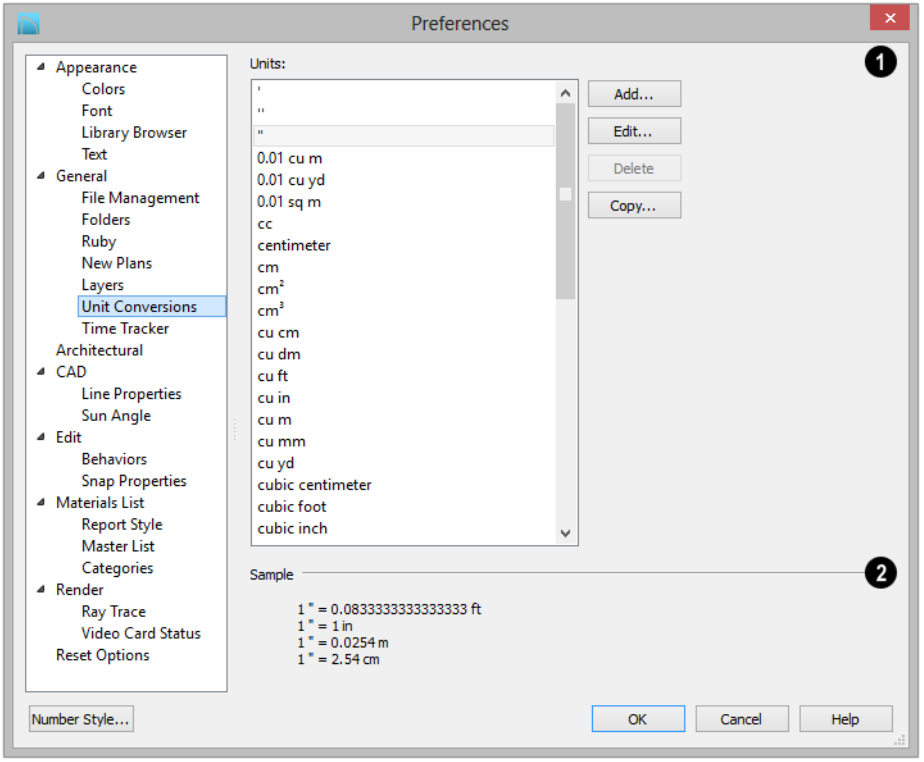
2 **Layer Editing** - If you check **Modify Name In All Layer Sets** and then change the name of a layer in one layer set, it will be changed in all layer sets. Clear the checkmark if you want name changes to only affect a single layer set.

Unit Conversions Panel

In many places throughout Chief Architect, you can specify the size of an object with any Length unit listed on the Unit Conversions panel. Using the data on this panel, the program will convert your entry into the unit set in the **Dialog Number/Angle Style** dialog. See “Dialog Number/Angle Style Dialog” on page 126.

These conversions are also useful when you import drawings. When an object is drawn in a Chief Architect plan file, it is always at its true, unscaled size and the drawing is only scaled when you print it. This means that if you import a scaled drawing, you must compensate for its scaling by creating a custom unit of measurement. See “Import Drawing Assistant” on page 1136.

The default unit conversions are locked and cannot be changed, but custom conversions can be added to the list and later modified.



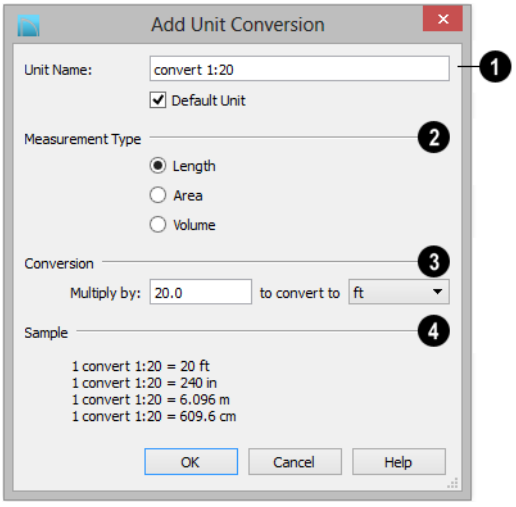
1 A list of available units of measurement displays here. Click on the name of a unit to select it.

- **Add**, **Edit**, **Delete**, or **Copy** the unit conversions. Certain unit conversions are locked and cannot be edited or deleted.

If you click **Add**, **Edit** or **Copy,** the **Add Unit Conversion** dialog displays.

2 The **Sample** area shows how the unit selected above converts to a selection of similar units. You can use this to verify that any unit conversion you add is correct.

Add Unit Conversion Dialog



1 **Unit Name** - Type a short, descriptive name of the new unit. Names must be unique: the names of units installed with the program cannot be used.

Names can include any characters, as well as spaces. Bear in mind, though, that names of units for measuring length that have numbers in them may be unusable if entered in some dialogs in the program.

Check **Default Unit** to display this new unit in places that present lists of available units. For example, if you have inches as units and make inches a default, inches appear on the list when you are given a choice of units, such as in the **Import Drawing Assistant**. In other places, such as the Materials List, all units are listed.

2 **Measurement Type** specifies what the new unit measures. Select the appropriate radio button: **Length**, **Area**, or **Volume**.

3 **Conversion** -

- Specify how much to **Multiply by** your custom unit **to convert to** the unit you select from the drop-down list. A measurement type must be selected before the list is populated.

4 A **Sample** of the Unit Conversion defined above displays here.

To create a new unit of measurement

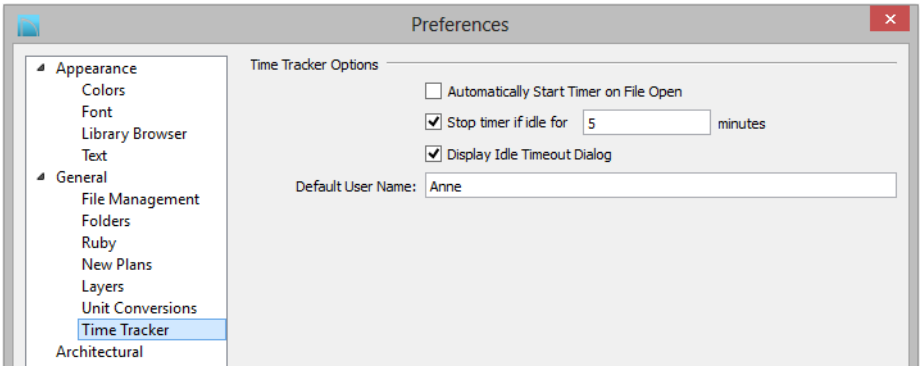
When importing a drawing with a 1” = 20’ scale, for example, create a unit to convert this scaling to 1” = 1”.

1. Click the **Add** button to open the **Add Unit Conversion** dialog.
2. Type a short, descriptive name like “convert 1:20” in the **Unit Name** field.
   - Because this unit will be used only for scaling conversion, including numbers in its name will not cause any issues.
3. Select **Length** as the **Measurement Type**.
4. Type 20 in the **Multiply by** field.
5. Select “ft” from the drop-down list.

Note: You can achieve the same results if you Multiply by 240 to convert to inches.

6. Click **OK** to close the dialog.

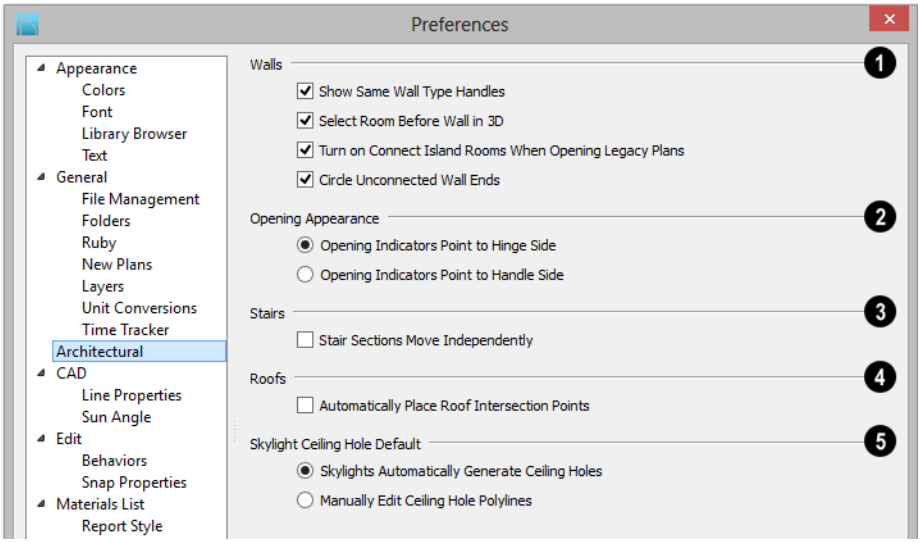
Time Tracker Panel



- Uncheck **Automatically Start Timer on File Open** if you do not want to begin logging time whenever a file is opened. If this is not checked, you must select **Tools> Time Tracker> Start Time Logging** to begin logging.
- Check **Stop timer if idle for __ minutes**, and enter the number of minutes to stop logging time when a plan has been idle.
- Check **Display Idle Timeout Dialog** to warn when a plan is considered idle.
- Specify the **Default User Name** used in Time Log entries. This field is initially populated by the name that you entered when you registered your software license. See “Designer Information” on page 1095.

For more information, see “Time Tracker” on page 1091.

Architectural Panel



1 Select the desired default behaviors for selected **Walls**.

- Check **Show Same Wall Type Handles** to display edit handles on selected walls that draw new walls of the same type when dragged. See “Same Wall Type Edit Handles” on page 283.
- Check **Select Room Before Wall in 3D** to select the room defined by a wall when you click on the wall in 3D views. When this is unchecked, rooms cannot be selected in 3D views. See “Selecting Walls” on page 279.
- Check **Turn on Connect Island Rooms When Opening Legacy Plans** to automatically connect “island” rooms an Invisible wall in legacy plans opened in version X6. See “Room Definition” on page 325.

2 **Opening Appearance** - Specify the appearance of opening indicators on cabinets, doors, and windows. See “Displaying Cabinets” on page 668, “Displaying Doors” on page 359, or “Displaying Windows” on page 393.

- Select **Opening Indicators Point to Hinge Side** for opening indicators that point to the hinge side of the opening.
- Select **Opening Indicators Point to Handle Side** for opening indicators that point to the handle side of the opening.

3 Check **Stair Sections Move Independently** to allow stair sections connected by landings to move separately, without moving the entire staircase. See “Editing Stairs and Ramps” on page 528.

4 Check **Automatically Place Roof Intersection Points** to automatically generate temporary CAD points that correspond to roof plane intersection points. When unchecked, these temporary points are

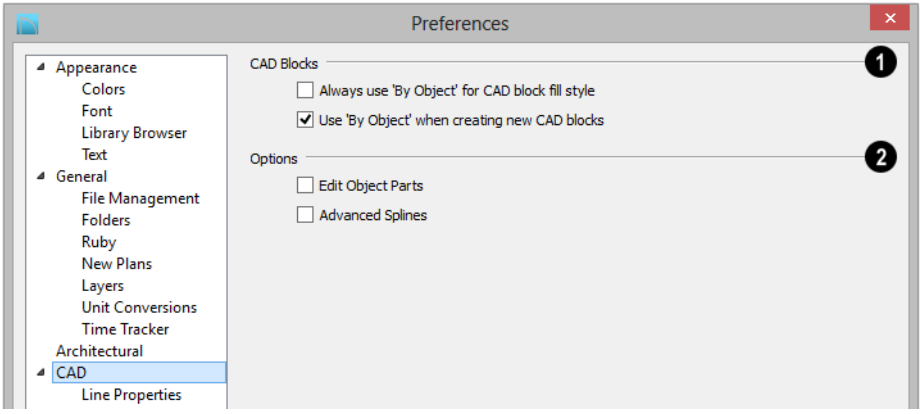
not created. See “Locating Intersections” on page 482.

5 Select the desired **Skylight Ceiling Hole Default** behavior.

- If you select **Skylights Automatically Generate Ceiling Holes,** the program automatically generates a ceiling hole for a new skylight.
- Select **Manually Edit Ceiling Hole Polylines** to create your own ceiling holes.

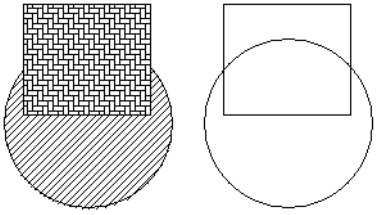
CAD Panel

The CAD panel contains settings that define how CAD blocks and other objects behave.



1 The **CAD Blocks** settings determine the default fill style behavior for CAD blocks. See “CAD Blocks” on page 1078.

- Check **Always use ’By Object’ for CAD block fill style** to retain the fill patterns of the component objects of CAD blocks. When checked, all settings that would otherwise affect the fill style of a CAD block in its specification dialog are ignored. See “CAD Block Specification Dialog” on page 1082.
- Check **Use ’By Object’ when creating new CAD blocks** to have **By Object** checked in the **CAD Block Specification** dialog when a new CAD block is created. See “General Panel” on page 1083.



Checked *Unchecked*

2 The **Options** settings control the editability of polylines and splines.

- Check **Edit Object Parts** to edit the individual components of a polyline or polyline-like object. This functionality can also be accessed by clicking the **Edit**

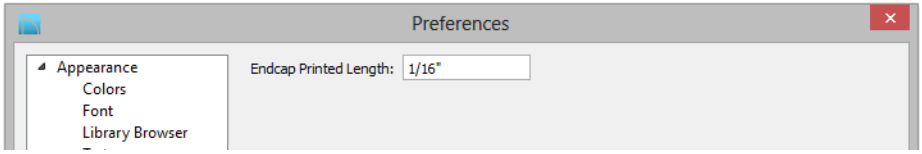
Object Parts button. See “Edit Object Parts” on page 182.

Note: Unlike other Preferences, the program always resets Edit Object Parts to be off whenever you close the program.

- Check **Advanced Splines** to enable the advanced spline setting as the default editing behavior for all subsequently drawn splines. You can also enable this function for an individual spline by clicking the **Advanced Splines** edit button. See “Advanced Splines” on page 210.

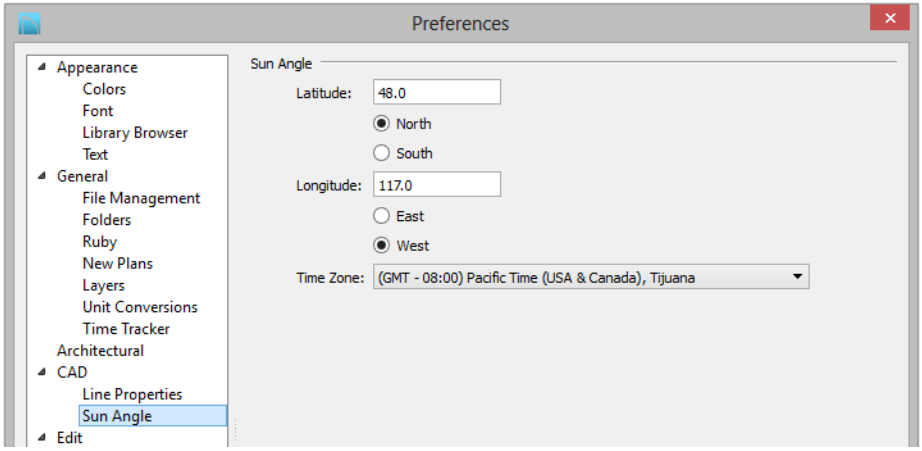
Line Properties Panel

The Line Properties panel controls the appearance of CAD lines.



- **Endcap Printed Length** - The beginning and end of CAD lines that are not solid are sometimes difficult to distinguish. Endcaps can be placed to eliminate this problem. Specify the printed endcap length in inches (mm).

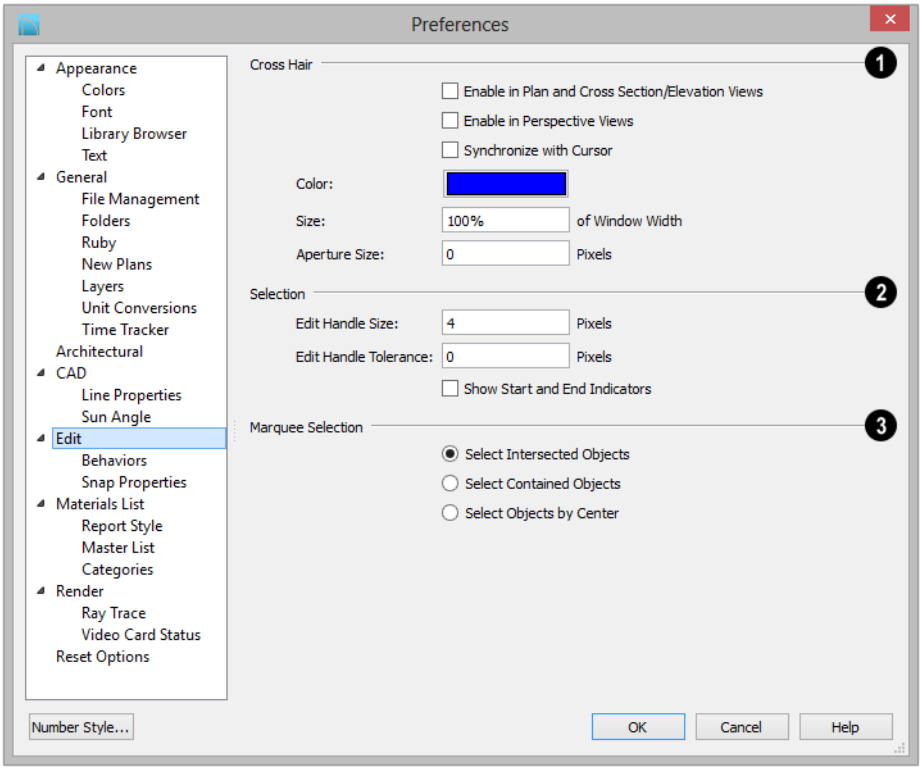
Sun Angle Panel



- Define a default **Latitude**, **Longitude** and **Time Zone** used when creating Sun Angles. See “Sun Angles and Shadows” on page 921.

Edit Panel

The settings on the Edit panel of the **Preferences** dialog control the appearance of the cursor and selection behavior of edit handles. See “Using the Mouse Cross Hairs” on page 223.



1 You can use a cursor with **Cross Hairs** in different view types and control its appearance.

- Check **Enable in Plan and Cross Section/Elevation Views** to use a cross hair cursor in floor plan and cross section/elevation views. This option is checked by default.
- Check **Enable in Perspective Views** to use a cross hair cursor in perspective camera views and overviews.
- When **Synchronize with Cursor** is checked, the mouse pointer and cross hairs always move together on screen. If you feel that they do not keep up with your mouse movements, try unchecking this option.
- Click the **Color** bar to open the **Select Color** dialog and specify the color of the cross hairs.
- Cross hair **Size** is specified as a percentage of the view **Window Width**. Specify

the **Size** as 100% to extend the cross hairs across the entire screen.

- Set the **Aperture Size**, measured in pixels. The aperture is the space where the cross hairs meet. A value of 0 makes the cross hairs meet at a point. Larger numbers leave a gap in the center.

❷ Specify the desired **Selection** settings, which affect how objects are selected and their appearance.

- Enter an **Edit Handle Size** in pixels. The edit handles are twice this number of pixels plus one. For example, the default value is 3, which results in a handle that is 7 x 7 pixels (3 x 2=6, and 6 + 1=7). A value of 1 results in a handle that is 3 x 3 pixels.
- Enter a value, in pixels, for **Edit Handle Tolerance** to specify how close to an edit handle you must click in order to select it. The default value is 0.
- Check **Show Start and End Indicators** to display an S and an E at the start and end points of a selected wall or the selected edge of a CAD-based object. This can make it easier to edit the selected edge in the object's specification dialog. See "Selected Edge" on page 181.

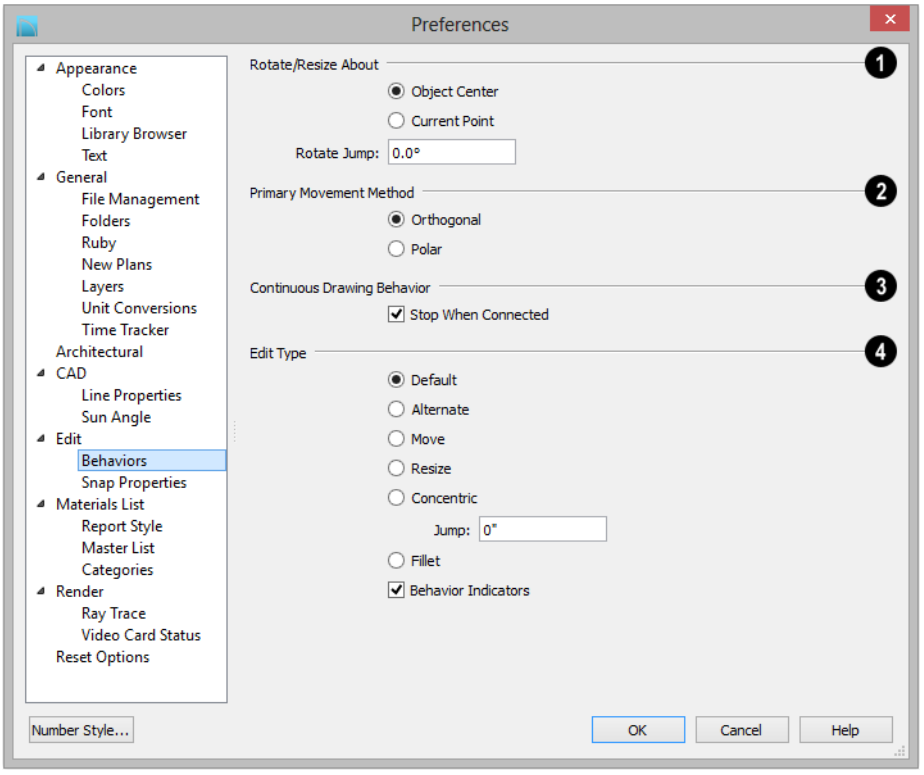
❸ Specify program behavior when using **Marquee Selection** to select objects. See "Marquee Select" on page 183.

- Choose **Select Intersected Objects** to select any objects whose bounding boxes are intersected by or located within the marquee. See "Bounding Boxes" on page 1176.
- Choose **Select Contained Objects** to select only objects located entirely within the marquee. This option provides the best results in most situations.
- Choose **Select Objects by Center** to select only objects whose center points are located within the marquee.

You can add the Selection Modes tools to your toolbars. See "To add a button to a toolbar" on page 132.

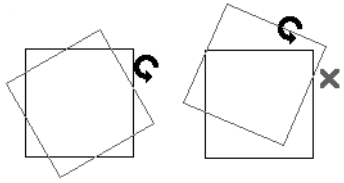
Behaviors Panel

The settings on the Behaviors panel of the **Preferences** dialog define basic editing behaviors of CAD and architectural objects.



1 **Rotate/Resize About** defines the point about which an object or a group of objects rotates or resizes. See “Rotate/Resize About” on page 159.

- Select **Object Center** to rotate or resize the selection about its center point. Object Center is the default setting.
- Select **Current Point** to rotate the object about the current CAD point instead.

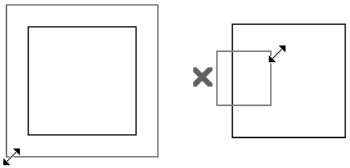


Rotate about Object Center

Rotate about Current Point

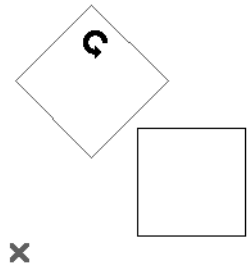
To resize a CAD object about a current point, select the **Resize** Edit Type.

This function can also be accessed by selecting **Edit> Edit Behaviors> Resize**  . See “Edit Behaviors” on page 176.



Concentric Resize *Resize About Current Point*

- **Rotate Jump** defines the angles an object or group of objects jumps to as it is rotated. When this value is set to 0°, the Allowed Angles set in the Plan Defaults dialog are used; otherwise, Allowed Angles are ignored.



Box rotating about Current Point with Jump set to 45°

❷ The **Primary Movement Methods** control the directions that you can move objects using their edit handles.

- Select **Orthogonal** to move an object perpendicular to any of its edges.
- Select **Polar** to move an object at Allowed Angles.

❸ Specify whether the **Continuous Drawing Behavior** restarts after a closed shape is formed. See “Alternate” on page 177.

- Uncheck **Stop When Connected** to remain in the continuous Alternate drawing mode after a closed shape is formed. When checked, the continuous drawing mode is halted but can be started again.

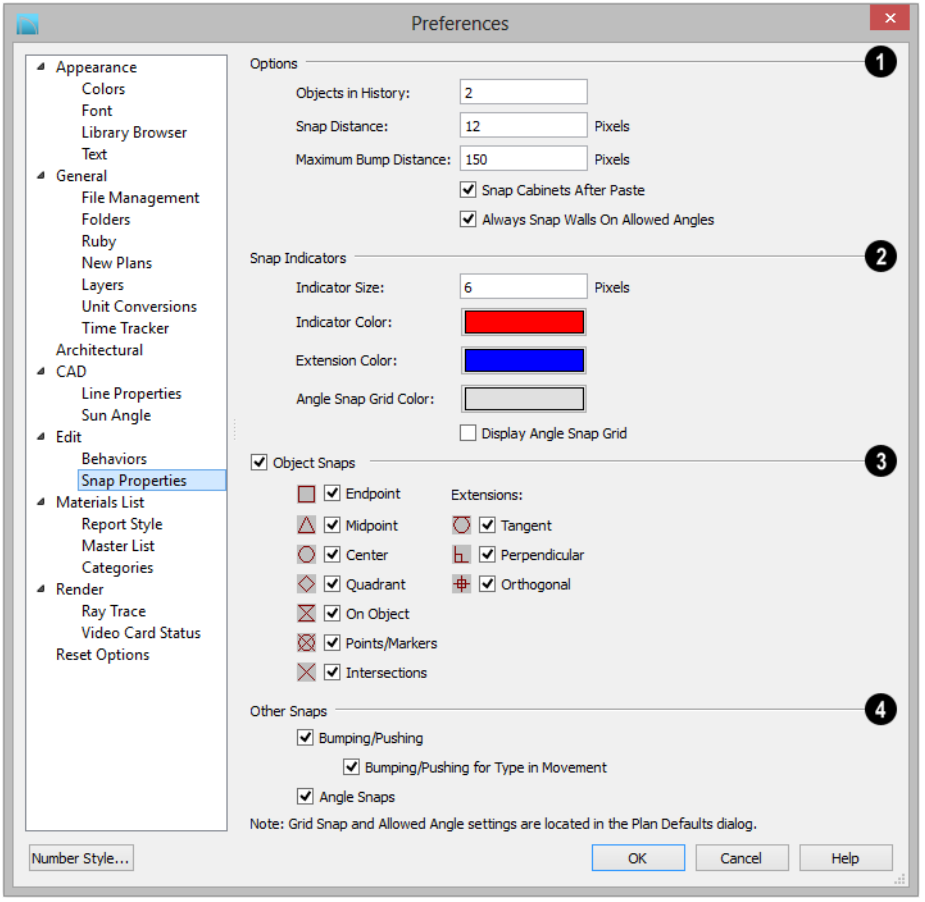
❹ Select one of the six **Edit Type** radio buttons. For detailed information about the different edit types and how they affect different objects, see “Edit Behaviors” on page 176.

- If **Concentric** is selected, specify the desired **Jump** increment.
- Uncheck **Behavior Indicators** to turn off the display of the mouse pointer icons associated with these Edit Behaviors. This box is checked by default.

Note: Unlike other Preferences, the program always restores the Default Edit Behavior whenever you close the program.

Snap Properties Panel

The settings on the Snap Properties panel of the **Preferences** dialog control the behavior of Object Snaps as well as the appearance of snap indicators. See “Object Snaps” on page 160.



1 Options -

- Specify the **Objects in History**, which is the number of Extension Line Anchors that can display at one time.
- Specify the **Snap Distance**, which is how far your the cursor can be from a snap point for the snap to occur. This value is measured in screen pixels; the default value is 12.
  When working with very small objects, you may find it helpful to reduce this value; when working with very large objects, it may be helpful to increase it. This setting also controls the minimum length of camera and cross section/elevation lines of sight. See “Creating Camera Views” on page 879.
- Specify the **Maximum Bump Distance**, which is the distance that a selected object must be dragged to override bumping and move past an obstructing object.

- Check **Snap Cabinets After Paste** to make the cabinets snap together after you paste them.
- Check **Always Snap Walls on Allowed Angles** to limit walls to Allowed Angles. When unchecked, Object Snaps can override Angle Snaps, allowing walls to snap at off angles as they are drawn or edited. See “Angle Snaps” on page 162.

❷ Control the appearance of **Snap Indicators**.

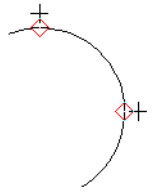
- Specify a snap **Indicator Size** in pixels. This setting also controls the size of temporary CAD Points. See “Place Point” on page 1044.
- Click the color bar to select a snap **Indicator Color** from the **Select Color** dialog. See “Color Chooser/Select Color Dialog” on page 853.
- Click the color bar to select an **Extension Color** from the **Select Color** dialog.
- Click the color bar to select an **Angle Snap Grid Color** from the **Select Color** dialog.
- Check **Display Angle Snap Grid** to turn on the display of the Angle Snap Grid. See “Angle Snap Grid” on page 163.

❸ Enable any combination of **Object Snaps**. You can also turn these options on an off with the toggle buttons on the toolbar or using keyboard hotkeys.

- Check **Object Snaps** to enable the object snap and extension snap options, below.
- **Endpoint** enables snapping to the ends of lines, arcs, splines and other objects.
- **Midpoint** enables snapping to the midpoint of an object such as a line or arc. For objects such as boxes, you can snap to the midpoint of any side of the box.

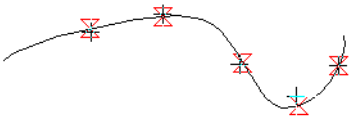
Endpoint and Midpoint snaps

- **Center** enables snapping to the center of cabinets, fixtures, furniture, as well as circles and arcs.
- **Quadrant** enables snapping to the left, right, top, or bottom of an object. Only used for arcs and circles.



Quadrant snaps

- **On Object** enables snapping to any point on the selected object, including CAD objects and cabinets.

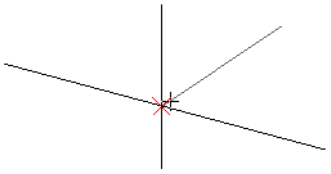


On Object snaps

- **Points/Markers** allows you to snap to any temporary points you may have placed, as well as callouts and markers.

Points/Markers snaps

- **Intersection** enables snapping to the intersection of two objects, such as the intersection of a line with another line. Intersection snapping also snaps extension lines to objects, and allows you to snap two extension lines to each other.

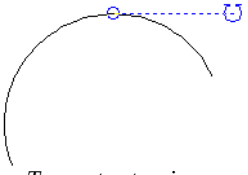


Intersection snaps

When Intersection snapping is enabled, wall extension line snapping will also occur. See “Drawing Walls” on page 270.

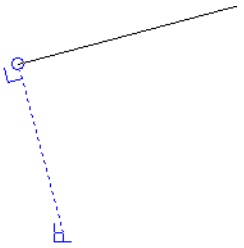
Check any combination of **Extension Snaps**.

- **Tangent Extensions** enables snapping to a point tangent to the point where the extension anchor sits.



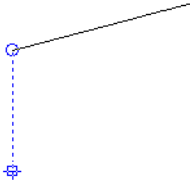
Tangent extension

- **Perpendicular Extensions** enables snapping to a point perpendicular to the point where the extension anchor sits.



Perpendicular extension

- **Orthogonal Extensions** enables snapping to a point on a 90° axis from the extension anchor.



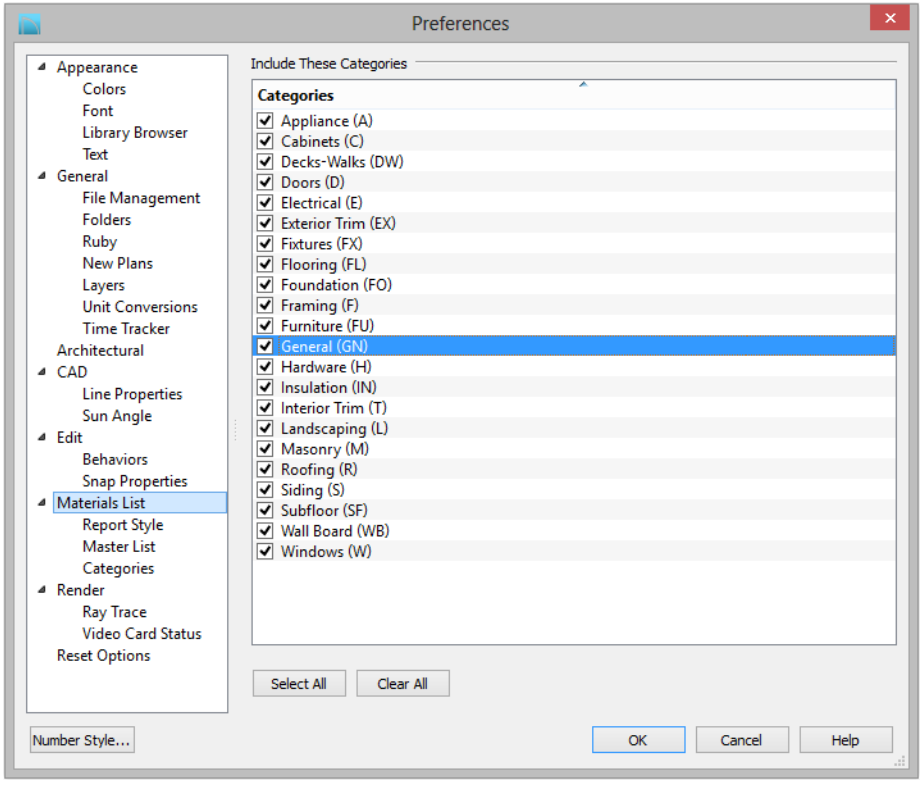
Orthogonal extension

4 Control the behavior of **Other Snaps**.

- Check **Bumping/Pushing** to allow objects to bump into and move other objects. See “Bumping/Pushing” on page 218.
- Check **Bumping/Pushing for Type-in Movement** to cause objects moved using dimensions or the **Enter Coordinates** dialog to bump into objects in their path of movement and stop. When unchecked, objects moved using type-in methods move to their specified destination locations. See “Moving Objects” on page 217.
- Check **Angle Snaps** to enable snapping to Allowed Angles. See “Angle Snaps” on page 162.

Materials List Panel

The settings on the Materials List panel control which categories are included in Materials Lists. The names of all categories and their ID prefixes are listed here. They are defined by the program and cannot be changed. See “Materials Lists” on page 1247.



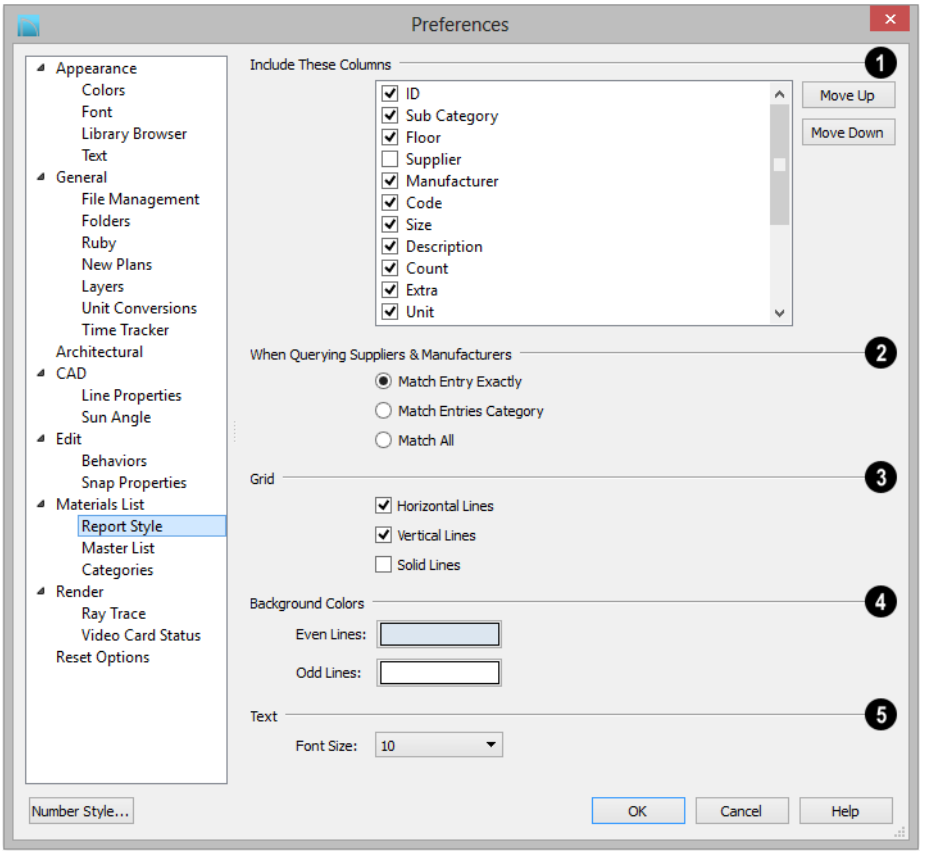
When a material is entered in the Materials List, the program decides what category it goes in and assigns it an ID, which is the prefix followed by a number. EX1 would be the first exterior trim piece entered in the Materials List for a particular plan.

- **Include These Categories** - Check the categories you want to to include in every new materials list generated. Before you hide a category, make sure you know what items are listed within it.
- Click **Select All** to check the boxes beside all categories, or click **Clear All** to clear the checkboxes beside all categories.

It is usually better to remove categories from individual plan lists in the Layer Display Options dialog, rather than globally. See “Layer Display Options Dialog” on page 148.

Report Style Panel

The Report Style panel controls the appearance of Materials Lists.



❶ **Include These Columns** - Check the box beside each column that should be included in newly created Materials Lists. Columns can also be specified per individual Materials List by choosing **Tools> Display Options** while that Materials List is

active. See “Materials List Display Options Dialog” on page 1255.

- Use the **Move Up** and **Move Down** buttons to change the order that columns appear. To change the order, select one or more items in the list and click the button. The selected columns move up or down by one in the list.

❷ **When Querying Suppliers and Manufacturers** - Select an option to narrow or broaden your query when searching the Master List.

❸ Choose whether or not **Grid** lines display in the Materials and Master Lists, both on-screen and printed.

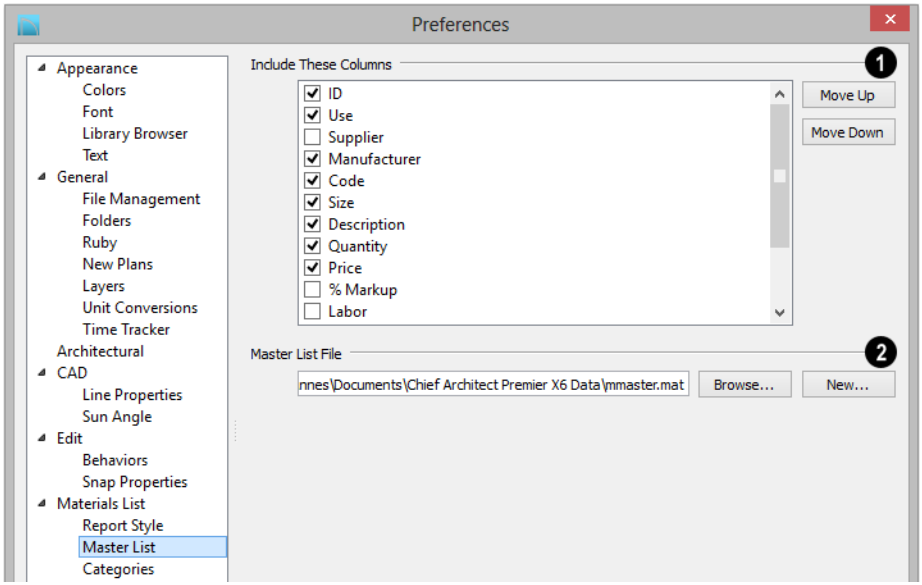
- Check **Horizontal Lines** for lines between Materials List rows.
- Check **Vertical Lines** for lines between Materials List columns.
- Check **Solid Lines** for a solid line style. When unchecked, dotted lines are used.

❹ **Background Colors** can be specified for **Odd** and **Even** numbered lines.

❺ Specify the **Text Font Size**, which is the height of the font used in the Materials List, Master List, and the **Components** dialog. See “Character Size” on page 1000.

Master List Panel

The Master List panel specifies how the Master List(s) for materials appears. You can maintain Multiple Master Lists, but only one may be used at any given time. See “Materials Lists” on page 1247.



❶ **Include These Columns** - Check each column to include it in the Master materials list.

Use the **Move Up** and **Move Down** buttons to change the order of columns. To change the order, select one or more items in the list and click the button. The selected columns move up or down by one in the list.

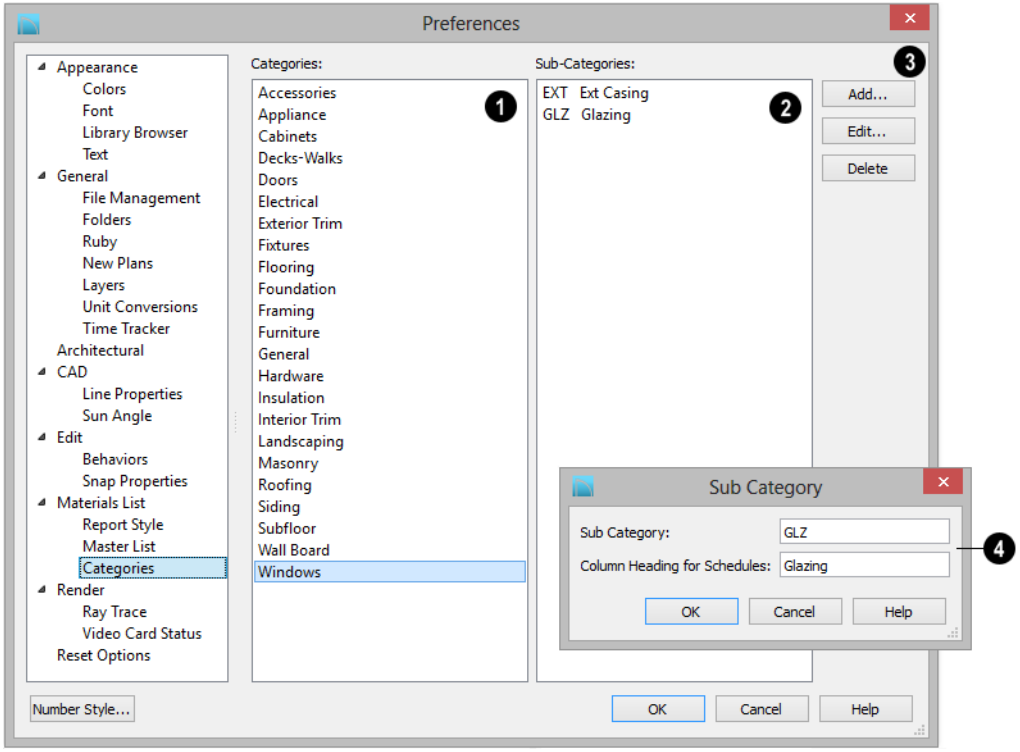
❷ **Master List File** - The name and pathname of the Master List currently referenced is shown. It is referenced for all subsequently opened plans when a materials list is generated.

- Click the **Browse** button to select a different Master List. Navigate the directory structure until you find the new Master List to be used, select it, and click **OK**.
- Click the **New** button to create a new Master List. Name and save it in the location of your choice. When you create a new Master List, it is blank until you build a materials list and enter prices, supplier or manufacturer information. The Master List is saved automatically when you close.

Categories Panel

The Categories panel allows you to customize the organization of the Materials List by creating subcategories under the predefined Materials List categories. See “Organizing Materials Lists” on page 1253.

Subcategories can also be included in schedules. See “Adding Custom Columns” on page 1235.



1 A list of available **Categories** displays here. Click on a name to select it.

2 If the selected Category has any **Sub-Categories**, their names will display here.

3 To **Add**, **Edit**, or **Delete** a Sub-Category, select it and click the appropriate button. Clicking **Add** or **Edit** opens the **Sub-Category** dialog.

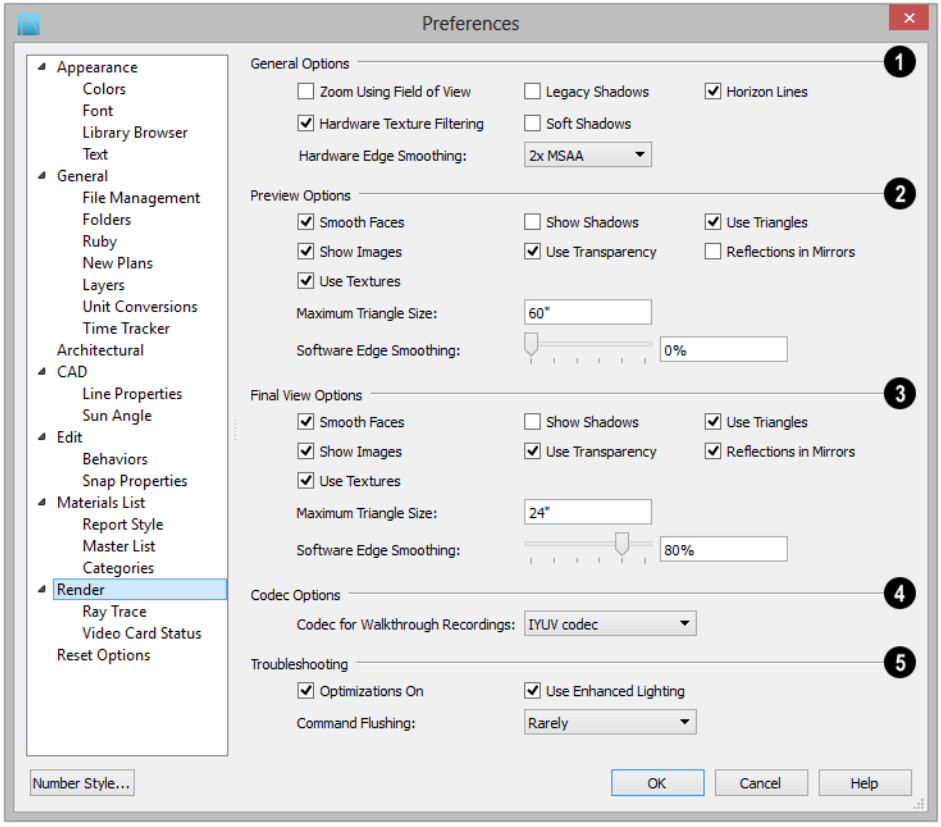
4 In the **Sub Category** dialog:

- Type a name of the Sub-Category to appear in the **SubCat** column of the Materials List. This name can be any sequence of characters, up to 12 characters in length.
- Doors, Windows, Cabinets, Fixtures, Furniture, and Electrical objects can be included in schedules. Subcategories for these objects can appear as column headings. Type a **Column Heading for Schedules**.

In the example above, two subcategories are added to the **Windows** category: **GLZ** (Glazing) and **EXT** (Exterior Trim).

Render Panel

The Render panel settings control how 3D views are generated, particularly Render Previews and Final Views. See “Previews vs Final Views” on page 913.



1 The **General Options** settings affect both Render Previews and Final Views.

- **Zoom Using Field of View** directs the program to zoom in 3D views by adjusting the camera’s Field of View, which can result in perspective distortion. See “Field of View” on page 895.
  When **Zoom Using Field of View** is unchecked, zooming in 3D views is done by cropping or expanding the view’s extents. See “Zooming” on page 895.
- **Hardware Texture Filtering** uses your video card to filter textures and improve their appearance: noticeably, on surfaces angled away from the camera. In some rare instances, this may slow rendering time somewhat. Not supported by some video cards.
- Check **Legacy Shadows** to generate shadows using the method used in version X5 and prior. Legacy shadows are significantly slower than standard shadows, but

are often of higher quality with smoother edges. If your video card does not support standard shadows, Legacy Shadows will be used automatically. See “Shadows” on page 912.

- **Soft Shadows** displays shadows with soft edges instead of hard edges. This feature is only used when Show Shadows and a Software Edge Smoothing value greater than 0% are also used. See “Rendering Tips” on page 912.
- **Horizon Lines** are lines that generate along the curved edges of symbol objects in Vector Views. Uncheck this box to increase the speed of Vector View generation but also suppress these lines. See “Vector View” on page 928.
- **Hardware Edge Smoothing** uses the video card to remove the jagged edges that sometimes result along surface edges, producing cleaner lines. Select an MSAA (Multi Sample Anti-Aliasing) multiplier from the drop-down list: the higher the multiplier, the smoother the surface edges and longer the rendering time. The options available in this list may be limited, depending on what your video card is able to support.

❷ The **Preview Options** settings affect only Render Previews.

- **Smooth Faces** generates smooth curved surfaces. It uses new surface normals to alter the lighting effects on surfaces, making them appear curved, even though it does not alter the shape of the surfaces.
- **Show Images** controls the display of images, such as plants and vehicles, in rendered views. See “Displaying Images” on page 1104.
- **Show Shadows** controls whether or not shadows display.
- **Use Transparency** allows materials such as window glass to display effects. For some video cards, rendering may be slowed when this feature is selected.
- **Use Textures** controls whether or not surfaces are rendered with textures. This only affects surfaces with materials that have assigned textures. When textures are turned off, surfaces are rendered using the solid color assigned to the material, but not the texture. See “Mapping Patterns and Textures” on page 835.
  Textures can also be turned on or off in most rendered views by selecting **3D> Camera View Options> Toggle Textures**  .
- **Use Triangles** divides large surfaces, such as walls, floors, and ceilings, into small triangles. This feature enhances lighting effects when point or spot light sources are used.
- **Reflections in Mirrors** allows flat surfaces using a Mirror material to display reflections of other objects in the scene. Reflections may slow program performance in 3D views, particularly when multiple mirrors are present. By default, this is checked for Final Views but not for Previews. See “Reflections” on page 913.
- **Maximum Triangle Size** controls the size of the surface triangles modeled by the program. Lighting looks better with smaller triangles, but rendering takes longer. See “Rendering Tips” on page 912.

  The initial settings for Previews and Final Views are 60” (1500 mm) and 24” (600

mm), respectively. The minimum value is 6" (150 mm).

- **Software Edge Smoothing** removes the jagged edges that sometimes result along surface edges, producing cleaner lines. Use the slide bar or text field to specify how much jagged edge lines should be smoothed.

  Initial Software Edge Smoothing settings for Previews and Final Views are 0% and 80%, respectively.

❸ The **Final View Options** settings are exactly the same as the Preview Options, but affect Final Views instead of Render Previews. See “Previews vs Final Views” on page 913

❹ Select a **Codec for Walkthrough Recordings** from the drop-down list. By default, “Cinepak codec” is selected in the 32-bit Windows version of the software, “IYUV codec” in the 64-bit Windows version, and “H.264” in the Mac version; but any other codecs that you may have installed on your system will also display in the list. See “Walkthroughs” on page 1124.

❺ The **Troubleshooting** settings can be used to troubleshoot performance in 3D views.

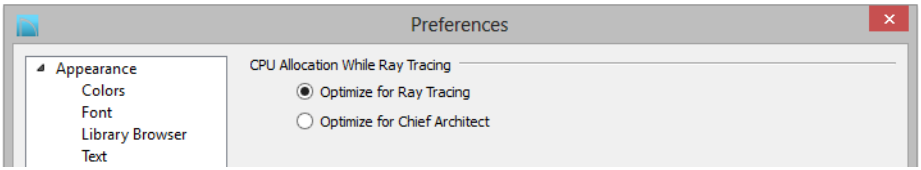
- **Optimizations On** saves rendering data to your video card, which speeds up rendering time. This option may cause problems if the rendering data for your model exceeds the video card’s memory.
  If the program stops responding when rendering, try unchecking **Optimizations On**. This slows down rendering time considerably, though, so if the problem is not solved, leave this checkbox selected.

Note: If your video card does not support this feature, Optimizations On may be unchecked automatically to avoid problems.

- When **Use Enhanced Lighting** is checked, Standard rendered views generate lighting effects that require a video card that supports OpenGL 2.0. Unchecking this box may speed up Standard rendering times somewhat; however, the quality of lighting effects will be reduced. Not available if your video card does not support OpenGL 2.0. See “OpenGL and Hardware” on page 868.
- **Command Flushing** - Select an option from the drop-down list to control how often the program flushes cached video memory. “Rarely” is selected by default and will produce fastest rendering times on most systems, but “Frequently” may be helpful for older video cards.

Ray Trace Panel

The settings on Ray Trace panel allow you to specify whether your computer’s processor allocates more resources to Chief Architect or to the Chief Architect Ray Tracer when both are running. Changes to these settings do not affect ray traces that are in progress or queued: only ray traces that you start in the future. See “Ray Trace Views” on page 940.



- Select **Optimize for Ray Tracing** to allocate more of your CPU's resources for the Ray Tracer than for Chief Architect.
- Select **Optimize for Chief Architect** to allocate more of your CPU's resources for Chief Architect than for the Ray Tracer.

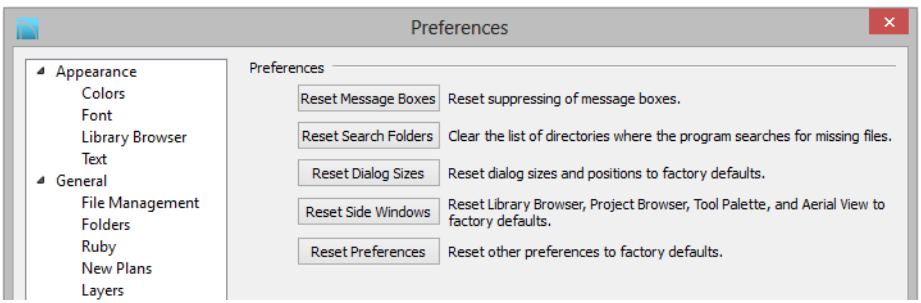
Video Card Status Panel

The Video Card Status panel displays information about your video card, including the vendor and the OpenGL version it uses. See "OpenGL and Hardware" on page 868.

This information may be important if you are having problems generating 3D views.

Notice the **Max Lights** value. This indicates how many lights can be rendered in a 3D view. This value should be 8 or higher, depending on your video card. See "Lighting" on page 914.

Reset Options Panel



- If message boxes have been suppressed, you can make them display again by clicking **Reset Message Boxes**. See "Message Boxes" on page 40.
- Chief Architect retains a list of locations where you have located missing files in the past. If you find that the program takes a long time to search for files before informing you that they are missing, you can click the **Reset Search Folders** button to clear this list.
- Click the **Reset Dialog Sizes** button to restore all dialog boxes to their original sizes and positions. See "Dialogs" on page 36.
- Click the **Reset Side Windows** button to restore all side windows to their original sizes and positions. See "Side Windows" on page 33.

- Click the **Reset Preferences** button to restore all preferences to those that originally came with the program. For the reset to take effect, you will need to restart the program.

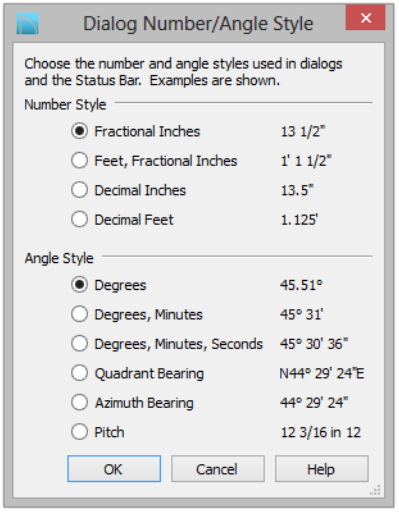
> ⚠ Resetting all preferences to default can be a drastic step and should be done with caution.

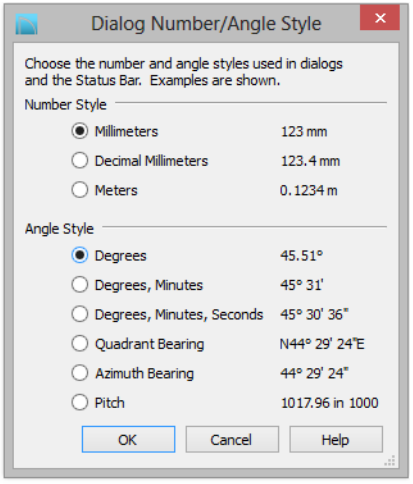
Dialog Number/Angle Style Dialog

At the bottom of many dialogs, you can click the **Number Style** button to open the **Dialog Number/Angle Style** dialog.

The settings in this dialog are global and control the format of distances, coordinates and angles of angles in dialog boxes as well as in the Status Bar. See “The Status Bar” on page 39.

These settings control the format of values used in dialogs but do not limit how you must enter these values. For example, if you set your Number Style to use Inches, values will display using fractional inches. You can, however, enter values using decimal inches, inches and feet, or even decimal feet. When the dialog you’re typing in updates, the value will be converted to fractional inches.





When Imperial units are used, the **Fractional Inches** and **Feet, Fractional Inches** options use fractional inches with denominators of 2, 4, 8 and 16. A few objects, notably text, dimensions, and floor, ceiling and wall structure layers can be sized using smaller fractions with larger denominators.

Angles can be displayed using one of four basic methods:

- **Degrees/Minutes/Seconds** - Measured counterclockwise from a line drawn horizontally to the right of the angle's vertex. Useful for most drawing tasks. Select the level of accuracy that you require.
- **Quadrant Bearings** - Measured from a vertical line representing North/ South, Quadrant Bearings use directional bearings in their measurements. Useful for site drawings.
- **Azimuth Bearings** - Measured from a line drawn straight up from the angle's vertex (ie, North on a site plan). Useful for site drawings, Azimuth Bearings use degrees, minutes, and seconds in their measurements.
- **Pitch** - Defined as a ratio of vertical rise to horizontal run. In Imperial units, the run is always 12"; in metric units it is 1000 mm. Useful for roofs.

Quadrant and Azimuth Bearings are affected by the orientation of the **North Pointer**  , if one is present in the current plan. See "North Pointer" on page 921.

Chapter 4:

Toolbars and Hotkeys

Two of the most efficient ways to access Chief Architect's tools are the toolbars and keyboard shortcuts, also referred to as hotkeys.

Both toolbars and hotkeys can be customized to suit your workflow.

Chapter Contents

Toolbar Arrangement

Chief Architect's toolbars provide fast access to the program's most commonly used tools and settings, and are organized so that related tools are grouped together and easy to find.

If a tool or setting is active, a small checkmark will display at the lower left corner of its button icon.

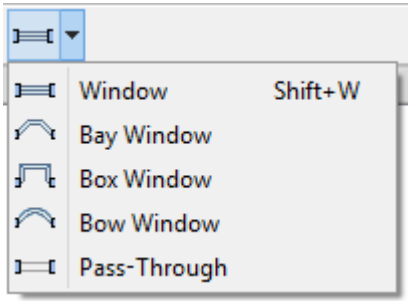
The toolbars that display in a given view depend on the view type. For example, the toolbars that are available in floor plan and 3D views are not available in Materials Lists or Ray Trace views.

Many of Chief Architect's tools are organized into families of related tools which can be accessed using either of two styles of toolbar interface: the **Child Tool Palette** or **Drop Down** tools. You can select the interface that you prefer in the **Preferences** dialog. See "Appearance Panel" on page 90.

You can turn off the display of toolbars entirely or turn them on again by selecting **View> Toolbars** .

Drop-Down Tools

Click on the arrow to the right of a button to display a drop-down list of related tools. For example, click the arrow to the right of the **Window** button to display a drop-down list of the other Window Tools.



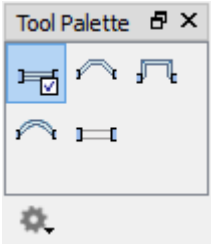
The most recently selected tool displays in the toolbar.

Child Tool Palette

An alternative to Drop-Down toolbars is the Parent button and Child Tool Palette interface. Parent toolbar buttons have a blue triangle in the lower right corner. When you select a Parent button, its Child tools display in the Child Tool Palette. If the Child Tool Palette has been closed, it will open.

You can open the Tool Palette at any time, even when Drop Down tools are enabled, by selecting **View> Tool Palette** . See “View Tools” on page 858.

When you click the **Window Tools** Parent button, for example, its Child buttons display in the Child Tool Palette.



By default, the Child Tool Palette is docked on the left side of the program window; but it can be undocked and moved, as well as resized and closed, just like other side windows. See “Side Windows” on page 33.

Click the **Palette Options** button at the bottom of the palette to select how the tools within it are presented:

- Select **Fit Palette** to resize the palette so that it is one row wide.
- Select **Grid View** to display only the button icons of the child tools in a grid that may have multiple rows, depending on the width of the palette side window.
- Select **List View** to display child tools in a vertical list with each tool’s button icon and name in a row.

As long as it is open, the Child Tool Palette will also display the members of a selected tool’s family when the Drop Down interface is active. If you select a tool that does not belong to a family, the previously selected tool’s family will continue to display in the Tool Palette.

The Edit Toolbar

When you select an object, its edit toolbar opens. By default, it is located at the bottom of the program window, just above the Status Bar. The buttons on the edit toolbar can be used to edit the selected object(s). Which buttons display depends on the type of object selected, the current view, and how you selected the object.

Toolbar Configurations

Chief Architect installs a set of Toolbar Configurations, which control what tools are initially included in the toolbars, as well as where these toolbars are located.

- The **Default Configuration** displays architectural tools used for house design, including walls, windows, doors, stairs, cabinets, etc.
- The **Terrain Configuration** displays buttons associated with the terrain and road tools, including the plant and sprinkler tools. See “Terrain Toolbar Configuration” on page 696.
- The **Kitchen and Bath Design Configuration** displays buttons associated with kitchen and bath design. See “Cabinets” on page 659.
- The **MEP Configuration** displays buttons associated with mechanical, electrical, and plumbing. See “Line Styles” on page 1076.
- The **Space Planning Configuration** displays buttons associated with the Space Planning Assistant. See “Space Planning” on page 1095.
- The **Extended Configuration** displays an extensive selection variety of tools for various uses.

To switch toolbar configurations

There are several ways to switch from one Toolbar Configuration to another.

- Click a Toolbar Configuration button.
- Choose a configuration in the **Toolbar Customization** dialog. See “Configurations Panel” on page 138.
- Right-click in an empty space on any toolbar and select a **Toolbar Configuration** from the contextual menu.

Customizing Toolbars

The Toolbar Configurations installed with the program are designed to help make tools quickly and easily accessible; however, for greatest efficiency, you may want to customize them to meet your own particular needs. A number of options are available:

- Toggling toolbars
- Moving toolbars
- Adding buttons to existing toolbars
- Adding new toolbars

Any changes made to an existing Toolbar Configuration will be saved whenever you:

- Switch to a different configuration;

- Close the **Toolbar Configuration** dialog;
- Exit out of Chief Architect.

Bear in mind that the size of the Chief Architect program window and the space available for toolbar button depends on your monitor's size and screen resolution settings.

Toggling Toolbars

There are several ways to toggle individual toolbars on or off:.

- Right-click in an empty space on any toolbar and mouse over **Toolbars** in the contextual menu. In the submenu, toolbars with a checkmark next to their name are on in the current view. Click on a toolbar name to turn it off if it is on, or vice versa.
- Toolbars can be turned on or off in the **Toolbar Customization** dialog. See "Toolbar Panel" on page 137
- If a toolbar is undocked, click the **Close** button at its top right corner.

You can turn off the display of toolbars entirely or turn them on again by selecting **View> Toolbars** .

Moving Toolbars

You can move any toolbar to a different location by clicking and dragging its dotted grab bar. Toolbars can be docked to any side of the program window, or they can be undocked and left floating.

Undocked toolbars can be moved outside of the program window, and they can be closed completely. They can also be reshaped; however, they cannot be resized in such a manner that any buttons become hidden.

Toolbars are saved between program sessions. To restore the original toolbar positions and display, click the **Reset Toolbars** button in the **Toolbar Customization** dialog. See "Toolbar Panel" on page 137.

Adding and Removing Buttons

Toolbar buttons can be added to or removed from toolbars using the **Toolbar Customization** dialog.

To add a button to a toolbar

1. Select **Tools> Toolbar and Hotkeys> Customize Toolbars** and go to the Tools panel of the **Toolbar Customization** dialog. See "Tools Panel" on page 136.
2. Select the **View Type** that you want to add a toobar button in.
   - You can add any buttons you like to any View Type; however, not all buttons will necessarily be available for use in all views.
3. Search or browse to find the desired button or its parent in the **Available Toolbar Buttons** list.
4. Click and drag the button you wish to add to a toolbar out of the dialog box.
   - Drop it onto an existing toolbar to add the button to that toolbar.
   - Drop it away from an existing toolbar to create a new toolbar. The selected button is first in the new toolbar. The new toolbar is named with the current view followed by a number.

To remove a button from a toolbar, open the **Toolbar Customization** dialog, then click and drag the button out of the toolbar area.

Buttons cannot be added to or removed from the Edit toolbar. See “The Edit Toolbar” on page 35.

Adding and Removing Toolbars

Toolbars can be added to or removed from each View Type using either the toolbar contextual menu or the **Toolbar Customization** dialog.

To add or remove an existing toolbar

1. Right-click on an empty space in a toolbar.
2. In the contextual menu, click on the name of a toolbar.
   - If the toolbar has a checkmark next to it, clicking on it will clear the checkmark and remove the toolbar from the current View Type.
   - If the toolbar does not have a checkmark next to it, clicking on it will add the toolbar to the current View Type.

You can also specify which toolbars are used in each View Type in the **Toolbar Customization** dialog. See “Toolbar Panel” on page 137.

Creating New Toolbars

New toolbars can be created using the **Toolbar Customization** dialog.

To create a new toolbar

1. Select **Tools> Toolbar and Hotkeys> Customize Toolbars** and go to the Tools panel.
2. Select the **View** type to which you want to add a new toobar.
3. Select the first button that you want on the toolbar from the **Available Toolbar Buttons** list.
4. Click and drag the button out of the dialog box and drop it:
   - In an empty section of the program window border to create a new toolbar docked at that location.
   - In the drawing area to create a new, undocked toolbar.
5. Additional buttons can be added to this new toolbar.
6. By default, a new toolbar will inherit the name of the first tool that was added to it, preceded by the word Custom. You can assign a new name in the **Toolbar Customization** dialog. See “Toolbar Panel” on page 137.
7. Still on the Toolbar panel, specify the View Types that the new toolbar should be used in.

You can use the Empty Space button in your toolbars as a spacer.

Locking Toolbars

When your toolbars are organized the way you want them, you can select **Tools> Toolbars and Hotkeys> Lock Toolbars** to prevent them from being moved. Select the same tool to unlock toolbars. **Lock Toolbars** is also available in the contextual

menu for toolbars: right-click in an empty space on any toolbar to access it. See “Contextual Menus” on page 36.

Restoring Toolbars

To discard your changes and restore all installed Toolbar Configurations to their original condition, click the **Reset Toolbars** button in the **Toolbar Customization** dialog. See “Toolbar Panel” on page 137.

Because Reset Toolbars affects all Toolbar Configurations, you may find it worthwhile to create your own custom Toolbar Configurations.

Creating Custom Toolbar Configurations

If you extensively edit your toolbars, you may want to consider creating one or more custom Toolbar Configurations so that your changes can be backed up as well as transferred to a different computer if you wish.

To create a custom configuration

1. Go to the Configurations panel of the **Toolbar Customization** dialog.
2. Select a configuration similar to the one you want to create and click **Copy**.
3. Give the new configuration a short, unique name. It will be saved in the Chief Architect Toolbars folder. See “Chief Architect Data” on page 51.
4. When you click **Save**, the new configuration will be active. It will appear in the list, and will be highlighted.
5. You can now move toolbars, add or remove buttons, and add or remove toolbars to meet your requirements.
6. Select each of the different **View Types** to see the toolbars active in each and confirm that they suit your needs.
   - Select each of the different **View Types** to see the toolbars active in each and confirm that they suit your needs.
7. When you are satisfied with your new Toolbar Configuration, click **Close**.

It is a good idea to back up your Toolbar Configuration files. See “Chief Architect Data” on page 51.

Custom Configuration Buttons

By default, new Toolbar Configurations display a default configuration 

button; however, if you want you can make your own button icon for your custom Toolbar Configuration.

Create a **.bmp** file with the same name as the configuration and save it in the Toolbars folder. To see an example, look at the Default**.bmp** file in the Chief Architect Toolbars folder, which corresponds to the Default Toolbar configuration. See “Chief Architect Data” on page 51.

- Toolbar button bitmaps must be 20 x 20 pixels in size.
- The color (R:192, G:192, B:192) maps to the system 3D face color.
- The color (R:128, G:128, B:128) maps to the system 3D Shadow color.

- The color (R:223, G:223, B:223) maps to the system 3D light color.

Importing Custom Configurations

Toolbar Configurations can be imported into the program, allowing you to transfer custom configurations between computers as well as add backed up configurations to new installations.

To import a custom configuration

1. Go to the Configurations tab of the **Toolbar Customization** dialog.
2. Click **Add**.
3. Browse to the location of the toolbar you want to import.
4. Click **Open**. If the **.toolbar** file is not in the Chief Architect Toolbars folder, a copy of the file will be created there.

Toolbar Customization Dialog

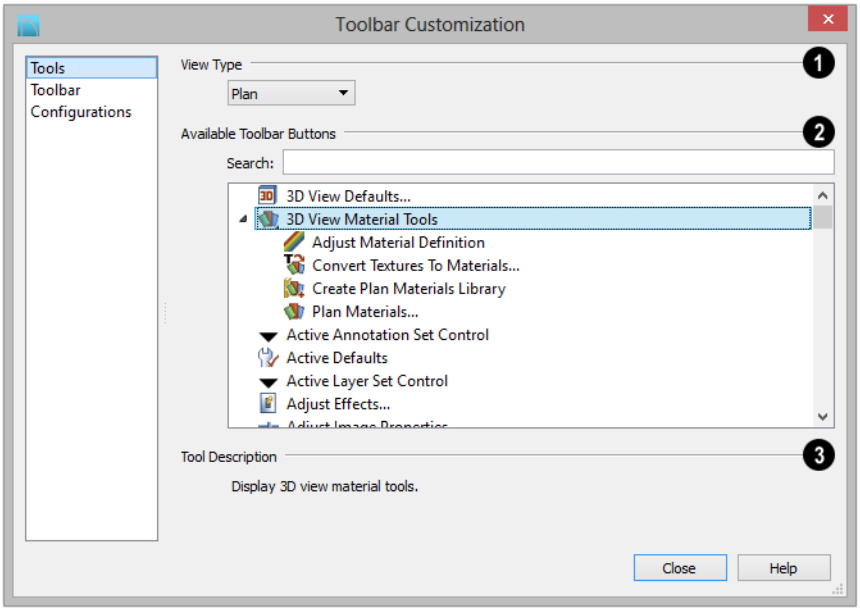
Select **Tools> Toolbars and Hotkeys> Customize Toolbars** to open the **Toolbar Customization** dialog. You can also right-click in an empty space in any toolbar and select **Customize Toolbars** from the contextual menu.

In the **Toolbar Customization** dialog, you can:

- Add and remove buttons from toolbars.
- Specify which of the available toolbars display in different view types.
- Select the active Toolbar Configuration.

Tools Panel

The settings on the Tools panel allow you to add or remove buttons from your toolbars, as well as to create new toolbars.



❶ Select the **View Type** that you would like to add toolbar buttons to. When the dialog is first opened, the selected View Type is that of the current view. If you select a different View Type, the toolbars associated with it will display behind the dialog for reference until you click the **Done** button.

❷ The **Available Toolbar Buttons** display in a list that can be searched or browsed.

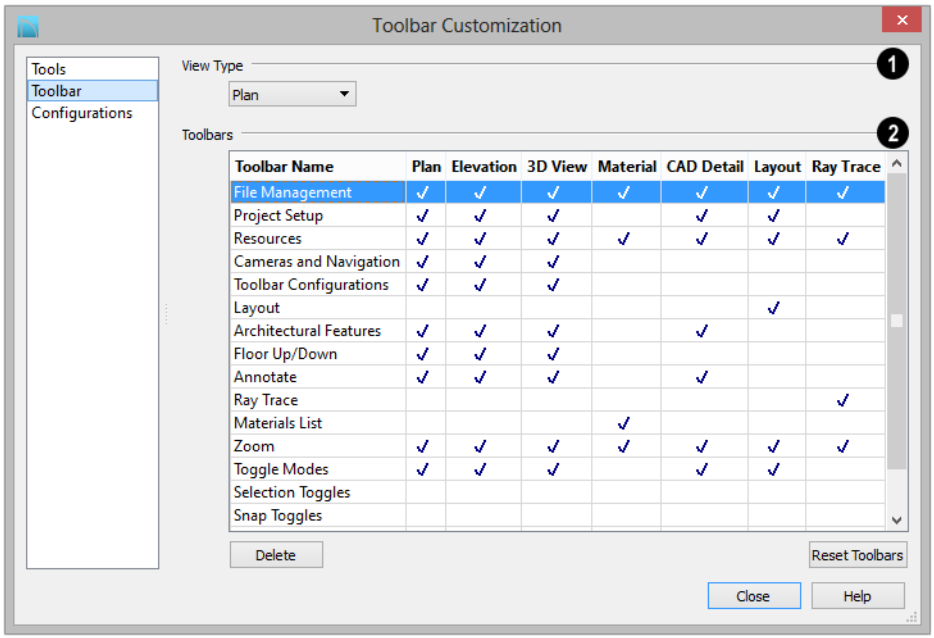
- Type a keyword or the name of a tool in the **Search** field. As you type, only buttons that match your search will display. When nothing is typed in this field, all buttons will display in the list.
  If a child tool matches your search, its parent will display in the search results. Click the arrow next to the parent's name to see the child tools.
- The Available Toolbar Buttons list can be browsed using the scroll bar to the right.
- Click on a button in the list to display a description of that tool, below.
- Parent tools have an arrow to the right of their button icon in the list. Click on this arrow to display the child tools below the parent. See "Toolbar Arrangement" on page 129.

If you do not see a particular button in the list, it may be the child of a parent tool.

❸ **Tool Description** - When a button is selected in the list above, a description of it displays here.

Toolbar Panel

The Toolbar panel allows you to manage the use of individual toolbars.



❶ When this dialog is first opened, the selected **View Type** is that of the current view. If you select a different View Type, the toolbars associated with it will display behind the dialog for reference until you click the **Done** button.

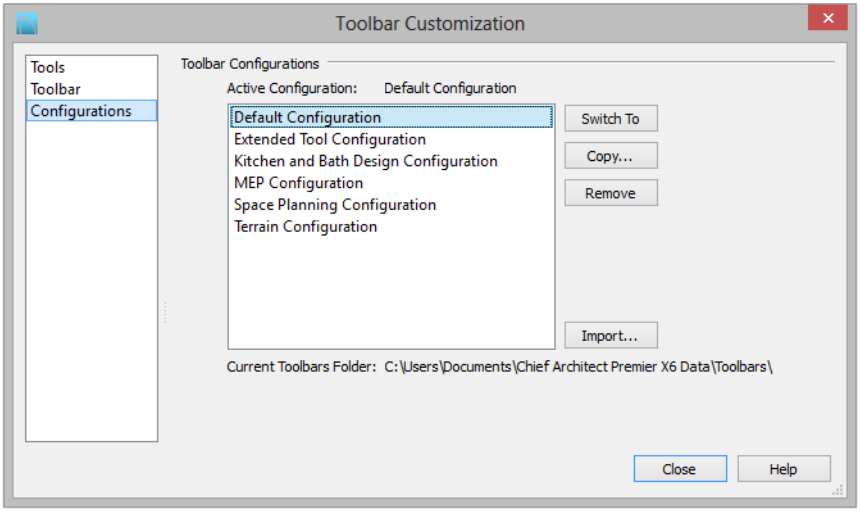
❷ The **Toolbars** table displays the names of all available toolbars, along with the View Types in which they are in use.

- Select a toolbar by clicking on its name.
- Click to place a checkmark in a column to add the selected toolbar to that View Type; click on checkmark to remove it.
- Double-click on a toolbar in the Toolbar Name column to rename it. Toolbar names must be unique.
- Click **Delete** to remove the selected toolbar from the list. A deleted toolbar is no longer available in any View Type.
- Click **Reset Toolbars** to restore all the toolbars to their original configuration. See “Restoring Toolbars” on page 134.

> ⚠ Clicking the Reset Toolbars button removes all changes that you may have made to all installed Toolbar Configurations.

Configurations Panel

The Configurations panel allows you to add, remove, and switch between Toolbar Configurations. See “Toolbar Configurations” on page 131.

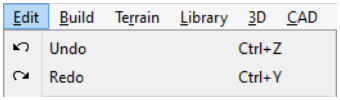


A list of Toolbar Configurations displays here. Select a configuration before clicking the **Remove**, **Copy**, or **Switch To** buttons.

- Click **Switch To** to switch to the selected Toolbar Configuration. See “To switch toolbar configurations” on page 131.
- Click **Copy** to create a copy of the selected Toolbar Configuration.
- Click **Remove** to remove the selected Toolbar Configuration. This removes the configuration from the list but does not delete the configuration file permanently. If only one configuration is listed, it cannot be deleted.
- The location of the **Current Toolbars Folder** displays below. See “Chief Architect Data” on page 51.

Hotkeys

Many Chief Architect tools have a keyboard shortcut, or hotkey, associated with them. If such a hotkey exists, it will display to the right of the tool’s name in the menu.



Edit menu items with button icons to the left and hotkeys to the right

To use a hotkey, simply press the appropriate key or combination of keys on your keyboard instead of selecting the menu item or clicking the toolbar button. For example, press the Ctrl and Z keys at the same time to perform an **Undo** .

Note: If a key or key combination is in use as a system hotkey, it cannot be used as a program hotkey.

You can specify the hotkeys associated with Chief Architect tools in the **Customize Hotkeys** dialog. In this dialog, you can program hotkeys to activate tools and invoke a variety of commands such as opening dialogs, including Defaults dialogs.

Number keys can be, and are, used as hotkeys. Bear in mind that if a number key is assigned as a hotkey, the corresponding number pad key will invoke the same command as long as it is not assigned to something else. The converse, however, is not true: if a number pad key is assigned as a hotkey, the corresponding number key will not invoke that command.

Create Hotkey List

A list of the hotkeys available to the current program user can be saved in **.html** or **.xhtml** format.

Select **Tools> Toolbars and Hotkeys> Create Hotkey List** to open the **Save Hotkey List File** dialog, a standard Save dialog, and create a hotkey list that can then be opened in a web browser window and printed, if you wish.

Next/Last Command

You can navigate a list of up to 100 recently used tools using the **Cancel Selection/ Previous Command**, **Next Command** and **Previous Command** hotkeys. The tools in this list are organized according to the order in which you selected them during the current program session.

Cancel Selection/Previous Command, **Next Command** and **Previous Command** are hotkeys only: they do not have toolbar buttons associated with them and are not found in the menu.

By default, **Cancel Selection/Previous Command** is assigned to the Esc key. This command can be used to:

- Cancel a current object selection.
- Cancel a current drawing or editing action that is in progress.
- Activate the previously used tool or command if no object is selected or action in progress.

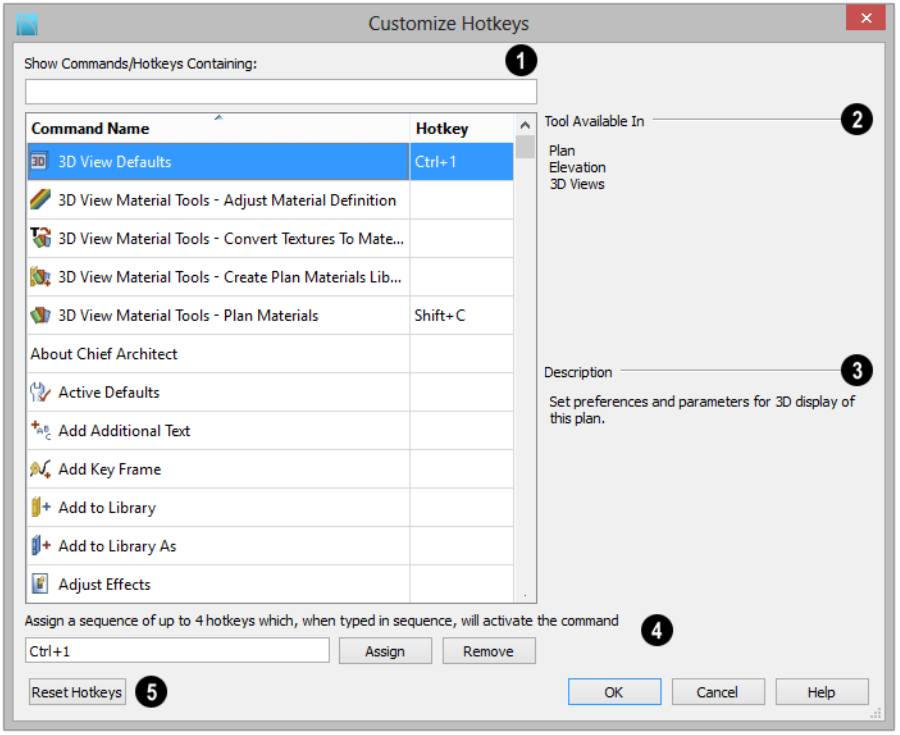
When cancelling a selection or a command, be careful to press the Esc key only once to avoid changing the currently active tool.

By default, **Next Command** is assigned to the Shift+Esc keys. This command can be used to deactivate the current command and instead activate the one that is next in the list of recently used tools.

If you prefer, you can assign two different hotkeys to the **Cancel Selection** and **Previous Command** instead of one single hotkey.

Customize Hotkeys Dialog

Select **Tools> Toolbars and Hotkeys> Customize Hotkeys** to open the **Customize Hotkeys** dialog.



1 Show Commands/Hotkeys Containing

- In the text field, type part or all of the name of a tool or hotkey to see a list of tool names and hotkeys with that string of characters. When nothing is typed in this text field, all tools and commands are shown in the list.
- Click on an item in the list of **Commands** and **Hotkeys** to select it.

2 **Tool Available In** - A list of the View Types that the selected command can be used in displays here.

3 A brief **Description** of the selected command displays here.

Click on an item in the list of **Commands** and **Hotkeys** to select it.

❹ **Edit hotkey for this command** - Click in this field, then press the key or key combination that you would like to use.

- Create a simultaneous hotkey combination by holding down the Shift, Ctrl, and/or Alt keys and typing an additional letter or number.
- Create a hotkey sequence by typing up to four hotkeys or hotkey combinations, one after the other.

Note: Default hotkeys use the number keys and number keypad interchangeably. User defined hotkeys, however, do not. As such, when a custom hotkey is defined here, characters typed using the numpad begin with “Num +” in Windows, and “Num” on a Mac.

Bear in mind that while nearly all commands can be assigned custom hotkeys, a few cannot: Delete and Enter Coordinates are two notable examples. Hotkeys reserved by the operating system cannot be used, either.

❺ Click the **Reset Hotkeys** button to restore the default hotkeys that were originallyl installed with the program.

Exporting and Importing Hotkeys

Customized hotkeys are user specific and are saved in the Chief Architect X6 Data folder. See “Chief Architect Data” on page 51.

Hotkeys can be exported, making them available for import on another computer, or even by another user on the same computer.

Exporting Hotkeys

To export hotkeys, select **File> Export> Hotkeys**. The **Export Hotkeys** dialog is a typical **Save As** dialog that lets you specify the exported file’s name and its saved location on your computer. See “Exporting Files” on page 56.

Exported hotkey files use the **.xml** file format. Information exported includes both customized hotkeys and hotkeys installed with the program.

Importing Hotkeys

To import hotkeys, select **File> Import> Hotkeys**. The **Import Hotkeys** dialog is a typical **Open File** dialog. See “Importing Files” on page 61.

When hotkeys are imported, the existing User Hotkeys.xml file is replaced by the imported data. Any previously programmed custom hotkeys will not be retained.

Chapter 5:

Layers

Layers are used to organize and manage the display of all objects in all views and in the Materials List. A layer can be thought of as a transparency sheet with objects placed on it for viewing. Nearly all views use multiple layers, like a stack of transparencies put together to show different types of objects.

You can find out which layer an object is on in its specification dialog or by selecting the object and looking at the Status Bar. You can customize how each layer displays in the **Layer Display Options** dialog.

Multiple layers are organized into Layer Sets, which are designed to help you perform different tasks efficiently or produce specific views for your construction documents or for presentation purposes. You can customize the display settings for individual layer sets and can also copy, add and delete layer sets.

Different types of 2D and 3D views use their own layer sets. You can specify the initial layer set used by a particular type of view in the **Layer Set Defaults** dialog.

Chapter Contents

Displaying Objects

The display of objects in different views is controlled by layer sets and layers in the **Layer Display Options** dialog. See “Layer Display Options Dialog” on page 148.

Primary and Secondary Layers

Every object is placed on a layer which controls whether it displays in a given view. This layer is referred to as the object’s primary layer.

In addition, some objects have secondary layers which may alter the appearance of objects on the primary layer, but do not control whether the objects display or not.

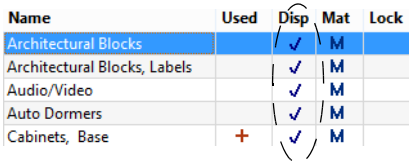
For example, the default primary layer for base cabinets is “Cabinets, Base”. In addition, base cabinets have a number of secondary layers that control the display of the countertop, face indicators, door opening indicators, module lines and labels.

> Note: If an object's primary layer is turned off, information on its secondary layers will not display - even if those layers are turned on.

You can view a list of an object’s primary and secondary layers by selecting it and clicking the **Object Layer Properties** edit button. See “Object Layer Properties” on page 152.

In All Views

All layers with a check in the “Disp.” column display when the current layer set is active. Objects that are not displayed cannot be seen or selected. If you try to place or draw an object on a layer that is hidden, the program asks if you want to turn the layer on.

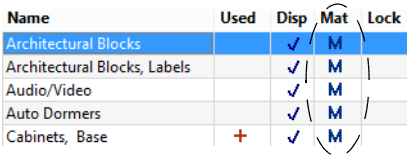


Some objects cannot stand alone in a drawing: they can only be inserted into another object. If the display of an object that contains an inserted object is turned off, the display of the inserted object will be turned off, as well For example, if the display of a wall is turned off, any doors and windows in that wall will not display either. See “Inserted Objects” on page 815.

Materials Lists

Layers showing an “M” in the **Mat** column are included in subsequently generated materials lists. This allows you to control the inclusion of objects in the Materials List on a layer-by-layer basis.

Some default layers, such as Patterns, do not generate materials and are not included by default. See “Materials Lists and Layers” on page 1254.



The overall content and organization of materials lists can be controlled in the

Preferences dialog. See “Materials List Panel” on page 117.

To control the components that are included in a Materials List for a particular object, select the object and click the

Components edit button. See “Components Dialog” on page 1265.

Line and Text Styles

A layer’s **Color**, **Weight**, **Line Style** and **Text Style** attributes determine how an object on that layer appears in floor plan view and in 3D views using the Vector View rendering technique.

Color	Weight	Line Style	Text Style
	25	———	Default Text Style
	25	———	Default Text Style
	10	———	Default Label Style
	25	———	Default Text Style

Many objects, including all CAD and text objects, allow you to override these settings for an individiual instance without changing its layer.

Locking Layers

Objects on layers with a lock symbol in the **Lock** column cannot be selected by the user.

Name	Used	Disp	Mat	Lock
Roofs, Gutters			M	🔒
Roofs, Labels		✓	M	
Roofs, Openings		✓	M	
Roofs, Overhang Area			M	🔒
Roofs, Ridge Caps			M	🔒
Roofs, Trim			M	🔒

New objects cannot be drawn on a locked layer, either. If you lock a layer and then attempt to draw a new object on that layer, a message box will ask you to unlock the layer.

Layers with objects that you need to see as a reference while working, but not select, are good candidates for locking. For example:

- Locking the “Rooms” layer can make it easier to select objects located inside of rooms.
- Locking the “Roof Planes” layer can make it easier to select objects located under the eaves.

Another use for locking layers is to protect them from editing in plans opened by clients or others in select Home Designer programs. See “Opening Chief Architect Plans in Home Designer Programs” on page 50.

⚠ Locking a layer does not prevent objects on that layer from being modified. Most objects can be deleted using the Delete Objects dialog. Objects are also deleted if the floor they are placed on is deleted. See “Deleting Objects” on page 249.

Layer Sets

Layer Sets are used to control the layer settings for different views in a plan or layout file. All views associated with a plan file - including views sent to layout - make use of layer sets stored in that **.plan** file.

A layer set consists of a complete list of the layers in the current plan or layout along with

the display settings for each layer as set for a particular type of view or purpose. These display settings can be modified, and can be different for each layer set. See “Layer Display Options Dialog” on page 148.

Any changes made to a layer set in one view affects all other views using the same layer set. If this is not desired, you can create a unique layer set for a particular view. See “Layer Set Management” on page 147.

Layer sets are file specific, which means that changes made in one plan or layout file have no effect on the settings in other files. If you find that you use the same settings often, you should consider adding these layer sets to your template files. See “Template Files” on page 82.

Each plan file can have an unlimited number of layer sets.

While any view is active, select **Tools**> **Layer Settings**> **Display Options** to make changes to the layer set used for that view type.

Annotation Sets

Layer Sets are among the items associated with Annotation Sets, which are groups of Saved Defaults that can be customized and activated for specific drawing tasks. See “Annotation Sets” on page 78.

Layout Layer Sets

Views sent to layout use layer sets saved with the plan, rather than with the layout. See “Displaying Layout Views” on page 1213.

Layer Sets and Templates

Layers and layer sets are plan-specific. A custom layer set that you created in one plan file may not be available in another. To include a custom layer set in all new plan files, add it to your template plan. See “Exporting and Importing Layer Sets” on page 155 and “Template Files” on page 82.

Modify All Layer Sets

If you want changes made in one layer set to apply to all other layer sets in the current plan, check **Modify All Layer Sets** in the **Layer Display Options** dialog before making changes. The layer name and display attributes are applied to all other layer sets.

For example, if you check **Modify All Layer Sets** and then change the color and line style for the Text layer of the Electrical Set, the same changes are applied to the Text layer of the Framing Set of the same plan.

Layer Set Defaults

Whenever a particular type of view is created, such as floor plan view or a framing overview, a specific layer set is activated for that view. Which layer set becomes active depends on the type of view created.

The default layer sets for nine different view types, including the Reference Floor, are specified in the **Layer Set Defaults** dialog.

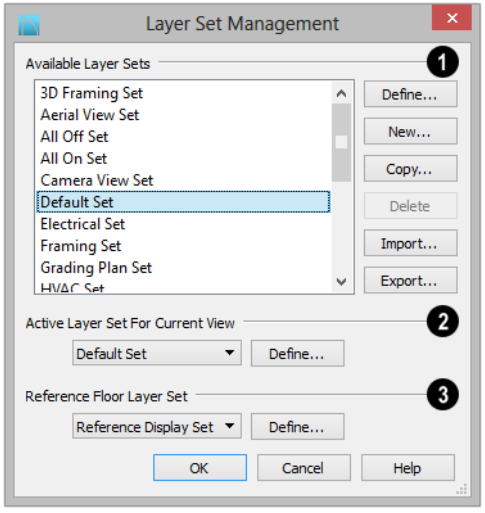
Each of these layer sets can be edited as needed in the **Layer Display Options** dialog. See “Layer Display Options Dialog” on page 148.

Normally, it is best to change the settings in the existing default layer sets rather than select different default layer sets, but you can

do so if needed. See “Layer Set Defaults Dialog” on page 156.

Layer Set Management

The **Layer Set Management** dialog lists the layer sets available in the current plan or layout file and lets you add and remove layer sets and modify and copy existing layer sets. Select **Tools> Layer Settings> Layer Set Management** to open this dialog.



1 Use the **Available Layer Sets** options to manage the layer sets saved with the current plan or layout file.

- Click on a layer set name in the list to select it.
- Click the **Define** button or double-click on the layer set name to open the **Layer Display Options** dialog and make changes to the selected layer set.
- Click the **New** button to open the **New Layer Set Name** dialog and create a new layer set based on system default settings.
- Click the **Copy** button to open the **New Layer Set Name** dialog and create a new layer set based on a copy of the currently selected layer set.
- Click the **Delete** button to delete the selected layer set from the current file. The Delete button is enabled if the layer set can be deleted. You cannot delete the active layer set or any layer set in use as a default.

  Do not delete any layer sets that are used by a layout.
- Click the **Import** button to import layer settings from a .layers file. See “Exporting and Importing Layer Sets” on page 155.
- Click the **Export** button to export the layer settings in the current plan in a .layers file.

2 The **Active Layer Set for Current View** options affect only the layer set used in the view that was active when the **Layer Set Management** dialog was opened.

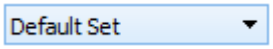
- Select a new **Active Layer Set** from the drop-down list or click the **Define** button to make changes to the active layer set in the **Layer Display Options** dialog.

3 **Reference Floor Layer Set** -Click the drop-down list to specify which layer

set is used by the Reference Floor when it is turned on. See “Reference Floor Display” on page 434. Not available when the dialog is opened in a layout file.

- Select a new **Reference Floor Layer Set** from the drop-down list or click the **Define** button to make changes to the selected layer set in the **Layer Display Options** dialog.

Active Layer Set Control



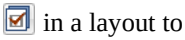
The **Active Layer Set Control** drop-down list displays on the toolbar for all views and provides convenient access to a list of all layer sets saved with the plan. Click the drop-down list to select a new layer set for the current view.

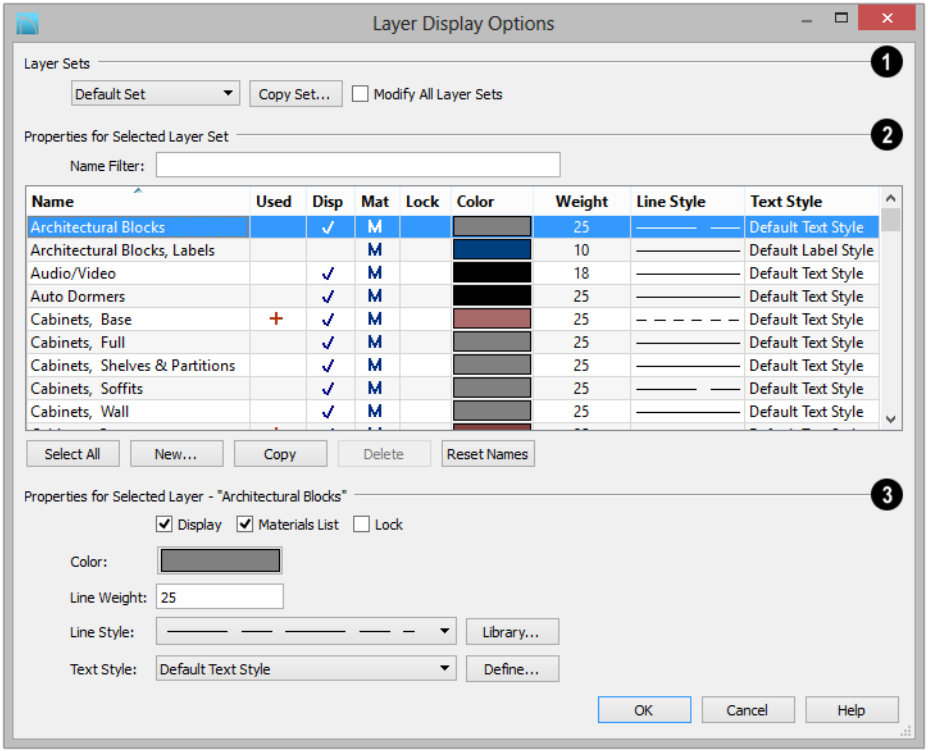
Layer Display Options Dialog

The **Layer Display Options** dialog controls the display of layers in a selected layer set. It consists of a table that lists all available layers and the attributes for each. Layers can be added and deleted. There is no limit to the number of layers that can exist in a plan.

From any view except the Materials List, select **Tools> Layer Settings> Display Options**  to open the **Layer Display Options** dialog.

There are a number of dialogs similar to **Layer Display Options** in the program:

- Select **Tools> Reference Floors> Reference Floor Display Options**  to open the **Layer Display Options** dialog with the Reference Display Set active. See “The Reference Floor” on page 434.
- Select **Tools> Display Options**  in a materials list to open the **Materials List Display Options** dialog. See “Materials List Display Options Dialog” on page 1255.
- Select **Tools> Layer Settings> Display Options**  in a layout to open the **Layout Page Display Options** dialog. See “Layout Page Display Options” on page 1204.
- The **Layer Display Options** dialog is also available for views sent to layout. See “Displaying Layout Views” on page 1213.



1 The **Layer Sets** options let you specify which layer set - or sets - is affected by changes made in this dialog.

- The currently selected layer set displays in the drop-down list.
- Click the **Copy Set** button to create a copy of the current layer set.
- When **Modify All Layer Sets** is checked, changes made in the **Layer Display Options** dialog apply to all other layer sets in the plan when you click OK.

Modify All Layer Sets is a one-time action. It is always unchecked when the Layer Display Options dialog is opened.

2 The **Properties for Selected Layer Set** are presented in a table of layers and their attributes. You can filter the names that display in the list by typing in the **Name Filter** text field. When nothing is typed in this field, all layers display. You can also click a column header to sort all layers in the table by that column. An arrow above a column indicates that it is being used to sort the table, and in which direction it is being sorted.

The **Name** column is sorted alphabetically. Layers are named so that similar object types are listed near one another, and sorting is case sensitive to allow greater control over

organization. Double-click a layer in the **Name** column to rename it.

- A red + in the **Used** column indicates which layers have objects placed on them in the current plan. This column cannot be edited.
- A check in the **Disp** column indicates which layers are set to be visible. If a layer is turned off, this column is blank.
- An M in the **Mat** column indicates which layers are included in the Materials List.
- A yellow in the **Lock** column indicates which layers are locked, preventing objects on that layer from being selected. See “Locking Layers” on page 145.
- The **Color** column shows the line color for each layer and can be sorted so that like colors are listed together.
- The **Line Style** column shows the line style for each layer and can be sorted so that like line styles are listed together.
- The **Line Weight** column displays the line weight used by each layer and can be sorted so that like line weights are listed together. See “Line Weights” on page 1191.
- The **Text Style** column shows the text style assigned to each layer and can be sorted so that layers using the same style are listed together. See “Text Styles” on page 1030.

The buttons below the table offer additional control over the layers in the table.

- Click the **Select All** button to select all layers in the table at once. This allows changes to be quickly applied to all layers.
- Click the **New** button to open the **New Layer Name** dialog and create a new layer with a unique name of your choice. Duplicate layer names are not allowed.

Note: New layers are added to all layer sets. However, in all but the current layer set, their display will be turned off.

- Click the **Copy** button to create a copy of the selected layer. The new layer is added directly below the original in the table.
- Click the **Delete** button to delete the selected layer. You cannot delete used layers or any of the system layers used by Chief Architect.
- Click the **Reset Names** button to revert layer names for system layers back to the original names that installed with Chief Architect. This does not affect layers you created.
- Click **OK** to close the dialog and apply your changes.
- Click **Cancel** to close the dialog, ignoring any edits.

Layers are selected by clicking on them in the table. Hold down the Shift key or the Ctrl key to select multiple layers at once. Press Ctrl + A or click the **Select All** button to select all layers in the table. When selected, a layer’s attributes display and can be edited below.

The program remembers what layer(s) are selected when you click OK and selects them again when you return to this dialog.

❸ The **Properties for “Selected Layer”** options let you modify the attributes of

one or more selected layers. Line Color, Style, and Size affect lines in floor plan view and surface edge lines in Vector Views. When multiple layers are selected, "No Change" may display for attributes that are not shared by the selected layers.

- To turn off a selected layer, uncheck **Display**. See "Displaying Objects" on page 144.
- Uncheck **Materials List** to exclude all objects on a selected layer from the Materials List. See "Materials Lists" on page 1247.
- To protect the objects on a selected layer from accidental changes, check **Lock**. Items on locked layers can display but cannot be selected. See "Locking Layers" on page 145.
- To change the color of lines on a selected layer, click the **Color** bar to open the **Select Color** dialog. See "Color Chooser/Select Color Dialog" on page 853.
- Specify the default **Line Weight**, or thickness, for objects on the selected layer. See "Line Weights" on page 1191.
- To change the **Line Style** of a selected layer, click the drop-down arrow or the **Library** button to select a line style from the library. See "Line Styles" on page 1076.
- To change the **Text Style** of a selected layer, click the drop-down arrow or click the **Define** button to open the **Text Style Defaults** dialog. The **Define** button is not available when multiple layers with different Text Styles are selected. See "Text Style Defaults" on page 1031.

Note: Not all objects display in all views. For instance, invisible walls do not appear in camera views or materials lists, regardless of the layer they are placed on or whether that layer is turned on or not.

Select Layer Dialog

The **Select Layer** dialog allows you to select a layer for one of two purposes:

Select **CAD> Current CAD Layer** to open this dialog and specify which layer is the Current CAD Layer. See "Current CAD Layer" on page 1044.

This dialog also opens when the **Layer Painter** tool is used. See "Layer Painter, Eyedropper and Hider" on page 153.

The Current CAD Layer and Layer Painter buttons can be added to your toolbars. See "To add a button to a toolbar" on page 132.

The **Select Layer** dialog contains the table of layers and Name Filter found in the **Layer Display Options** dialog. Click on a layer in the table to select it, then click OK.

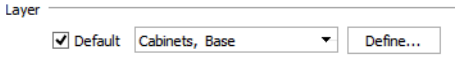
- If the dialog was opened using the **Current CAD Layer**  tool, the selected layer will become the Current CAD Layer.

- If the dialog was opened using the **Layer Painter** tool, you can click on objects in the current view to assign them to the selected layer.

Layer Panel

The Layer panel is found in the specification dialogs for many different objects. Here you can specify the layer that the program uses to display the selected object.

> Note: In some specification dialogs, layer information is located on the Line Style or Appearance panel rather than the Layer panel.



- Check **Default** to place the selected object on the default layer for that object type. If the selected object is an automatically generated dimension line, freize molding, or shadow board that has been edited, this box will be unchecked. See “Dynamic Defaults” on page 74.
- Click the drop-down list to select a layer from those available in the file.
- Click **Define** to open the **Layer Display Options** dialog and select, modify, or add a new layer. See “Layer Display Options Dialog” on page 148.

Object Layer Properties

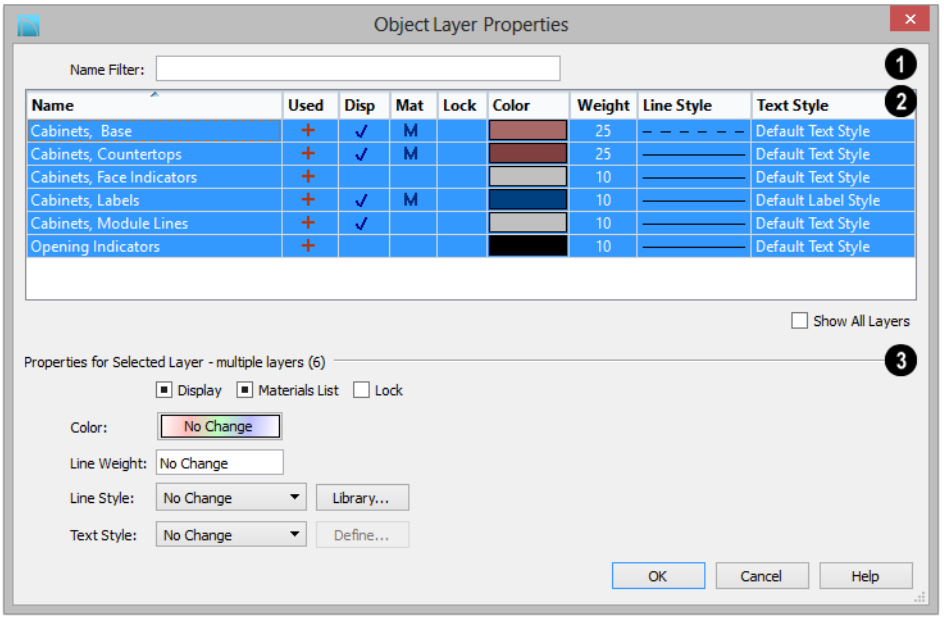
The **Object Layer Properties** edit tool allows you to access and edit the layer or layers associated with one or more selected objects. See “Primary and Secondary Layers” on page 144.

Some objects, such as CAD lines, only have one layer associated with them. Other objects, including many architectural objects like cabinets, have multiple layers that affect their display in various views. A few objects, such as active camera symbols and layout boxes, do not have this edit tool.

Object Layer Properties Dialog

When you click the **Object Layer Properties** edit button, the **Object Layer Properties** dialog opens.

The settings in this dialog are similar to those in the **Layer Display Options** dialog.



1 Type in the **Name Filter** text field to filter the names that display in the list below. When nothing is typed in the field, no layers are suppressed.

2 A table listing the layers associated with the selected object(s) displays here. This sortable table functions like that in the **Layer Display Options** dialog.

Unlike the Layer Display Options dialog, whenever this dialog is opened, all of the layers will be selected.

- Check **Show All Layers** to list all layers in the current file rather than just those associated with the selected object. When unchecked, only the layers associated with the selected object(s) display.

3 The **Properties** of the selected layer(s) display and can be edited here.

- As in the **Layer Display Options** dialog,, when multiple layers with different properties are selected, drop-down lists may display “No Change” and checkboxes may have a solid fill. See “Dialogs” on page 36.

Layer Painter, Eyedropper and Hider

The **Layer Painter** and **Layer Eyedropper** tools allow you to move an object to any layer in any view without opening its specification dialog.

The **Layer Hider** tool lets you turn off the display of any layer in the currently active layer set by clicking on an object on that layer.

To use the Layer Painter

1. In any view, select **Tools> Layer Settings> Layer Painter** .
2. In the **Select Layer** dialog, choose a layer and click OK. Your cursor will display the painter icon. See “Select Layer Dialog” on page 151.
3. Note that the name of the layer being painted is noted on the left side of the Status Bar at the bottom of the program window. See “The Status Bar” on page 39.
4. Move your cursor over an object and notice that the Status Bar now states both the layer being painted and the current layer of the target object.
5. Click on objects in the view to move them to the selected layer.

To use the Layer Eyedropper

1. In any view, select **Tools> Layer Settings> Layer Eyedropper** .
2. Click on an object to load the layer it is on into the Layer Painter.
3. Your cursor will display the painter icon, and you can click on other objects to place them on the selected layer.

To use the Layer Hider

1. In any view, select **Tools> Layer Settings> Layer Hider** .
2. Your cursor will display the layer icon.
3. Move your cursor over an object and notice that the Status Bar states the object’s primary layer.
4. Click on the object to turn off the display of its primary layer in the currently active layer set. See “Layer Sets” on page 145.

Layout Layer Sets

Layer sets are an effective way to control not just what displays while you are working, but what displays in the views you send to layout and print. See “Layout” on page 1203.

When you send a view to layout, you have two choices as to which layer set the view uses:

- You can use the same layer set as the original view being sent to layout.
- You can make a copy of the layer set used by the original view.

Both approaches have advantages and disadvantages, so you should use the option that best suits your needs. To learn more about the pros and cons of each approach, see “Message: You have successfully sent the active view to layout”.

Whichever option you choose, remember that the layer set used by a layout view is

always saved with the plan that the view was originally sent to layout from. For this reason, you should avoid deleting layer sets from a plan unless you are absolutely sure that they are not being used by layout views.

You can find out which layer set a layout view is using by selecting it and clicking the **Layout Box Layers** edit button. See “Displaying Layout Views” on page 1213.

If you select a layout view and click the **Open View** edit button, you will return to the original view in the plan file. Bear in mind that the layout view’s layer set will be active. If you make changes to its settings, the view on the layout page will be affected.

Exporting and Importing Layer Sets

Layer sets created in one plan can be exported as a **.layers** file and imported into other plans. This is a convenient alternative to re-creating one or more layer sets that may already exist in another plan.

Exporting Layer Sets

To export layer sets from the current plan or layout file, select **File> Export> Layer Sets** or click the **Export** button in the **Layer Set Management** dialog.

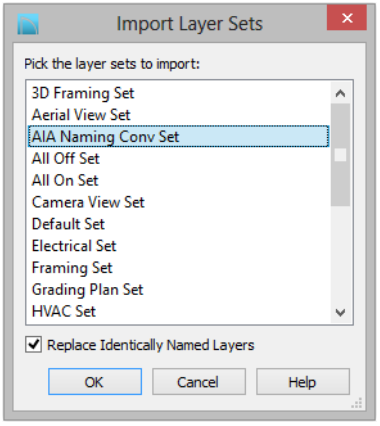
The **Save Layer Set File** dialog is a typical Save As dialog. Exported layer set files use the **.layers** file extensions. See “Exporting Files” on page 56.

Importing Layer Sets

To import layer sets into the current plan or layout, select **File> Import> Layer Sets** or click the **Import** button in the **Layer Set Management** dialog.

The **Import Layer Set File** dialog is a typical Open File dialog. See “Importing Files” on page 61.

When the desired **.layers** file is selected, click **Open**. The **Import Layer Sets** dialog will open next.



- Select a layer set or hold down the Shift key to select multiple sets.
- Check **Replace Identically Named Layers** to replace any layers present in the destination file if they have identical names to layers being imported. When unchecked, layers in the destination file may be replaced by imported layers with different names. Generally, this box should be checked unless you wish to

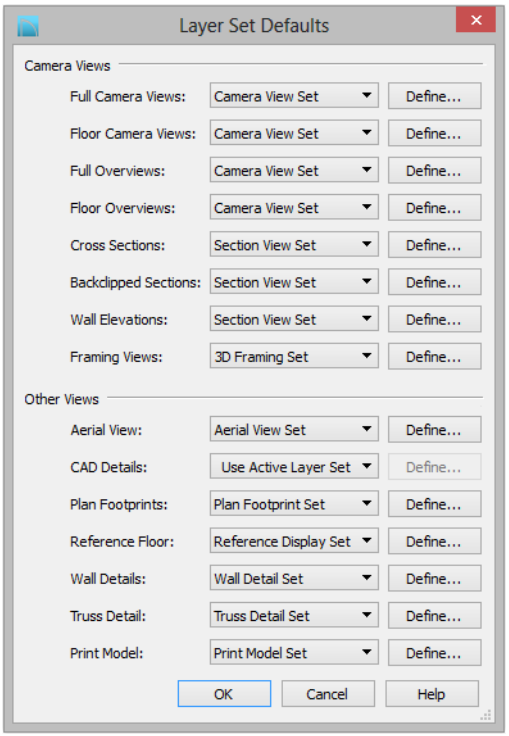
reset existing layer names in the destination file.

- Click **OK** to close the dialog and import the selected layer sets.

As layers sets are imported, the program checks the destination file for any layers with the same name as those being imported. If a layer in the destination file has an identical name to a layer being imported, it will be replaced by the imported layer.

Layer Set Defaults Dialog

The **Layer Set Defaults** dialog is used to specify the initial layer sets for different view types. Select **Edit> Default Settings** to open the **Default Settings** dialog, then select Layer Sets from the list and click the **Edit** button.



When a new view is created for any of the specified view types, Chief Architect sets the default layer set listed here as the active layer set for that view. Click the drop-down list to change the initial layer set for each type of view.

Select **Use Active Layer Set** to use the currently active layer set for the new view when it is created.

Click the **Define** button to open the **Layer Display Options** dialog and change the layer settings for the layer set. See “Layer Display Options Dialog” on page 148.

Chapter 6:

Creating Objects

There are a wide variety of objects in Chief Architect that you can use to create complete 3D models and working drawings. Although these objects are sometimes very different from one another, the methods used to create them are similar.

Once an object is created, it can be selected and edited to meet the requirements of your project. The editing characteristics common to most objects are described elsewhere. See “Editing Objects” on page 175.

Chapter Contents

Architectural vs CAD Objects

There are two broad categories of objects in Chief Architect: architectural objects and CAD objects.

CAD objects such as lines, arcs, text, and dimensions are 2D objects that can be created and edited in floor plan view, and cross section/elevation views, CAD detail windows, and on layout pages but do not display in 3D camera views and overviews. See “The CAD Drawing Tools” on page 1043.

In contrast, architectural objects such as walls, cabinets, doors, windows, and stairs display in 2D and 3D views. Architectural objects can be created and edited in 2D and 3D views but not in CAD Detail windows or on layout pages.

Some architectural objects, such as custom countertops and slabs, have some behaviors in common with CAD objects and are referred to as CAD-based.

Defaults and Preferences

The ways that objects in the program behave as they are created and edited are affected by a number of default and preference settings. See “Preferences and Default Settings” on page 71.


It is a good idea to be familiar with these options and how they affect both drawing and editing in the program.

Snap Settings


Select **Edit> Snap Settings** to access the three categories of Snap Settings that determine how objects snap to one another and whether they snap to allowed angles or to points on a grid, as well as object bumping and pushing behaviors.


Object Snaps enable snapping to objects. See “Object Snaps” on page 160.


Angle Snaps enable snapping at Allowed Angles. See “Angle Snaps” on page 162.


Grid Snaps enable snapping to the Snap Grid. See “Grid Snaps” on page 164.


Bumping/Pushing enables bumping and pushing behaviors. See “Bumping/Pushing” on page 218.

Edit Behaviors


Select **Edit> Edit Behaviors** to access the six global edit behavior modes that determine how dragging the edit handles with the left mouse button affects a selected object and may also affect how objects are drawn.


The **Default** edit behavior provides the most commonly used editing options. See “Default” on page 176.

The **Alternate** edit behavior provides an alternative to the Default behaviors that may be more useful in some situations. See “Alternate” on page 177.

The **Move** edit behavior allows you to move a selected object using the corner handles and the Move handle. See “Move” on page 177.

The **Resize** edit behavior scales an object as you drag a corner handle. See “Resize” on page 178.

The **Concentric** edit behavior allows you to resize objects so that the distance moved by each edge is the same as all other edges. See “Concentric” on page 178.

The **Fillet** edit behavior allows you to add a fillet at any corner of an object. See “Fillet” on page 180.

Edit Object Parts

Select **Edit> Edit Behaviors> Edit Object Parts** to toggle the ability to edit the individual segments of polyline-based objects and connected walls. It also affects the ability to snap line- and arc-based objects together as they are drawn to form a polyline. See “Edit Object Parts” on page 182.

Rotate/Resize About

Objects can be rotated or resized about either their own centers or the Current CAD point. See “Point Tools” on page 1044.

Specify which behavior is used by selecting **Edit> Edit Behaviors> Rotate/Resize About Current Point**  or in the **Preferences** dialog. See “Behaviors Panel” on page 111.

Arc Creation Modes

Select **Edit> Arc Creation Modes** to access the five Arc Creation Modes that control how arcs and curved walls are drawn.

Free Form Arc mode allows you to define an arc by clicking and dragging along the desired path. See “Free Form Arc” on page 1057.

Center/Radius/End Arc mode allows you to define the center and radius of an arc, and then its length. See “Center/Radius/End Arc” on page 1057.

Start/End/On Arc mode allows you to define the start and end points of an arc, then adjust the curvature. See “Start/End/On Arc” on page 1057.

Start/Tangent/End Arc mode allows you to define the start and end points of an arc, its tangent and its curvature. See “Start/Tangent/End Arc” on page 1057.

Arc About Center mode allows you to draw an arc by defining the center and then the start and end points. See “Arc About Center” on page 1058.

Snap Behaviors

There are three categories of snap behavior in Chief Architect that affect how objects are created and how they can be edited:

- **Object Snaps** , which snap CAD and architectural objects to other objects.
- **Angle Snaps** , which snap objects at specific angles.
- **Grid Snaps** , which snap objects to points on a grid.

Snap behaviors can be controlled in the **Preferences** dialog and in the **Plan** or **Layout Defaults** dialogs. See “Snap Properties Panel” on page 113 and “General Plan Defaults Dialog” on page 86.

You can select **Edit> Snap Settings** to quickly turn Object, Angle and Grid Snaps on or off.

To temporarily disable Snap Behaviors and other move restrictions, press the Ctrl key while dragging an edit handle. See “Moving Objects” on page 217.

Hotkeys

You can also temporarily enable individual Snap Behaviors during a mouse editing operation using hotkeys. This can be helpful if you wish to use one particular type of snap behavior when you begin an operation, but a different behavior when you end it.

The Snap Behavior hotkeys are listed on the right side of the **Edit> Snap Settings** submenu. See “Hotkeys” on page 138.

To use snap behavior hotkeys

1. Select **Edit> Snap Settings** and toggle off the snap behavior category that you wish to control using hotkeys.
2. Select a tool that you wish to draw with or an object you wish to edit.
3. Begin drawing or editing and hold down the left mouse button without releasing.
4. Press and hold the appropriate key on your keyboard to enable the snap behavior associated with it.
5. When you are finished using the snap behavior, release the hotkey but continue holding down your left mouse button.
6. If you wish, you can press and hold a different hotkey on your keyboard and continue the drawing or editing operation.
7. When you are finished, release the left mouse button.

Object Snaps

Object Snaps allow you to position objects precisely relative to each other; for example, to position lines so that their endpoints meet or roof plane edges so that they are colinear.

Object Snaps can be turned on or off by selecting **Edit> Snap Settings> Object Snaps**, by clicking the toggle button, or in the **Preferences** dialog. See “Snap Properties Panel” on page 113.

Object Snaps are indicated visually as you create or edit objects. To remove any object snap indicators that are visible on screen, press the 1 (one) key. As you continue drawing or editing, new indicators may appear.

With the exception of **On Object** snaps, Object Snaps have priority over all other types of snapping in Chief Architect.

Bumping/Pushing overrides Object Snaps, however. See “Bumping/Pushing” on page 218.

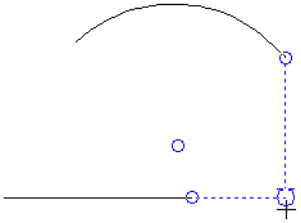
Object Snap Locations

There are many locations on an object that other objects can snap to. In addition to snap points located on objects, Extension Snaps locate points away from objects. Each type of object snap can be toggled by selecting **Edit> Snap Settings** or in the **Preferences** dialog. See “Snap Properties Panel” on page 113.

Regardless of which Object Snaps are active, when multiple objects are selected the selection set’s only snap point is its midpoint.

Extension Snaps

For some operations, it is helpful to snap to a point far away from an original object, while maintaining a relationship to a point on that object. For example, you may want to snap to a point exactly perpendicular to a line’s endpoint. Extension Snaps are helpful in these situations.



Extension anchors and lines

Extension Snaps are indicated by extension anchors, indicated by small blue circles.

Anchors display for Endpoint, Midpoint, and Quadrant snaps when these snap behaviors are enabled.

When an anchor is established, you can create **Tangent**, **Perpendicular** and **Orthogonal** extension lines relative to it.

To use extension snaps

1. Toggle on **Object Snaps** and make sure the extension snaps are enabled.
2. Draw a **Rectangular Polyline**.
3. Select the **Draw Line** tool and move your pointer along the edges of the poly-line.
4. When your pointer passes over an end-point or midpoint, an extension anchor is created.
5. Move your pointer perpendicular edge displaying the anchor to create a blue, dashed extension line.

Only a limited number of anchors can exist at one time; creating a new anchor removes the

oldest existing anchor. You can specify the number of possible anchors in the **Preferences** dialog. See “Snap Properties Panel” on page 113.

Wall Intersection Extension Snaps

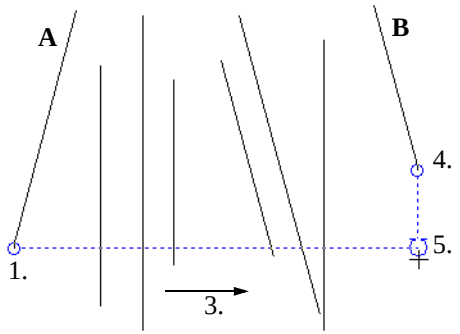
As walls are drawn, extension lines identify points that are either collinear or orthogonal to the end points of other walls. These extension lines identify potential intersection points and display only when **Intersection Snaps** are enabled. See “Drawing Walls” on page 270.

Object Snaps Hotkeys

- Press the “1” key to clear out all current extension anchors.
- Hold down the “S” key to temporarily disable Object Snaps. You are still able to use Extension Snaps to existing anchors, so the “S” key can be used to avoid picking up unwanted extension anchors.

The “S”Key - Case Study

In the following example, there are several lines. Suppose we want to start a line at the intersection of two orthogonal extension lines drawn from two lines, **A** and **B**. To establish an extension anchor, we need to drag the mouse over line **A**’s endpoint, but there are several lines between the endpoints of lines **A** and **B**. We need to establish the two extension anchors without snapping to the intervening objects.



The S key can help establish extension snaps when other objects may interfere

To establish two extension anchors

1. Drag the mouse over the endpoint for line **A** to establish the first endpoint anchor.
2. Temporarily disable object snapping by holding down the “S” key.
3. Move the mouse to the end of line **B**.
4. Release the “S” key to establish the second endpoint anchor.
5. Move the mouse to the intersection of the two extension lines and draw the new object.

Angle Snaps

It is often important that objects be drawn at exact angles. This can be accomplished using **Angle Snaps**. Angle Snaps allow you to draw walls, lines, and other objects at specified Allowed Angles. Angle Snaps also affect the way objects rotate, the radius of arcs, and a variety of other operations.

You can specify whether Angle Snaps use 15° increments or 7.5° increments plus any additional Allowed Angles that you may specify. See “General Plan Defaults Dialog” on page 86.

Angle Snaps can be turned on or off by selecting **Edit> Snap Settings> Angle Snaps**, by clicking the toggle button, or in the **Preferences** dialog. See “Snap Properties Panel” on page 113. When Angle Snaps are disabled, the Angle Snaps icon will display near the mouse pointer.

Angle Snap Settings

You can change Allowed Angle settings for Angle Snaps in the **Plan Defaults** or **Layout Defaults** dialog. See “General Plan Defaults Dialog” on page 86.

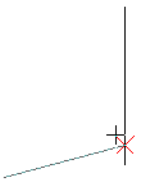
Specify **15 Degree** or **7 ½ Degree** angle snaps. When **7 ½ Degree** Angle Snaps are selected, you can also specify **Additional Angles**.

Angle Snaps and Object Snaps

Angle Snaps have a higher priority than Grid Snaps and **On Object Snaps**, but a lower priority to all other Object Snaps. If a valid Object Snap exists, the program uses that instead of an Angle Snap.

Walls are an exception to this snapping prioritization. When walls are drawn or edited, Angle Snaps take higher priority than Object Snaps. See “Drawing Walls” on page 270.

Sometimes both Angle Snaps and Object Snaps apply. For example, suppose a CAD line is drawn at 15° using Angle Snaps and another line is approached. You can draw the new line at 15° using **Intersection Snaps** to snap to a point on the existing line.

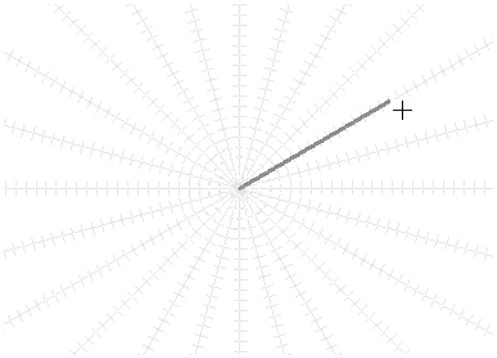


Use both Object Snapping and Angle Snapping to create a 15-degree line that intersects an existing line

Now suppose that we don't want the new line to end on the existing line. Hold down the “S” key to temporarily disable Object Snaps, allowing only Angle Snaps. See “The “S”Key - Case Study” on page 162.

Angle Snap Grid

The **Angle Snap Grid** is a visual reference aide that displays the Allowed Angles in the current plan when line-based objects are being drawn. Select **View> Angle Snap Grid** to toggle this feature on or off. The Angle Snap Grid can be also turned on and off in the **Preferences** dialog and is disabled by default. See “Snap Properties Panel” on page 113.



Drawing a line with the Angle Snap Grid on

When the Angle Snap Grid is turned on, it will display in all views where line-based objects can be drawn - including 3D views in which walls can be drawn and edited. See “Editing Line Based Objects” on page 184.

When Grid Snaps are enabled, small perpendicular hatch lines display along the lengths of the Angle Snap Grid lines, indicating the Snap Grid Unit.

Grid Snaps

Grid Snaps allow you to snap objects to points on an on-screen grid as they are created, moved, and resized. See “Moving Objects” on page 217 and “Resizing Objects” on page 226.

The display and size of this Snap Grid can be controlled in the **Plan** or **Layout Defaults** dialog. See “General Plan Defaults Dialog” on page 86.

It is recommended that you draw and position the exterior walls of your plan with **Grid Snaps** youenabled. Once these walls are in place, you may choose to turn Grid Snaps off to finish the rest of the drawing.

Grid Snaps are turned on and off by selecting **Edit> Snap Settings>Grid Snaps**, by clicking the toggle button, or in the **Plan** or **Layout Defaults** dialog.

In addition to the Snap Grid, the **Reference Grid** is provided to give you a visual sense of scale. The Reference Grid is useful for zooming in and out, or for general layout guidelines, but is not used for snapping. The Reference Grid can be toggled on and off by selecting **View> Reference Grid**. See “View Tools” on page 858.

Grid Snaps and Angle Snaps

Of the three snap behaviors, Grid Snaps have the lowest priority and are overridden by Angle Snaps and Object Snaps.

When Grid snaps and Angle Snaps are both enabled, objects are drawn and edited using Polar Coordinates. For example, if the grid **Snap Unit** is set to 12" (1 foot), drawing a

new wall at an Allowed Angle snaps the wall length to 0", 12", 24", and so on. The Angle Snap Grid illustrates this nicely: when Grid Snaps are enabled, small perpendicular hatch lines display along the lengths of the Angle Snap Grid lines. These hatches are at regular intervals equal to the Snap Grid Unit, but do not necessarily align with the Snap Grid itself. See “Angle Snap Grid” on page 163.

To draw a line or wall at an Allowed Angle but with unrestricted length, disable Grid Snaps and leave Angle Snaps on.

Creating Objects

In Chief Architect, there are five ways to create objects: by clicking to place an object, by clicking and dragging to draw an object, by entering coordinates, by placing a distribution path or region, or by importing custom symbols, drawings, pictures or metafiles.

If you create an object using any of these methods and the layer it will go on is either locked or turned off, the program will ask you if you want to display or unlock the layer. Objects can be created on layers that are not set to display, but they cannot be created on locked layers. See “Object Creation and Layers” on page 168.

While the size of the drawing area in Chief Architect is limited only by the resources on your computer, it is best to begin your drawing near the origin, 0,0,0. The current position of your mouse pointer displays in the Status Bar at the bottom of the program window. See “3D Drafting” on page 29.

Click-to-Create

Many objects, including doors and windows, cabinets, library symbols, terrain objects, text, pictures and images are created by clicking. Select a or library object, then click in the drawing area to place the object at that location.

Continue clicking to place the selected object until another tool is selected.

If you click at a location where there is not enough room for the object to be placed, one of two things may happen:

- Some objects, notably cabinets, doors, and windows, will resize smaller to fit into the space.
- Most objects cannot resize in this manner, so the program will present a warning message indicating that there is not sufficient space at the current location.

When most drawing tools are active or library symbols selected for placement, a preview outline follows your mouse pointer, indicating the size and shape of the object to be created. If your pointer is positioned at a location where the object cannot be placed, this preview outline will not display.

As you move the mouse pointer, the center point of the object’s back edge will snap to active snap points when **Grid Snaps**  or **Object Snaps**  are enabled. See “Snap Behaviors” on page 160.

Many architectural objects can be created in floor plan view or any 3D view. In order to place a stand-alone, click-to-create object in 3D, it is necessary to click near a wall or within the Terrain Perimeter as these objects help orient the new object within the 3D space.

Clicking and Dragging

Other objects, including walls and railings, straight stairs, and CAD and CAD-based objects are created by clicking and dragging to define either a path or an enclosed area. Select a tool, then click and drag in the drawing area to draw an object between your start and end points.

Continue drawing the selected object until another tool is selected.

You can temporarily slow the movement of the mouse as you drag by holding down the Shift key on your keyboard..

You can cancel any click-and-drag drawing operation before it is completed by pressing the Esc key on your keyboard, or by pressing any two mouse buttons at the same time.

When the **Alternate** Alt edit behavior is active, a continuous drawing behavior is enabled, allowing you to click at the start and end points of line- and arc-based objects without dragging. See “Alternate” on page 177.

To continuously draw by right-clicking

1. Select a tool that creates line- or arc-based objects.
2. Right-click, drag, and release the mouse button to draw the first object.
3. Move the pointer to a different location and notice the drawing indicator that begins at the object’s endpoint and follows your pointer as it moves.
4. Click to create a second object beginning at the first object’s starting point and ending where you clicked.
5. Continue moving the pointer and clicking to create additional objects until:
   - Another tool is selected,
   - The Esc key is pressed,
   - Two mouse buttons are pressed at the same time,
   - The left mouse button is double-clicked,
   - A closed shape is formed.

To keep the Alternate Drawing Mode enabled when a closed shape is formed, uncheck Stop When Connected in the Preferences dialog. See “Behaviors Panel” on page 111.

Polyline- and Spline-based objects can be created by snapping multiple Line-, Arc-, and/or Spline-based objects together. These objects will only snap together to form a polyline or spline if they are on the same layer and share identical attributes such as color, line style, and arrow specifications. See “Editing Objects” on page 175.

Entering Coordinates

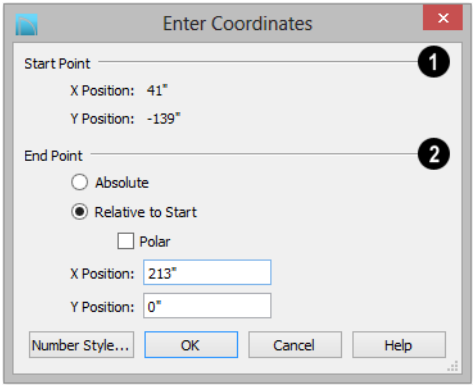
Objects created by clicking and dragging can also be drawn by entering coordinates. See “3D Drafting” on page 29.

Coordinates can be either absolute or relative. Absolute coordinates refer to a fixed point of origin at 0,0,0, while relative

coordinates treat the current location of the selected object as the point of origin.

To use the Enter Coordinates dialog

1. Select any tool that requires you to click and drag to create an object.
2. Click and begin dragging to draw the object.
3. Before you finish dragging and with the mouse button pressed, press either the Tab or Enter key on your keyboard.
4. In the **Enter Coordinates** dialog:



   - The **Start Location**, where you clicked and began dragging, displays at the top.
5. Specify the method used to define the **New Location**, or end point.
   - Select **Absolute** to define the end point using absolute coordinates on the snap grid.
   - Select **Relative to Start** to define the end point relative to the start point, as though the start point was at (0,0).
   - Check **Polar** to define the end point of the new line by its **Distance** and **Angle** from the start point rather than as X and Y coordinates.
   - The program remembers which option you last used in this dialog.
6. Specify the position of the end point, either as X and Y Position coordinates, or as Distance and Angle.
7. Click OK to close the dialog and create the object.

CAD lines, arcs and points can also be created using the **Input Line**, **Input Arc** and **Input Point** dialogs. See “Input Point” on page 1045, “Input Line” on page 1049, or “Input Arc” on page 1058.

You can also move objects using the Enter Coordinates dialog. Click and drag the Move edit handle of an existing object, then press the Tab key and proceed with steps 4 and 5. See “Moving Objects” on page 217.

Distributing Objects

You can place multiple copies of any object in an evenly-spaced array either within a region or along a path using the **Distributed Objects**  tools. See “Distributed Objects” on page 782.

Importing Objects

Custom symbols, drawings, pictures and metafiles can be imported into the program and placed in the drawing area with a click. See “Importing and Exporting” on page 1133 and “Pictures, Images, and Walkthroughs” on page 1101.

Converting Objects

A variety of objects can be created by converting existing CAD objects and many

CAD-based objects into another type of object. See “Converting Objects” on page 235.

Object Creation and Layers

When it is created, every object is placed on a layer which controls whether and how it displays. See “Layers” on page 143.

If you try to create an object on a layer that is not set to display in the current view, the program will ask if you want to turn that layer on. See “Message Boxes” on page 40.

- Click **Yes** to create the object and turn on its layer in the current view.
- Click **No** to create the object but leave its layer turned off in the current view.
- Click **Cancel** to not create the object and leave the layer turned off.

If you try to create an object on a layer that is locked, the program will prompt you to unlock the layer. If you choose to leave the layer locked, the object will not be created. See “Locking Layers” on page 145.

Similarly, if you try to insert an object into another object that is on a locked layer, nothing will be created. See “Inserted Objects” on page 815.

Copying and Pasting Objects

New objects can also be created by cutting, copying, and pasting existing objects, either individually or in groups. Objects can be copied from one floor to another, one view window to another, and one file to another. Because copying uses the Windows Clipboard, some objects can be pasted into other applications, as well.

> ⚠ Objects created in an Imperial plan or layout should not be pasted into a metric file, or vice versa. See “Units of Measurement” on page 53.

Objects cannot be pasted into any views that they cannot be created in normally. For example, CAD objects cannot be pasted into a 3D camera view or overview, while Architectural objects cannot be pasted into a CAD Detail window or onto a layout page.

If an object on a custom layer or one that inherits properties from a Saved Dimension Default or Saved Text Style is pasted into a different plan or layout file:

- That Saved Default, Text Style, or layer will be created in the destination file if it does not already exist.
- If a Saved Default, Text Style, or layer with the same name does exist in the destination file, the object will inherit its attributes from the existing settings.

See “Multiple Saved Defaults” on page 75 and “Layers” on page 143.

A few objects, such as Terrain Perimeters and camera symbols, cannot be copied.

Cut

Select **Edit> Cut** to remove the selected object(s) from the file and save them in the Windows Clipboard. To paste the selection in Chief Architect or another application, select **Edit> Paste** or

press **Ctrl + V** while in that application to enable the Paste function.

Copy

Select **Edit> Copy** to copy the selected object(s) to the Windows Clipboard. To paste the selection in Chief Architect or another application, select **Edit> Paste** or press **Ctrl + V** while in that application to enable the Paste function.

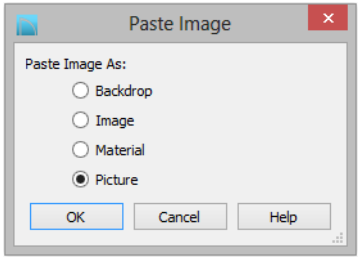
Paste

Select **Edit> Paste** to enable Paste mode, then left- or right-click in the current view to paste the selected object(s) previously copied to the Windows Clipboard at that location.

Once pasted, these object(s) are selected. Objects pasted in 3D views are selected on their top surfaces.

If the selection being pasted consists of text, it is placed in a Text object.

If the selection being pasted is an image, the **Paste Image** dialog opens.



The options in the **Paste Image** dialog and their results are similar to those in the **Screen Capture Setup** dialog. See “Creating Screen Captures” on page 1121.

Copy/Paste

Click the **Copy/Paste** edit button to copy the selected object(s) to the Windows Clipboard and immediately enable the **Paste** function in Chief Architect.

The **Copy/Paste** edit button activates Paste mode in which each available edit tool and handle makes a copy in addition to its primary function and four new edit buttons display on the edit toolbar.

- Click the **Sticky Mode** edit button remain in the current mode and place multiple copies of the selected object(s).
- Click the **Point to Point Move** edit button to make a copy of the selection at a specific location. See “Point to Point Move” on page 219.
- Click the **Reflect About Object** edit button to make a copy of the selection reflected about another object. See “Reflect About Object” on page 234.
- Click the **Main Edit Mode** edit button or press the Esc key to return to the selected objects’s main edit toolbar.

If you paste a selection in a file other than its original source file, when you return to the original, Paste mode is still enabled.

The **Copy/Paste** edit button can be used with the edit handles in either of two ways: by clicking or by dragging an edit handle.

To Copy/Paste by clicking

1. Select an object or objects to copy.

2. Click the **Copy/Paste** edit button, select **Edit> Copy** from the menu or press **Ctrl + C** to copy and then **Ctrl + V** to activate the Paste functionality. The cursor displays the Copy/Paste icon.
3. If you wish to paste the copy in a different view or program window, open that window.
4. If your cursor does not display the Copy/Paste icon, select **Edit> Paste** from the menu or press **Ctrl + V**.
5. Left- or right-click once to paste a copy of the object at that location.

To Copy/Paste by dragging

1. Select an object or objects to copy.
2. Click the **Copy/Paste** edit button, select **Edit> Copy** from the menu or press **Ctrl + C**. The cursor displays the Copy/Paste icon.
3. Drag an edit handle:
   - Drag the Move edit handle to position the copy at a new location.
   - Drag a corner handle to create a copy in the same location but with a different size or shape. The result depends on which **Edit Behavior** you use. See "Edit Behaviors" on page 176.

Use the Concentric edit behavior to create concentric copies of CAD-based objects. See "To create setback lines" on page 187 of the User's Guide for an example.

4. You can resize or position the copy accurately with respect to the original by watching the moved distance in the Status Bar at the bottom of the screen.

Sticky Mode

Normally, after an action is performed using the edit tools or handles while in an edit mode such as Paste mode, you return to the Main Edit Mode. Click the **Sticky Mode** edit button to remain in Paste mode and continue pasting copies of the selected object(s).

To exit Paste mode and return to the main edit toolbar for the selected object, click the **Main Edit Mode** edit button or press the Esc key on your keyboard. If you have not pasted a copy of the selected object and immediately click **Copy/Paste** after returning to the Main Edit Mode, **Sticky Mode** is still enabled.

Sticky Mode is available when the Trim Object(s), Extend Object(s), Copy/Paste or Multiple Copy edit button is clicked. See "Trim and Extend" on page 240.

Copy and Paste in Place

Click the **Copy and Paste in Place** edit button to create a copy of the selected object(s) at the same location as the original. The copy remains selected so you can perform additional operations.

Because multiple walls, railing and fencing cannot share the same space, the **Copy and Paste in Place** edit button is not available for these objects.

Paste Hold Position

When copying between different floors or view windows, you can paste a copy at the same absolute position as the original selection using **Paste Hold Position**.

To use Paste Hold Position

1. Select the object(s) to be copied.
2. Click the **Copy/Paste** edit button.
3. Switch to the desired floor or plan file and select **Edit> Paste> Paste Hold Position**.
4. A copy is placed at the same X, Y coordinates on the new floor or in the new plan as the original's position.

Paste Special

The **Paste Special** tool allows you to choose a representation for the selection to be pasted.

Selections can be pasted as:

- Enhanced Windows Metafiles (EMF). See "Metafiles" on page 1112.
- Device Independent Bitmaps (BMP). See "Importing Pictures" on page 1109.
- Unformatted non-unicode text (TXT).
- File Name (a path to a file). Depending on the file type, it will be either opened or imported (if supported).
- Unformatted text (HTML). Pastes as text.
- Model Objects - Chief Architect format, not compatible with other programs.

To use Paste Special

1. Select an object, image, text or file on your computer and copy it.
2. Switch to the desired Chief Architect view window and select **Edit> Paste> Paste Special**.
3. In the **Paste Special** dialog, select the desired representation for the selection and click OK.
4. Click in the drawing area to place the copy at that location.

Multiple Copy

`The **Multiple Copy** edit button makes it easy to create regularly spaced or concentric copies of any object or group of objects, including CAD Blocks and Architectural Blocks.

The copy intervals, or offsets, between copies can be specified in the **Multiple Copy** dialog. See "Multiple Copy Dialog" on page 172.

To use Multiple Copy

1. Select the object(s) to copy.
2. Click the **Multiple Copy** edit button.
3. Click the **Sticky Mode** edit button if you wish to make more than one set of multiple copies.
4. Three edit handles will display on the selected object.
   - Click and drag the square Move edit handle. Copies of the selection are made at regular intervals between the original and the pointer's location.

- Click and drag the triangular Rotate edit handle. Rotated copies of the selection are made at regular intervals.

A rotated array can be rotated about the selected object's center or a CAD point. See "Rotate/Resize About" on page 159.

- Click and drag the round Concentric Resize edit handle. Concentric copies of the selection are made at regular intervals either within or surrounding the selection. Line-based objects are copied in an array perpendicular to the selection but are not resized.

5. Release the mouse button to place the copies. The dragged distance determines the number of copies placed.
6. If you clicked the **Sticky Mode** edit button, you can drag the last object created to make additional copies.
7. Click the **Main Edit Mode** edit button or press the Esc key to return to the selected objects's main edit toolbar.

The **Multiple Copy** tool can be used with the **Alternate** edit behavior to create arrayed copies of objects. See "Alternate" on page 177.

To create an array of copies

1. Select the object(s) to copy.
2. Click the **Multiple Copy** edit button.
3. Right-click to enable the **Alternate** edit behavior and drag the either Move or the Rotate edit handle in any direction. The **Primary Offset** or **Primary Number of Copies** is used.
4. Release the mouse button and move the pointer in another direction. The **Secondary Offset** or **Secondary Copies** value is used.
5. Click the left or right mouse button to place the array of copies.

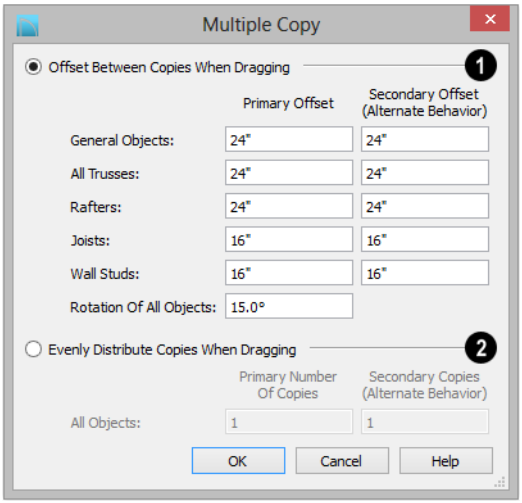
Multiple Copy Dialog

Separate multiple copy intervals can be specified for:

- General objects
- Roof and floor trusses
- Rafters
- Floor and ceiling joists
- Wall studs

To set the copy intervals for these objects, click the **Multiple Copy** button, then click the **Multiple Copy Interval** button to open the **Multiple Copy** dialog.

The specified intervals are retained between program sessions.



1 Click the **Offset Between Copies When Dragging** radio button to specify the offsets, or copy intervals, at which objects are copied as you drag with the mouse.

- **Primary Offset** - Specify the offset, or copy interval, for each object type.
- You can also specify a **Secondary Offset** for each object type that is used when the **Alternate** Alt edit behavior is active. See “Alternate” on page 177.
- **Rotation Of All Objects** - Specify the copy interval, in degrees, to be used when objects are rotated as they are copied.

2 **Evenly Distribute Copies When Dragging** - Click this radio button to specify a set number of copies to be made as you drag with the mouse. The further you drag, the wider the spaces between the copies. These settings apply to all object types.

- **Primary Number of Copies** - Specify the number of copies to be made.
- **Secondary Copies** - Specify the number of copies to be made when the **Alternate** Alt edit behavior is active.

The intervals for automatically generated rafters, joists, and studs are set on their respective panels in the Build Framing dialog. See “Build Framing Dialog” on page 569

Using the Transform/ Replicate Object Dialog

Objects and groups of objects can be copied and pasted using the **Transform Replicate Object** dialog. See “Transform/Replicate Object Dialog” on page 238.

Copy Region as Picture

The **Copy Region as Picture** tool allows you to copy any portion of the

screen and save it as a picture. See “Copy Region as Picture” on page 1120.

Using Point to Point Move

The **Point to Point Move** edit button can be used in combination with **Copy/Paste**  to make a copy of the selected object(s) at a specified location. See “Point to Point Move” on page 219.

To point to point copy

1. Select the object(s) to be copied, click the **Copy/Paste**  edit button, then the **Point to Point Move**  edit button.
2. Click at the start point and then at the end point.
3. An exact copy of the selected object(s) is created at the end point while the original remains unchanged.

Using Reflect About Object

The **Reflect About Object** edit button can be used in combination with **Copy/Paste**  to make a reflected copy of the selected object(s), much the way **Point to Point Move**  can. See “Reflect About Object” on page 234.

Chapter 7:

Editing Objects

Just as the methods used to create different objects in Chief Architect are similar, the options for moving, rotating, resizing, and otherwise editing them are also alike.

Edit handles allow objects to be resized, relocated, or rotated using the mouse. Edit toolbar buttons and the contextual menus access edit tools relevant to the selected object(s). Most objects have a specification dialog that allows you to edit it in ways that are specific to that type of object.

The editing characteristics common to most objects are described in this chapter. Unique, object-specific editing behaviors and the specification dialogs are covered in their respective chapters.

Chapter Contents

Defaults and Preferences

The same defaults and preference settings that affect how objects are drawn also influence how they can be edited. See “Defaults and Preferences” on page 158.

It is a good idea to be familiar with these options and how they affect drawing and editing in the program.

Edit Behaviors

There are six **Edit Behavior** modes that determine how edit handles affect an object, and may also affect how objects are drawn. The currently active edit behavior is a global preference setting, affecting all plan and layout files.

Two of these modes, **Default** and **Alternate**, are useful for most drawing and editing needs and can be considered primary editing modes. Default mode, in particular, accesses the most commonly used behaviors and is the best choice in most circumstances. When an Edit Behavior other than Default is active, its icon displays near the mouse pointer.

Note: Regardless of which Edit Behavior is active, the Default behavior is restored when you close the program.

The other four modes, **Move**, **Resize**, **Concentric** and **Fillet**, offer special editing behaviors that may be useful only in certain situations and can be considered secondary.

Each edit behavior can be temporarily enabled using the different buttons on your mouse or by pressing the keyboard keys associated with each. See “Using the Mouse” on page 31 and “Hotkeys” on page 138.

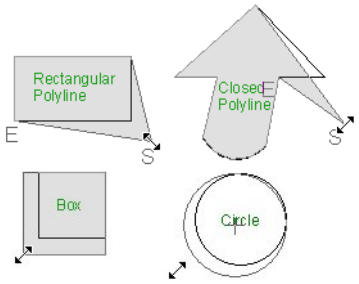
You can also specify which edit behavior mode is active when the left mouse button is used in the **Preferences** dialog, by selecting **Edit> Edit Behaviors**  , or by clicking the corresponding toggle button, which can be added to your toolbar. See “Behaviors Panel” on page 111.

Default

The **Default** mode is one of the primary edit behavior modes. It offers access to the most commonly used edit behaviors and should be selected as your preference in most situations.

When the use of a tool is described in this manual, it is assumed that the Default edit behavior mode is active.

- **Drawing -** Standard click and drag drawing behavior is enabled. See “Creating Objects” on page 165.
- **Resize/Reshape** - Default allows you to adjust the angle of any corner of a poly-line without affecting adjacent corners, changing the object’s shape.



Default edit behavior

- For box-based objects, the Default mode functions the same as the Alternate mode.
- **Movement** - Default allows you to move objects orthogonal, or at a right angle, to any of their edges.
- **Rotation** - In Default mode, objects snap at Allowed Angles as they are rotated.

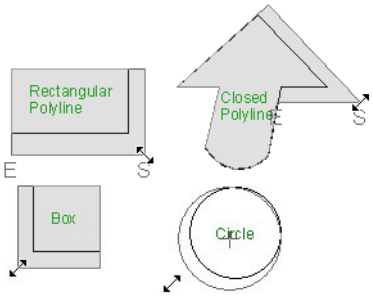
You can temporarily enable the **Default** edit mode when another mode is active by pressing **Alt + Z** or **Alt + /** while performing an edit or drawing operation.

Alternate

The **Alternate** mode is the second primary edit behavior mode. When this mode is active, the Alternate Alt icon displays near the mouse pointer.

> Note: Not all commands have an Alternate edit behavior. If a selected tool does not, it will not work when this edit mode is active.

- **Drawing -** Continuous drawing behavior is enabled. See “Clicking and Dragging” on page 166.
- **Resize/Reshape** - Alternate allows you to keep the angle between adjacent edges fixed when a corner edit handle is moved. Instead, adjacent corners move and adjacent edges lengthen or shorten.



Alternate edit behavior

- Alternate allows you to drag an end handle on an open polyline to change it from a line to an arc or vice versa.
- Alternate overrides the **Lock Center** setting of arc-based objects.
- **Movement** - Alternate allows you to move objects at Allowed Angles when **Angle Snaps** are enabled, or orthogonal to any of its edges when they are not. See “Angle Snaps” on page 162.
- **Rotation** - Alternate snaps objects at Allowed Angles as they are rotated.

You can temporarily enable the **Alternate** edit mode when another mode is active by pressing **Alt** or using the right mouse button while performing an edit or drawing operation.

Move

The **Move** mode allows you to move an object using edit handles that would otherwise be used for resizing, as well

as with the Move handle. When this mode is active, the Move icon displays near the mouse pointer.

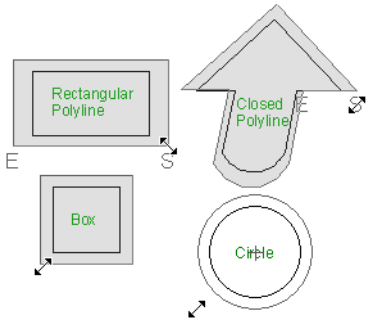
- **Drawing -** Standard click and drag drawing behavior is enabled.
- **Resize/Reshape** - Move allows you to move the selected object when any edit handle is used.
- **Movement** - Move mode allows you to move objects at Allowed Angles.
- **Rotation** - In Move mode, objects snap at Allowed Angles as they are rotated.

You can temporarily enable the **Move** edit mode when another mode is active by pressing **Z** or **/** while performing an edit or drawing operation.

Resize

The **Resize** edit behavior allows you to rescale an object. As you drag a corner edit handle of an object, you get an exactly scaled version of the original. For example, you can resize an object to 50% of its original size while maintaining the same proportions. When this mode is active, the Resize icon displays near the mouse pointer.

- **Drawing -** Standard click and drag drawing behavior is enabled.
- **Resize/Reshape** - Resize allows you to keep the angle between adjacent edges fixed when a corner handle is moved.



Resize edit behavior

To proportionally resize an object, always drag a corner edit handle and not an edge handle.

- **Movement** - Resize allows you to move an object orthogonal, or at a right angle, to any of its edges.
- **Rotation** - In Resize Mode, objects snap at Allowed Angles as they are rotated.

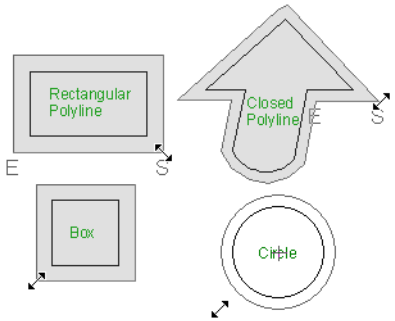
You can temporarily enable the **Resize** edit mode when another mode is active by pressing **X** or the period key, or using the X2 button on a five-button mouse while performing an edit or drawing operation. See “Using the Mouse” on page 31.

Concentric

The **Concentric** mode allows you to resize objects so that the distance moved by each edge is the same. For example, you can resize an irregularly shaped polyline so that each edge is exactly ten feet in from the original position, which is useful for creating site plans with setbacks.

When this mode is active, the Concentric icon displays near the mouse pointer.

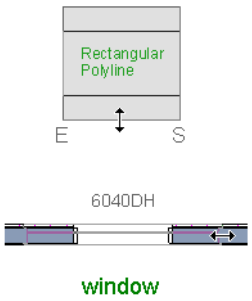
- **Drawing** - Standard click and drag drawing behavior is enabled.
- **Resize/Reshape** - Concentric allows you to resize an irregularly-shaped polyline so that each edge is moved the same distance from its original location.



Concentric edit behavior

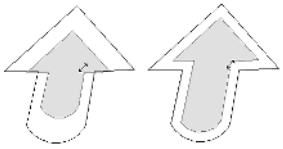
Note: The Concentric edit behavior can be used to create concentric copies of CAD-based objects. See “To create setback lines” on page 187 of the User’s Guide.

- Concentric mode also allows you to move opposite edges of an object so that each edge is moved the same distance from its original location.



- **Movement** - Concentric mode allows you to move an object orthogonal, or at a right angle, to any of its edges.
- **Rotation** - In Concentric mode, objects snap at Allowed Angles as they are rotated.

In some cases, the Concentric and Resize edit behaviors have the same result, such as when a circle is resized. Usually, though, the two behaviors are different because concentric resizing does not maintain the original ratio between an irregular polyline’s edges.



Resize edit behavior *Concentric edit behavior*

In Concentric mode, objects resize in **Concentric Jump** increments specified in the **Preferences** dialog. See “Behaviors Panel” on page 111.

When the **Concentric Jump** distance is set at 0", objects resize according to the **Snap Unit** specified in the **Plan Defaults** dialog. See “Grid Snaps” on page 164.

To concentrically resize an object with no restrictions, set the Concentric Jump value on the Edit> Behaviors panel of the Preferences dialog to zero and turn off Grid Snaps.

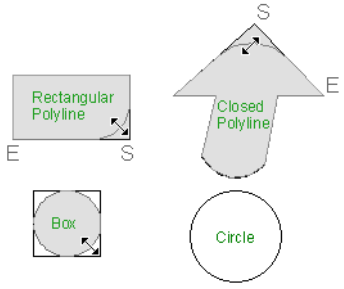
You can temporarily enable the **Concentric** edit mode when another mode is active by pressing **C** or the comman

key, or using the X1 button on a five-button mouse while performing an edit or drawing operation. See “Using the Mouse” on page 31.

Fillet

The **Fillet** mode allows you to add a fillet, or curve, at any corner of an object. Dragging a corner edit handle adjusts the fillet radius at that corner. When this mode is active, the Fillet icon displays near the mouse pointer.

- **Drawing -** Standard click and drag drawing behavior is enabled.
- **Resize/Reshape** - Fillet allows you to create a fillet at by dragging a corner edit handle inward.



Fillet edit behavior

- **Movement** - Move mode allows you to move objects at Allowed Angles.
- **Rotation** - In Move mode, objects snap at Allowed Angles as they are rotated.

The **Fillet** edit behavior adjusts all the corners of a box at once. The radius of each corner is the same.

Fillet does not have an effect on circles, ovals, ellipses or arc segments.

You can temporarily enable the **Fillet** edit mode when another mode is active by pressing **F** while performing an edit or drawing operation.

To produce fillets or chamfers of an exact radius, set the Fillet Chamfer Radius and use the Fillet two Lines or Chamfer Two Lines edit button. See “Fillet Two Lines” on page 229 and “Chamfer Two Lines” on page 230.

Selecting Objects

“Select” refers to selecting an object for editing. An object must be selected before it can be edited.

In order for an object to be selected, it must be both unlocked and visible in the current view. See “Layers” on page 143.

When an object is selected, it displays edit handles and a selection fill color. See “Colors Panel” on page 92.

In 3D views, a selected object will also display lines representing the selected edge or surface. The size of the edit handles does not change as you zoom in or out and is set in

the **Preferences** dialog. See “Edit Panel” on page 110. To prevent them from stacking on one another, some edit handles may not display as you zoom away from the selected object.

When an object is selected, its edit toolbar also displays, typically at the bottom of the Chief Architect program window just above the Status Bar. See “The Edit Toolbar” on page 35.

Information about the selected object or objects may also display in the Status Bar. See “The Status Bar” on page 39.

A selected object remains selected until another object is selected, a different tool is activated, the Esc key on the keyboard is pressed, or any two mouse buttons are pressed at the same time.

Select Objects

With the exception of temporary CAD points, any object created using Chief Architect can be selected using the **Select Objects** tool. Select **Edit> Select Objects**, click the toolbar button or press the **Space** bar on your keyboard to activate this tool, then click on an object or its label to select it. See Object Labels.

You can also select objects or open context sensitive menus using the right mouse button when any tool is active.

By default, you can select an object by clicking within 12 pixels of it. You can adjust this distance by changing the **Snap Distance** in the **Preferences** dialog. A lower value, for example, can be helpful for working with small objects but can also make it very difficult to select larger objects. See “Snap Properties Panel” on page 113.

Selecting Similar Objects

If a tool other than **Select Objects**  is active, you can only select objects of that type using the left mouse button. For example, if the **Straight Exterior Wall**  tool is active, you can only select walls using the left mouse button.

This can be useful for selecting an object when many objects of a different type occupy the same space in floor plan view.

Objects can be selected using the right mouse button, regardless of which tool is active.

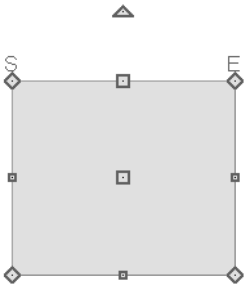
Right-Clicking

Regardless of which tool is active, you can select an eligible object by right-clicking on it once. When you right-click to select an object a contextual menu also appears, displaying the object’s edit tools. You can turn contextual menus on or off in the **Preferences** dialog. See “Contextual Menus” on page 36.

If a drawing tool is active and you right-click to select an object, you can unselect it by left-clicking in an empty space in the drawing area. Although a drawing tool is active, it is not used. If you then left-click a second time, the active tool will be used.

Selected Edge

When you click on a polyline- or box-based object, the edge that you click nearest becomes the selected edge and displays an edit handle larger than those on other edges. The handle on this edge may also display at the point where you clicked to select it.



Selected edge with start and end indicators

This edge can be edited on the Selected Line or Selected Arc panel of the object's specification dialog, as well as using a variety of edit toolbar buttons. It can also be moved using dimensions. See "Moving Objects Using Dimensions" on page 989, "Line Panel" on page 1052 and "Arc Panel" on page 1061.

The Start and End points of a CAD-based object's selected edge or of a wall can be indicated by an S and an E when the object is selected. These Start and End indicators can be helpful when editing the selected edge in the object's specification dialog, and their display can be turned on and off in the **Preferences** dialog. See "Edit Panel" on page 110.

Edit Object Parts

Polyline-based objects are composed of lines and arcs that are connected end to end. The individual edges of open and closed polylines can be selected and edited independently of the object's other edges when **Edit Object Parts** is enabled.

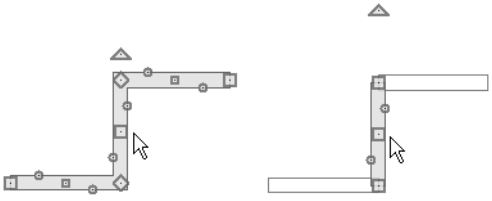
Select **Edit> Edit Behaviors> Edit Object Parts** to enable or disable the ability to edit polyline segments individually. **Edit Object Parts** can also be turned on or off in the **Preferences** dialog. See "CAD Panel" on page 108.

Edit Object Parts also affects connections between walls, railings and fences, but does not affect Walkthrough Paths or closed polyline CAD-based objects such as slabs and roof planes.

To use Edit Object Parts

1. Turn on **Edit Object Parts**. Your cursor will display the Edit Object Parts icon.
2. Click on an individual edge of a polyline, or a segment of wall, railing or terrain path to select it.

A selected Terrain Wall



Edit Object Parts off *Edit Object Parts on*

3. Notice that it is no longer connected to the rest of the polyline or adjacent walls.
4. The individual segment can now be edited entirely independent of its neighbors.
5. To connect the segment to the polyline again, turn off **Edit Object Parts** and move the end handles so that they snap to the ends of adjacent segments.

When **Edit Object Parts** is enabled, only objects that you click on are actually affected by it. Any objects that you do not select remain intact.

Note: Edit Object Parts is always reset to be off when you close the program.

Select Next Object

If there is more than one object in a particular space, it may be difficult to select the desired object. When a nearby object is selected, click the **Select Next Object** edit button or press the Tab key until the desired object becomes selected. This function cannot be applied to groups of selected objects.

Marquee Select

Groups of objects can be selected by holding down either the Shift or Ctrl key when the **Select Objects** tool is active and then dragging a marquee around the objects to be selected.

You can specify whether objects must be totally contained in or intersected by the marquee, or whether an object's center point must be contained in the marquee, in the **Preferences** dialog or using the **Selection Mode** buttons, which can be added to your toolbars. See "Edit Panel" on page 110.

If an object is currently selected and a selection marquee is drawn around it, that object becomes de-selected. If an object is currently selected and a marquee is drawn around other objects, the original object remains selected and the other objects are added to the selection set.

When using the marquee-select method, both CAD and architectural objects included in the marquee are selected. To remove an object from the selection set, hold down the Shift key and click it.

The Shift key can also be used to marquee-select objects of a similar type. For example, click the **Hinged Door** child button, hold down the Shift key, drag a marquee, release the mouse button, and only door objects within the marquee are selected. The Ctrl key will always marquee-select objects of all types, regardless of the active tool.

To make marquee selection easier, you can turn off the display of objects you do not want to include in your selection set. See "Displaying Objects" on page 144.

Shift and Ctrl Select

You can select a group of objects by adding them to the selection set one by one. Select an object, hold down either the Shift or Ctrl key, and click additional objects to select them.

More than one type of object can be selected using this method, but the ability to edit the group-selected items is limited to attributes that all selected objects have in common.

To remove an object from a selection set, click it once more - again, with either the Shift or Ctrl key pressed.

The Shift and Ctrl keys can be used to select multiple items in a variety of contexts, such as: the Library and Project Browsers, lists in dialog boxes, and files to be imported.

Select All

Select **Edit> Select All** to select all objects drawn on the current floor, in the current cross section/elevation view or CAD Detail window, or on the current layout page.

Edit Area Tools

The **Edit Area Tools** allow you to define an area of your plan and select the objects within that area for editing. See "Edit Area Tools" on page 246.

Using a Fence

The **Fence Select** edit tool allows you to group-select multiple CAD and CAD-based objects in contact with the selected CAD line, arc, polyline or spline.

Using a Fence to make a group-selection can be helpful in a number of situations, for example:

- When many CAD objects must be selected, particularly when they occupy the same area.
- When a selection marquee would be the wrong shape or include too many objects.
- When a selection group needs to be selected more than once.

The **Fence Select**  edit tool cannot be used to select architectural objects - only CAD and CAD-based objects. See "Architectural vs CAD Objects" on page 158.

Fences are often used with the **Trim Objects**  and **Extend Objects**  edit tools. See "Trim and Extend" on page 240.

To Fence Select a group of objects

1. Draw a CAD line, arc, open polyline, closed polyline or spline that crosses or touches all the objects you wish to group-select.
2. Click the **Fence Select**  edit button.
3. The originally selected object serves as a fence to select the objects it touches, while becoming deselected itself.
4. You can hold either the Shift or Ctrl key and click objects to add or remove them from the selection set.

You can keep all fences on their own custom layer and turn off their display when not needed. See "Layers" on page 143.

Select Same Type

Rooms, cabinets, windows and doors on the current floor can be selected based on a set of attributes that you specify using the **Select Same Type** edit tool. See "Select Same / Load Same" on page 245.

Editing Line Based Objects

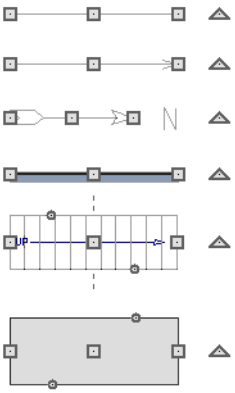
Objects are considered line-based when they can be edited similar to CAD lines using their edit handles.

CAD lines, framing members, straight walls and railings, straight stairs and straight roads are examples of line-based objects.

Most line-based objects can be connected to other like objects to form polylines or polyline-based objects provided that they are on the same layer and have identical attributes such as line color and arrow specifications. See “Editing Open Polyline Based Objects” on page 193 and “Editing Closed-Polyline Based Objects” on page 198.

Some objects, notably walls, have line-based editing behavior only when selected on certain surfaces. See “Editing Walls” on page 278.

Wall openings such as doors and windows have line-based editing behavior in floor plan view only but cannot be rotated, reversed or converted to an arc. See “Editing Doors” on page 360 and “Editing Windows” on page 395.



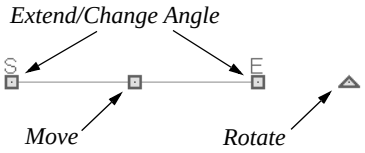
Other objects, such as stairs, foundation walls with footings, and roads, have additional edit handles that allow you to concentrically adjust the object’s width.

Using the Edit Handles

When selected, a typical line-based object displays four edit handles.

Any action performed using the edit handles can be cancelled by pressing the Esc key or any two mouse buttons at the same time.

The behavior of the edit handles may depend on the currently active Edit Behavior. See “Edit Behaviors” on page 176.



Move

- Click and drag the Move handle to move the object according to the currently active **Edit Behavior**  . See “Edit Behaviors” on page 176.
- Movement may be limited or stopped by other objects or Snap Behaviors. Move restrictions can be overridden by holding down the Ctrl key while dragging. See “Unrestricted Movement” on page 218.

Rotate

- The **Rotate** handle is used to rotate the object, either about its center or about the current CAD point. See “Rotating Objects” on page 231.

Extend/Change Angle

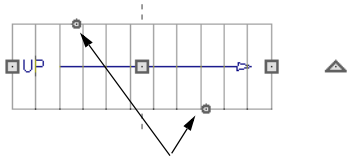
- Drag an end handle parallel to the selected line to change its length.
- Drag an end handle at an angle to the selected line to change its angle. When

Angle Snaps are on, the line snaps to Allowed Angles. See “Angle Snaps” on page 162.

- Right-click and drag it to change the adjacent line into an arc, or vice versa. See “Alternate” on page 177.

Adjust Width

Some line-based objects, such as stairs and roads, have additional handles that allow the width of the object to be adjusted.



Adjust Width

- Click and drag a small, round **Expand** handle to increase or decrease the object’s width. By default, objects are resized in 1" increments. This Snap Unit is defined in the **Plan Defaults** dialog. See “General Plan Defaults Dialog” on page 86.

Using Dimensions

Dimensions can be used to position line-based objects relative to other objects. See “Moving Objects Using Dimensions” on page 989.

Dimensions cannot, however, be used to adjust the length of line-based objects, or the width of line-based objects such as stairs.

Using Extension Line Snaps

Extension line snaps can be useful when editing line-based objects. See “Extension Snaps” on page 161.

Using the Specification Dialog

Line-based objects can be edited using their specification dialogs. See “Line Specification Dialog” on page 1052.

Using the Edit Toolbar

A selected line-based object can be edited in a variety of ways using the buttons on the edit toolbar.

The following toolbar buttons may display on the edit toolbar for a selected line-based object:

- Click the **Select Next Object** edit button to select nearby objects instead of the selected object. See “Selecting Objects” on page 180.
- Click the **Open Object** edit button to open the specification dialog for the selected object(s). See “Specification Dialogs” on page 38.
- Click the **Copy/Paste** edit button to copy the selected object(s) to the Windows Clipboard so they can be pasted elsewhere. See “Copying and Pasting Objects” on page 168.
- Click the **Copy and Paste in Place** edit button to create a copy of the selected object(s) at the same location as the original. See “Copy and Paste in Place” on page 170.

- Click the **Delete** edit button to delete the selected object(s). See “Deleting Objects” on page 249.
- Click the **Transform/Replicate Object** edit button to copy, move, rotate, resize, or reflect the selected object(s). See “Transform/Replicate Object Dialog” on page 238.
- Click the **Multiple Copy** edit button to make a series of copies at set intervals. See “Multiple Copy” on page 171.
- Click the **Make Parallel/Perpendicular** edit button to make the selected object(s) parallel or perpendicular to a straight edge. See “Using Make Parallel/Perpendicular” on page 224.
- Click the **Point to Point Move** edit button to accurately move the selected object(s). See “Point to Point Move” on page 219.
- Click the **Center Object** edit button to center an object along along a wall within a room or relative to a cabinet fixture. See “Using Center Object” on page 224.
- Click the **Reflect About Object** edit button to reflect the selected object(s) about another object. See “Reflecting Objects” on page 234.
- Click the **Move to Front of Group** edit button to display the selected object in front of other objects in the same drawing group. See “Move to Front of Group” on page 216.
- Click the **Break Line** edit button to add a new corner or pivot point to the selected object. See “Break Line” on page 228.
- Click the **Reverse Direction** edit button to reverse the direction of the selected object(s). See “Reverse Direction” on page 235.
- Click the **Convert Polyline** edit button to convert the object into a special polyline-based object. See “Convert Polyline” on page 235.
- Click the **Revision Cloud(s) Around Objects** edit button to create a revision cloud around each of the selected object(s). See “Revision Clouds” on page 1071.
- Click the **Change Line/Arc** edit button to change a line-based object to an arc, or vice versa. See “Change Line/Arc” on page 229.
- Click the **Fence Select** edit button to use the selected object(s) as a selection fence. See “Using a Fence” on page 184.
- Click the **Object Layer Properties** edit button to access and edit layer information about the selected object. See “Object Layer Properties” on page 152.
- Click the **Intersect/Join Two Lines** edit button, then click on a non-parallel line or arc to join the two objects. See “Intersect/Join Two Lines” on page 229.
- Click the **Fillet Two Lines** edit button, then click on a non-parallel line or arc to create an additional arc connecting

the two. See “Fillet Two Lines” on page 229.

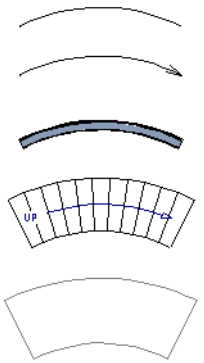
- Click the **Chamfer Two Lines** edit button, then click an edge adjacent to the selected edge to chamfer the corner between them. See “Chamfer Two Lines” on page 230.
- Click the **Extend Object(s)** edit button to lengthen other object(s) until they intersect the selected object. See “Trim and Extend” on page 240. Not available for Sun Angles or North Pointers.
- Click the **Trim Object(s)** edit button to shorten the length of object(s) intersected by the selected object. See “Trim and Extend” on page 240. Not available for Sun Angles or North Pointers.
- Click the **Align/Distribute Objects** edit button to specify how the selected objects are distributed. See “Align/Distribute Objects” on page 221. Only available when multiple objects are selected.
- Click the **Align/Distribute Along Line** edit button, then click on a line-based object align the selected object(s) relative to that line. See “Align/Distribute Along Line” on page 222.

Editing Arc Based Objects

Objects are considered arc-based when they can be edited similar to CAD arcs using their edit handles.

CAD arcs, curved walls and railings, curved stairs, and curved roads are examples of arc-based objects.

Most arc-based objects can be connected to other like objects to form polylines or polyline-based objects provided that they are on the same layer and have identical attributes such as line color and arrow specifications. See “Editing Open Polyline Based Objects” on page 193 and “Editing Closed-Polyline Based Objects” on page 198.



Some objects, notably curved walls, have arc-based editing behavior only when selected on certain surfaces. See “Editing Walls” on page 278.

Other objects, such as curved stairs and roads, have additional edit handles that allow you to concentrically adjust the object’s width.

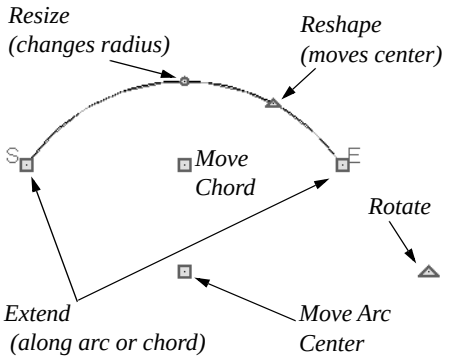
The currently active **Arc Creation Mode** determines how an arc-based object is drawn. Once an arc is drawn, the active Arc Creation Mode does not affect it. See "Drawing Arcs - Arc Creation Modes" on page 1056.

Using the Edit Handles

When selected, a typical arc-based object displays seven edit handles.

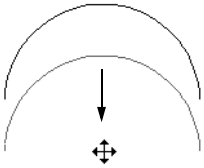
Any action performed using the edit handles can be cancelled by pressing the Esc key or any two mouse buttons at the same time.

> The behavior of the edit handles may depend on the currently active Edit Behavior. See "Edit Behaviors" on page 176.



Move

- Two Move edit handles allow the arc to be relocated without changing its shape. One is located at the center of the chord and the other, at the arc center.
- If you would like to snap one of these center points to another point, use that handle when moving the arc. See "Aligning Arc Centers" on page 226.
- Click and drag the Move handle to move the object according to the currently active **Edit Behavior**. See "Edit Behaviors" on page 176.
- Movement may be limited or stopped by other objects or Snap Behaviors. Move restrictions can be overridden by holding down the Ctrl key while dragging. See "Unrestricted Movement" on page 218.



Move edit handle

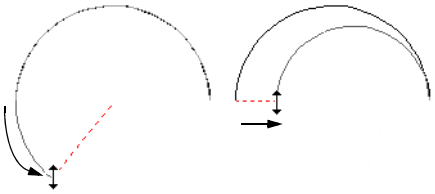
Rotate

- The **Rotate** handle is used to rotate the arc, either about its center or about the current CAD point. See "Rotating Objects" on page 231.

Extend

- The end edit handles expand or contract the arc when moved along the arc radius or chord.
- If you follow the path of the arc, the end edit handles allow you to adjust the arc length.
- The angle formed by the center point of the arc and its two endpoints is referred to as the Included Angle. If **Angle Snaps** are on, the Included Angle of the arc, as measured in degrees, can be rotated at Allowed Angles. See "Angle Snaps" on page 162.

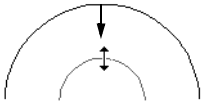
- Right-click and drag it to change the adjacent arc into a line, or vice versa. See “Alternate” on page 177.



Extend edit handles

Resize

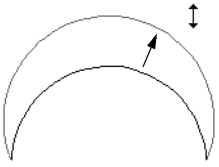
- Drag the small, round **Resize** edit handle to change the radius and included angle of the arc while maintaining its center.



Resize edit handle

Reshape

- Drag the small triangular **Reshape** handle to change the length and location of the center without moving the endpoints.

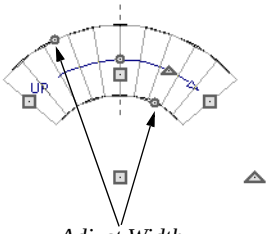


Reshape edit handle

- If the object has a locked center, the **Reshape** edit handle does not display. See “Using Lock Center” on page 193.

Adjust Width

Some arc-based objects, such as stairs, have additional handles that allow the width of the object to be adjusted.



Adjust Width

- Click and drag a small, round edit handle to increase or decrease the object’s width. By default, objects are resized according to the Snap Unit defined in the **Plan Defaults** dialog. See “General Plan Defaults Dialog” on page 86.

Using Dimensions

Dimensions can be used to position arc-based objects. Dimension lines typically locate tangent extension lines and any extension lines that may be parallel to those lines rather than the arc itself. See “Moving Objects Using Dimensions” on page 989.

Using Extension Line Snaps

Extension line snaps can be useful when editing arc-based objects. See “Extension Snaps” on page 161.

Using the Specification Dialog

Arc-based objects can be edited using their specification dialogs. See “Arc Specification Dialog” on page 1060.

Using the Edit Toolbar

A selected arc-based object can be edited in a variety of ways using the buttons on the edit toolbar.

The following toolbar buttons may display on the edit toolbar for a selected arc-based object:

- Click the **Select Next Object** edit button to select nearby objects instead of the selected object. See “Selecting Objects” on page 180.
- Click the **Open Object** edit button to open the specification dialog for the selected object(s). See “Specification Dialogs” on page 38.
- Click the **Copy/Paste** edit button to copy the selected object(s) to the Windows Clipboard so they can be pasted elsewhere. See “Copying and Pasting Objects” on page 168.
- Click the **Copy and Paste in Place** edit button to create a copy of the selected object(s) at the same location as the original. See “Copy and Paste in Place” on page 170.
- Click the **Delete** edit button to delete the selected object(s). See “Deleting Objects” on page 249.
- Click the **Transform/Replicate Object** edit button to copy, move, rotate, resize, or reflect the selected object(s). See “Transform/Replicate Object Dialog” on page 238.
- Click the **Multiple Copy** edit button to make a series of copies at set intervals. See “Multiple Copy” on page 171.
- Click the **Point to Point Move** edit button to accurately move the selected object(s). See “Point to Point Move” on page 219.
- Click the **Center Object** edit button to center an object along along a wall within a room or relative to a cabinet fixture. See “Using Center Object” on page 224.
- Click the **Reflect About Object** edit button to reflect the selected object(s) about another object. See “Reflecting Objects” on page 234.
- Click the **Move to Front of Group** edit button to display the selected object in front of other objects in the same drawing group. See “Move to Front of Group” on page 216.
- Click the **Break Line** edit button to add a new corner or pivot point to the selected object. See “Break Line” on page 228.
- Click the **Reverse Direction** edit button to reverse the direction of the selected object(s). See “Reverse Direction” on page 235.

- Click the **Convert Polyline** edit button to convert the object into a special polyline-based object. See “Convert Polyline” on page 235.
- Click the **Revision Cloud(s) Around Objects** edit button to create a revision cloud around each of the selected object(s). See “Revision Clouds” on page 1071.
- Click the **Change Line/Arc** edit button to change an arc-based object to a line, or vice versa. See “Change Line/Arc” on page 229.
- Click the **Convert Curve to Polyline** edit button to convert the selected arc into a polyline. See “Convert Curve to Polyline” on page 230.
- Click the **Lock Center** edit button to lock the selected arc-based object’s center. See “Using Lock Center” on page 193.
- Click the **Make Arc Tangent** edit button to adjust the arc and attached line(s) so they transition smoothly. See “Using Make Arc Tangent” on page 225. Only available when a selected arc is attached on one or both ends to another line or arc.
- Click the **Fence Select** edit button to use the selected object(s) as a selection fence. See “Using a Fence” on page 184.
- Click the **Object Layer Properties** edit button to access and edit layer information about the selected object. See “Object Layer Properties” on page 152.
- Click the **Intersect/Join Two Lines** edit button, then click on a non-parallel line or arc to join the two objects. See “Intersect/Join Two Lines” on page 229.
- Click the **Fillet Two Lines** edit button, then click on a non-parallel line or arc to create an additional arc connecting the two. See “Fillet Two Lines” on page 229.
- Click the **Chamfer Two Lines** edit button, then click an edge adjacent to the selected edge to chamfer the corner between them. See “Chamfer Two Lines” on page 230.
- Click the **Extend Object(s)** edit button to lengthen other object(s) until they intersect the selected object. See “Trim and Extend” on page 240.
- Click the **Trim Object(s)** edit button to shorten the length of object(s) intersected by the selected object. See “Trim and Extend” on page 240.
- Click the **Align/Distribute Objects** edit button to specify how the selected objects are distributed. See “Align/Distribute Objects” on page 221. Only available when multiple objects are selected.
- Click the **Align/Distribute Along Line** edit button, then click on a line-based object align the selected object(s) relative to that line. See “Align/Distribute Along Line” on page 222.

Arc Centers and Ends

When working with arc-based objects or circles, it can be helpful to see their

center points. Select **View> Show Arc Centers and Ends** to toggle their display. You can also turn on their display in the **CAD Defaults** dialog. See “CAD Defaults Dialog” on page 1040.

Arc-based objects can be aligned using their center points. See “Aligning Arc Centers” on page 226.

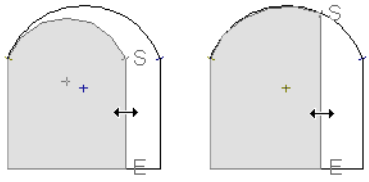
Using Lock Center

Click the **Lock Center** edit button to lock or unlock the selected arc-based object’s center. When an arc’s center is locked, it cannot be moved except by using one of its Move edit handles or when the **Alternate** Alt edit behavior is enabled.

An arc-based object with a locked center lengthens and shortens along its curve when it is resized. When this is not possible, its radius changes. In either case, its center remains locked in the same place.

Locked-center arcs do not display a **Reshape** edit handle when selected. See “Using the Edit Handles” on page 189.

When it is part of a polyline, a locked-center arc resizes along its arc rather than its chord when an adjacent line or arc is moved. Thus, the radius remains constant for an unlocked center arc, while the center does not change for a locked-center arc.



Unlocked center *Locked center*

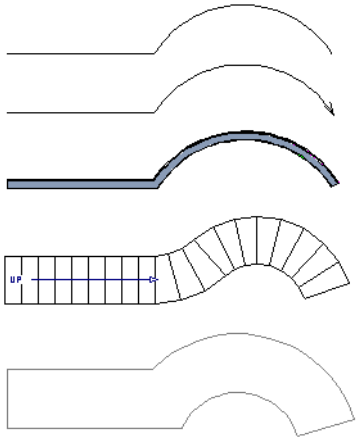
Editing Open Polyline Based Objects

Open polyline-based objects are composed of individual line- and arc-based objects that are connected at their end points but do not form an enclosed area. See “Polylines” on page 1065.

Objects are considered open polyline-based when they can be edited similar to open CAD polylines using their edit handles.

Open CAD polylines, connected walls, stairs, and roads are examples of open polyline-based objects.

For information about editing closed polyline-based objects, see “Editing Closed-Polyline Based Objects” on page 198.



Other objects, such as connected stair and road segments, have additional edit handles that allow you to concentrically adjust the width of all segments of the object.

If Edit Object Parts is enabled, clicking on a CAD polyline edge selects the individual edge rather than the entire polyline. See "Edit Object Parts" on page 182.

Using the Edit Handles

A polyline can be composed of many segments. See "Polylines" on page 1065.

When selected, an open polyline-based object displays a Move handle, a Rotate handle, a Reshape handle at the intersection of each segment, and an Extend handle at each end.

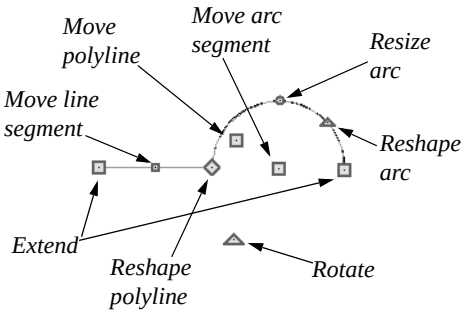
Each straight, line-based segment also has a Move edit handle along its length.

Each curved, arc-based segment has its own Move handle at the center of its chord, a Resize handle and, if it has an unlocked center, a Reshape handle. See "Editing Arc Based Objects" on page 188.

When a polyline is selected, the edge that you click nearest is called the selected edge, and certain operations affect only this edge. The Move handle of the selected edge is larger than that of other edges. It displays along the length of a line segment, or at the center of the chord on an arc segment. See "Selected Edge" on page 181.

Any action performed using the edit handles can be cancelled by pressing the Esc key or any two mouse buttons at the same time.

The behavior of the edit handles depends on the currently active Edit Behavior. See "Edit Behaviors" on page 176.



Move

- Click and drag the Move handle to move the object according to the currently active **Edit Behavior** .
- Movement may be limited or stopped by other objects or Snap Behaviors. Move restrictions can be overridden by holding down the Ctrl key while dragging. See "Unrestricted Movement" on page 218.

Rotate

- The **Rotate** handle is used to rotate the object, either about its center or about the current CAD point. Its position varies depending on which edge is currently selected. See "Rotating Objects" on page 231.

Extend

- Click and drag an Extend handle to lengthen or shorten the unconnected end of the selected line or arc segment, or to change the radius of the selected arc. See "Editing Arc Based Objects" on page 188.

- Right-click and drag it to change the adjacent line into an arc, or vice versa. See “Alternate” on page 177.

Reshape

- Click and drag a Reshape edit handle to change the angle and/or length of the segments on either side of it, or the size of the object, depending on the currently active **Edit Behavior** .

Move Line Segment

- The **Move Line Segment** edit handle is found on straight segments of open polylines and moves the straight section according to the currently active **Edit Behavior** . Adjacent segments may extend or contract in their original directions to maintain their connections.

Move Arc

- Click and drag the Move Arc edit handle to change the radius and/or chord length or position, depending on the currently active **Edit Behavior** and whether the arc has a locked center. Adjacent segments may extend, contract, or change angle to maintain their connections.

Resize Arc

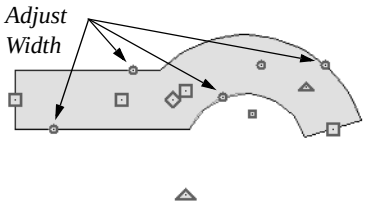
- Click and drag the Resize Arc edit handle to change the radius, chord length and chord position of the arc segment, depending on the currently active **Edit Behavior** and whether the arc has a locked center. Adjacent segments may extend, contract, or change angle to maintain their connections.

Reshape Arc

- Click and drag the Reshape Arc edit handle to change the radius of the arc without moving its end points. Only available if the arc has an unlocked center.

Adjust Width

Some arc-based objects, such as stairs and roads, have additional handles that allow the width of the object to be adjusted.



- Click and drag a small, round edit handle to increase or decrease the object’s width. By default, objects are resized in 1" increments. This Snap Unit is defined in the **Plan Defaults** dialog. See “General Plan Defaults Dialog” on page 86.

Using Dimensions

Dimensions can be used to move or reshape polyline-based objects. See “Moving Objects Using Dimensions” on page 989.

Using Extension Line Snaps

Extension line snaps, especially tangent snaps, can be useful when editing polyline vertices. See “Extension Snaps” on page 161.

Using the Specification Dialog

Open polyline-based objects can be edited using their specification

dialogs. See “Polyline Specification Dialog” on page 1066.

Using the Edit Toolbar

A selected open polyline-based object can be edited in a variety of ways using the buttons on the edit toolbar.

The following toolbar buttons may display on the edit toolbar for a selected open polyline-based object:

- Click the **Select Next Object** edit button to select nearby objects instead of the selected object. See “Selecting Objects” on page 180.
- Click the **Open Object** edit button to open the specification dialog for the selected object(s). See “Specification Dialogs” on page 38.
- Click the **Copy/Paste** edit button to copy the selected object(s) to the Windows Clipboard so they can be pasted elsewhere. See “Copying and Pasting Objects” on page 168.
- Click the **Copy and Paste in Place** edit button to create a copy of the selected object(s) at the same location as the original. See “Copy and Paste in Place” on page 170.
- Click the **Delete** edit button to delete the selected object(s). See “Deleting Objects” on page 249.
- Click the **Transform/Replicate Object** edit button to copy, move, rotate, resize, or reflect the selected object(s). See “Transform/Replicate Object Dialog” on page 238.
- Click the **Multiple Copy** edit button to make a series of copies at set intervals. See “Multiple Copy” on page 171.
- Click the **Make Parallel/Perpendicular** edit button to make the selected straight edge parallel or perpendicular to another straight edge. See “Using Make Parallel/Perpendicular” on page 224. Not available when the selected edge is an arc.
- Click the **Point to Point Move** edit button to accurately move the selected object(s). See “Point to Point Move” on page 219.
- Click the **Add to Library** edit button to add the selected object(s) to the library. See “Add to Library” on page 807.
- Click the **Center Object** edit button to center an object along along a wall within a room or relative to a cabinet fixture. See “Using Center Object” on page 224.
- Click the **Reflect About Object** edit button to reflect the selected object(s) about another object. See “Reflecting Objects” on page 234.
- Click the **Move to Front of Group** edit button to display the selected object in front of other objects in the same drawing group. See “Move to Front of Group” on page 216.
- Click the **Break Line** edit button to add a new corner or pivot point to the selected object. See “Break Line” on page 228.

- Click the **Reverse Direction** edit button to reverse the direction of the selected object(s). See “Reverse Direction” on page 235.
- Click the **Close Polyline** edit button to convert the selected open polyline into a closed polyline. See “Using Close Polyline” on page 198.
- Click the **Convert to Spline** edit button to change the selected polyline into a spline. See “Splines” on page 1073.
- Click the **Convert Polyline** edit button to convert the object into a special polyline-based object. See “Convert Polyline” on page 235.
- Click the **Revision Cloud(s) Around Objects** edit button to create a revision cloud around each of the selected object(s). See “Revision Clouds” on page 1071.
- Click the **Change Line/Arc** edit button to change a line-based polyline edge to an arc, or vice versa. See “Change Line/Arc” on page 229.
- Click the **Record Walkthrough Along Path** edit button to record a walkthrough video of your model along the path defined by the selected polyline. See “Walkthroughs” on page 1124.
- Click the **Convert Curve to Polyline** edit button to convert the selected arc into a polyline. See “Convert Curve to Polyline” on page 230. Only available when the selected edge is an arc.
- Click the **Lock Center** edit button to lock the center of the selected curved edge. See “Using Lock Center” on page 193. Only available when the selected edge is an arc.
- Click the **Make Arc Tangent** edit button to adjust the selected curved edge and attached edge(s) so they form a smooth shape. See “Using Make Arc Tangent” on page 225. Only available when the selected edge is an arc attached on one or both ends to another line or arc.
- Click the **Fence Select** edit button to use the selected object(s) as a selection fence. See “Using a Fence” on page 184.
- Click the **Object Layer Properties** edit button to access and edit layer information about the selected object. See “Object Layer Properties” on page 152.
- Click the **Intersect/Join Two Lines** edit button, then click on a non-parallel line or arc to join the two objects. See “Intersect/Join Two Lines” on page 229.
- Click the **Fillet Two Lines** edit button, then click on an adjacent edge to create an arc connecting the two. See “Fillet Two Lines” on page 229. Cannot be used if the adjacent edge is an arc.
- Click the **Chamfer Two Lines** edit button, then click on an edge adjacent to the selected edge to chamfer the corner between them. See “Chamfer Two Lines” on page 230.
- Click the **Extend Object(s)** edit button to lengthen other object(s) until they

intersect the selected object. See “Trim and Extend” on page 240.

- Click the **Trim Object(s)** edit button to shorten the length of object(s) intersected by the selected object. See “Trim and Extend” on page 240.
- Click the **Align/Distribute Objects** edit button to specify how the selected objects are distributed. See “Align/Distribute Objects” on page 221. Only available when multiple objects are selected.
- Click the **Align/Distribute Along Line** edit button, then click on a line-based object align the selected object(s) relative to that line. See “Align/Distribute Along Line” on page 222.

Using Close Polyline

An open polyline-based object can be converted into a closed polyline using the **Close Polyline** edit tool. This tool adds an edge to the open polyline, connecting its two ends and closing the gap between them. **Close Polyline** is not available when **Edit Object Parts** is enabled. See “Edit Object Parts” on page 182.

Editing Closed-Polyline Based Objects

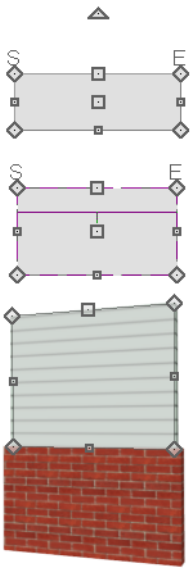
Closed polyline-based objects are composed of individual line- and arc-based objects joined end-to-end and forming an enclosed area. See “Polylines” on page 1065.

Objects are considered closed polyline-based when they can be edited similar to closed CAD polylines using their edit handles.

Closed CAD polylines, slabs and roof planes are examples of closed polyline-based objects.

Some objects, notably walls, have closed polyline-based editing behavior only when they are selected on certain surfaces in 3D views. See “Editing Walls” on page 278.

For information about editing open polyline-based objects, see “Editing Open Polyline Based Objects” on page 193.



Other objects, such as connected road segments, have additional edit handles that

allow you to concentrically adjust the width of all segments of the object.

If Edit Object Parts is enabled, clicking on a polyline edge selects the individual edge rather than the entire polyline. See “Edit Object Parts” on page 182.

Using the Edit Handles

A polyline can be composed of many segments. See “Polylines” on page 1065.

When selected, a closed polyline-based object displays a Move handle, a Rotate handle, and a Reshape handle at the intersection of each segment.

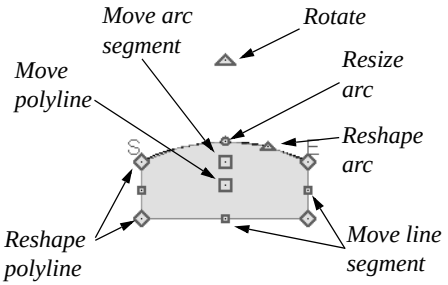
Each straight, line-based segment has a Move edit handle along its length.

Each curved, arc-based segment has its own Move handle at the center of its chord, a Resize handle and, if it has an unlocked center, a Reshape handle. See “Editing Arc Based Objects” on page 188.

When a polyline is selected, the edge that you click nearest is called the selected edge, and certain operations affect only this edge. The Move handle of the selected edge is larger than that of other edges. It displays along the length of a line segment, or at the center of the chord on an arc segment. See “Selected Edge” on page 181.

Any action performed using the edit handles can be cancelled by pressing the Esc key or any two mouse buttons at the same time.

The behavior of the edit handles may depend on the currently active Edit Behavior. See “Edit Behaviors” on page 176.



Move

- Click and drag the Move handle to move the object according to the currently active **Edit Behavior** .
- Movement may be limited or stopped by other objects or Snap Behaviors. Move restrictions can be overridden by holding down the Ctrl key while dragging. See “Unrestricted Movement” on page 218.

Rotate

- The **Rotate** handle is used to rotate the object, either about its center or about the current CAD point. Its position varies depending on which edge is currently selected. See “Rotating Objects” on page 231.

Reshape

- Click and drag a Reshape edit handle to change the angle and/or length of the segments on either side of it, or the size of the object, depending on the currently active **Edit Behavior** .

Move Line Segment

- The **Move Line Segment** edit handle is found on straight segments of closed polylines and moves the straight section according to the currently active **Edit**

Behavior . Adjacent segments may extend or contract in their original directions to maintain their connections.

Move Arc

- Click and drag the Move Arc edit handle to change the radius and/or chord length or position, depending on the currently active **Edit Behavior** and whether the arc has a locked center. Adjacent segments may extend, contract, or change angle to maintain their connections.

Resize Arc

- Click and drag the Resize Arc edit handle to change the radius, chord length and chord position of the arc segment, depending on the currently active **Edit Behavior** and whether the arc has a locked center. Adjacent segments may extend, contract, or change angle to maintain their connections.

Reshape Arc

- Click and drag the Reshape Arc edit handle to change the radius of the arc without moving its end points. Only available if the arc has an unlocked center.

Using Dimensions

Dimensions can be used to move or reshape closed polyline-based objects. See “Moving Objects Using Dimensions” on page 989.

Using Extension Line Snaps

Extension line snaps, especially tangent snaps, can be useful when editing polyline vertices. See “Extension Snaps” on page 161.

Using the Specification Dialog

Closed polyline-based objects can be edited using their specification dialogs. See “Polyline Specification Dialog” on page 1066.

Using the Edit Toolbar

A selected closed polyline-based object can be edited in a variety of ways using the buttons on the edit toolbar.

The following toolbar buttons may display on the edit toolbar for a selected closed polyline-based object:

- Click the **Select Next Object** edit button to select nearby objects instead of the selected object. See “Selecting Objects” on page 180.
- Click the **Open Object** edit button to open the specification dialog for the selected object(s). See “Specification Dialogs” on page 38.
- Click the **Copy/Paste** edit button to copy the selected object(s) to the Windows Clipboard so they can be pasted elsewhere. See “Copying and Pasting Objects” on page 168.
- Click the **Copy and Paste in Place** edit button to create a copy of the selected object(s) at the same location as the original. See “Copy and Paste in Place” on page 170.
- Click the **Delete** edit button to delete the selected object(s). See “Deleting Objects” on page 249.

- Click the **Transform/Replicate Object** edit button to copy, move, rotate, resize, or reflect the selected object(s). See “Transform/Replicate Object Dialog” on page 238.
- Click the **Multiple Copy** edit button to make a series of copies at set intervals. See “Multiple Copy” on page 171.
- Click the **Make Parallel/Perpendicular** edit button to make the selected straight edge parallel or perpendicular to another straight edge by either rotating the selected edge or the entire polyline. See “Using Make Parallel/Perpendicular” on page 224. Not available when the selected edge is an arc.
- Click the **Point to Point Move** edit button to accurately move the selected object(s). See “Point to Point Move” on page 219.
- Click the **Add to Library** edit button to add the selected object(s) to the library. See “Add to Library” on page 807.
- Click the **Center Object** edit button to center an object along along a wall within a room or relative to a cabinet fixture. See “Using Center Object” on page 224.
- Click the **Reflect About Object** edit button to reflect the selected object(s) about another object. See “Reflecting Objects” on page 234.
- Click the **Move to Front of Group** edit button to display the selected object in front of other objects in the same drawing group. See “Move to Front of Group” on page 216.
- Click the **Break Line** edit button to add a new corner or pivot point to the selected object. See “Break Line” on page 228.
- Click the **Reverse Direction** edit button to reverse the direction of the selected object(s). See “Reverse Direction” on page 235.
- Click the **Convert to Spline** edit button to change the selected polyline into a spline. See “Splines” on page 1073.
- Click the **Union** edit button to join two or more objects. See “Union, Intersection, and Subtract” on page 242. Not available for objects specified as holes.
- Click the **Intersection** edit button to create a new object defined by the areas shared by the original objects. See “Union, Intersection, and Subtract” on page 242. Not available for objects specified as holes.
- Click the **Subtract** edit button, then click a second object to remove the area shared by both objects. See “Union, Intersection, and Subtract” on page 242. Not available for objects specified as holes.
- Click the **Convert Polyline** edit button to convert the object into a special polyline-based object. See “Convert Polyline” on page 235.
- Click the **Revision Cloud(s) Around Objects** edit button to create a revision cloud around each of the selected

object(s). See “Revision Clouds” on page 1071.

- Click the **Change Line/Arc** edit button to change a line-based polyline edge to an arc, or vice versa. See “Change Line/Arc” on page 229.
- Click the **Convert Curve to Polyline** edit button to convert the selected arc into a polyline. See “Convert Curve to Polyline” on page 230. Only available when the selected edge is an arc.
- Click the **Lock Center** edit button to lock the center of the selected curved edge. See “Using Lock Center” on page 193. Only available when the selected edge is an arc.
- Click the **Make Arc Tangent** edit button to adjust the selected curved edge and attached edge(s) so they form a smooth shape. See “Using Make Arc Tangent” on page 225. Only available when the selected edge is an arc attached on one or both ends to another line or arc.
- Click the **Fence Select** edit button to use the selected object(s) as a selection fence. See “Using a Fence” on page 184.
- Click the **Object Layer Properties** edit button to access and edit layer information about the selected object. See “Object Layer Properties” on page 152.
- Click the **Intersect/Join Two Lines** edit button, then click on a non-parallel line or arc to join the two objects. See “Intersect/Join Two Lines” on page 229.
- Click the **Fillet Two Lines** edit button, then click on an adjacent edge to create an arc connecting the two. See “Fillet Two Lines” on page 229. Cannot be used if the adjacent edge is an arc.
- Click the **Record Walkthrough Along Path** edit button to record a walkthrough video of your model along the path defined by the selected polyline. See “Walkthroughs” on page 1124.
- Click the **Chamfer Two Lines** edit button, then click an edge adjacent to the selected edge to chamfer the corner between them. See “Chamfer Two Lines” on page 230.
- Click the **Extend Object(s)** edit button to lengthen other object(s) until they intersect the selected object. See “Trim and Extend” on page 240.
- Click the **Trim Object(s)** edit button to shorten the length of object(s) intersected by the selected object. See “Trim and Extend” on page 240.
- Click the **Align/Distribute Objects** edit button to specify how the selected objects are distributed. See “Align/Distribute Objects” on page 221. Only available when multiple objects are selected.
- Click the **Align/Distribute Along Line** edit button, then click on a line-based object align the selected object(s) relative to that line. See “Align/Distribute Along Line” on page 222.
- Click the **Create Hole** edit button, then click and drag to draw a rectangular hole in the selected object.

Polyline Holes

Most closed polyline-based objects can contain one or more holes. There are several ways to create a hole; the methods available may vary depending on the object type.

- Many closed polyline based object drawing tools have an associated Hole drawing tool.
- Many closed polyline based objects have a **Hole in** checkbox on the General panel of their specification dialog that will convert the object into a hole if it is located within a larger object of the same type.
- A CAD Polyline can be converted into a variety of different types of holes using the **Convert Polyline** tool. See “Convert Polyline” on page 235.
- Click the **Create Hole** edit button, then click and drag to draw a rectangular hole in the selected object. If the selected object has an associated Hole tool or Hole in checkbox, the Create Hole will create an object of that type; if the selected object does not, a standard closed polyline will be created.

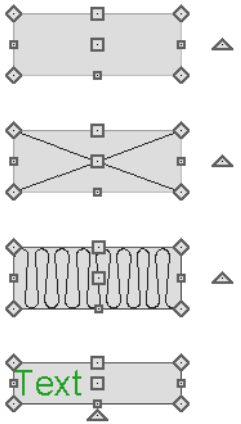
Bear in mind that by definition, a hole cannot exist where its containing object does not. It must be drawn entirely within the extents of its containing object without touching or crossing over an edge.

Editing Box-Based Objects

Objects are considered box-based when they can be edited similar to CAD boxes using their edit handles.

Box-based objects are similar to closed polyline-based objects, but must always have four sides with right-angled corners.

In addition to the CAD Box tools, Text objects, many library symbols, CAD blocks, pictures and images are examples of box-based objects.

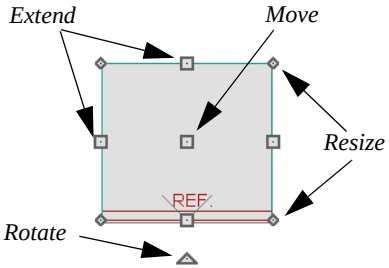


Using the Edit Handles

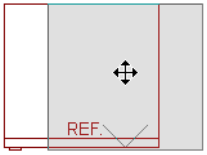
When selected, a box-based object displays ten edit handles. Unlike polylines, boxes must always have four sides with right-angled corners.

Any action performed using the edit handles can be cancelled by pressing the Esc key or any two mouse buttons at the same time.

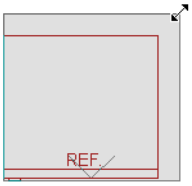
The behavior of the edit handles may depend on the currently active Edit Behavior. See “Edit Behaviors” on page 176.



- Click and drag the Move handle to move the object according to the currently active **Edit Behavior** . See “Edit Behaviors” on page 176.
- Movement may be limited or stopped by other objects or Snap Behaviors. Move restrictions can be overridden by holding down the Ctrl key while dragging. See “Unrestricted Movement” on page 218.

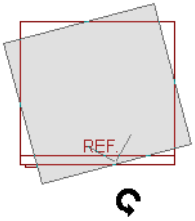


- The four **Resize** handles located at each corner are used to increase or decrease the size of the object.



- The four **Extend** handles display along each edge. If you select an object on an edge, the Extend handle displays at the point where you clicked; otherwise, it displays at the center of the edge.

- The triangular **Rotate** handle located near the selected edge of the object is used to rotate it either about its center or the current CAD point. The pointer changes to a circular arrow when moved over this handle. See “Rotating Objects” on page 231.



Using Dimensions

Dimensions can be used to move or reshape box-based objects. See “Moving Objects Using Dimensions” on page 989.

Using the Specification Dialog

Box-based objects can be edited using their specification dialogs. See “Box Specification Dialog” on page 1070.

Using the Edit Toolbar

A selected closed polyline-based object can be edited in a variety of ways using the buttons on the edit toolbar.

The following toolbar buttons may display on the edit toolbar for a selected closed polyline-based object:

- Click the **Select Next Object** edit button to select nearby objects instead of the selected object. See “Selecting Objects” on page 180.
- Click the **Open Object** edit button to open the specification dialog for the selected object(s). See “Specification Dialogs” on page 38.
- Click the **Copy/Paste** edit button to copy the selected object(s) to the Windows Clipboard so they can be pasted elsewhere. See “Copying and Pasting Objects” on page 168.
- Click the **Copy and Paste in Place** edit button to create a copy of the selected object(s) at the same location as the original. See “Copy and Paste in Place” on page 170.
- Click the **Delete** edit button to delete the selected object(s). See “Deleting Objects” on page 249.
- Click the **Transform/Replicate Object** edit button to copy, move, rotate, resize, or reflect the selected object(s). See “Transform/Replicate Object Dialog” on page 238.
- Click the **Multiple Copy** edit button to make a series of copies at set intervals. See “Multiple Copy” on page 171.
- Click the **Make Parallel/Perpendicular** edit button to make the selected straight edge parallel or perpendicular to another straight edge. See “Using Make Parallel/Perpendicular” on page 224. Not available when the selected edge is an arc.
- Click the **Point to Point Move** edit button to accurately move the selected object(s). See “Point to Point Move” on page 219.
- Click the **Center Object** edit button to center an object along along a wall within a room or relative to a cabinet fixture. See “Using Center Object” on page 224.
- Click the **Reflect About Object** edit button to reflect the selected object(s) about another object. See “Reflecting Objects” on page 234.
- Click the **Move to Front of Group** edit button to display the selected object in front of other objects in the same drawing group. See “Move to Front of Group” on page 216.
- Click the **Convert Polyline** edit button to convert the object into a special

polyline-based object. See “Convert Polyline” on page 235.

- Click the **Revision Cloud(s) Around Objects** edit button to create a revision cloud around each of the selected object(s). See “Revision Clouds” on page 1071.
- Click the **Extend Object(s)** edit button to lengthen other object(s) until they intersect the selected object. See “Trim and Extend” on page 240.
- Click the **Trim Object(s)** edit button to shorten the length of object(s) intersected by the selected object. See “Trim and Extend” on page 240.
- Click the **Align/Distribute Objects** edit button to specify how the selected objects are distributed. See “Align/Distribute Objects” on page 221. Only available when multiple objects are selected.
- Click the **Object Layer Properties** edit button to access and edit layer information about the selected object. See “Object Layer Properties” on page 152.
- Click the **Align/Distribute Along Line** edit button, then click on a line-based object align the selected object(s) relative to that line. See “Align/Distribute Along Line” on page 222.

Editing Spline Based Objects

A Spline is a curve that passes smoothly through a set of points, or vertices. Splines are typically used in situations where an irregular, free-flowing curve is needed.

Objects are considered spline-based when they can be edited similar to CAD splines using their edit handles. See “Splines” on page 1073.

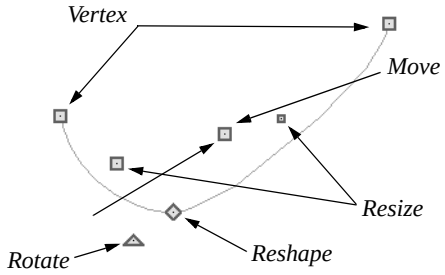
Sprinkler lines, spline terrain curbs, spline terrain walls and both round and kidney-shaped terrain features are spline-based objects. See “Terrain” on page 695.

Using the Edit Handles

When a spline is selected, several different types of handles display. How many handles display depends on whether the **Advanced Splines** edit button is on or not. See “Advanced Splines” on page 210.

Any action performed using the edit handles can be cancelled by pressing the Esc key or any two mouse buttons at the same time.

The behavior of the edit handles may depend on the currently active Edit Behavior. See “Edit Behaviors” on page 176.



Move

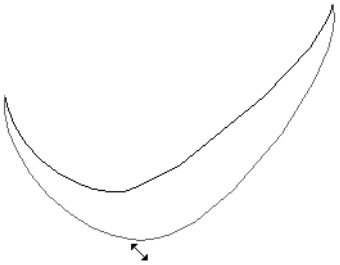
- Click and drag the Move handle to move the object according to the currently active **Edit Behavior**  . See “Edit Behaviors” on page 176.
- Movement may be limited or stopped by other objects or Snap Behaviors. Move restrictions can be overridden by holding down the Ctrl key while dragging. See “Unrestricted Movement” on page 218.

Rotate

- Click and drag the Rotate edit handle to rotate the entire spline.

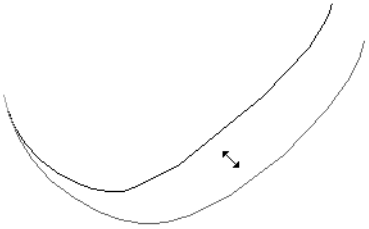
Reshape

- The Reshape edit handles display along the spline at each vertex. Click and drag a Reshape edit handle to change the length, angle and curve of adjacent segments without affecting other reshape handles.



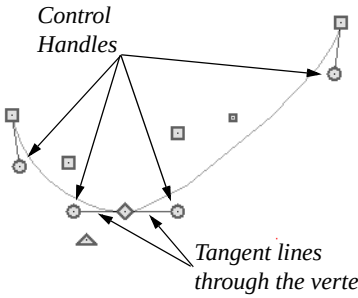
Resize

- The Resize edit handles display along the spline, between each vertex. Click and drag a Resize edit handle to move the adjacent vertices and lengthen or shorten adjacent segments.

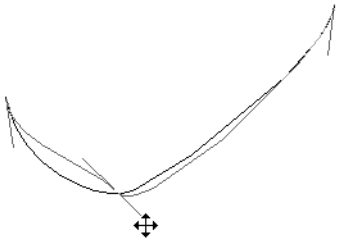


Advanced Splines

Additional edit handles, called Control Handles, display beside each spline vertex when **Advanced Splines**  is enabled. See “Advanced Splines” on page 210.



- Click and drag a round Control edit handle to change the angle of the associated tangent line.



- If two tangent lines pass through a vertex, the angle between them remains constant as long as **Lock Control Handle Angle** is enabled. See “Lock Control Handle Angle” on page 211.

Using the Specification Dialog

Spline-based objects can be edited using their specification dialogs. See “Polyline Specification Dialog” on page 1066.

Using the Edit Toolbar

A selected spline-based object can be edited in a variety of ways using the buttons on the edit toolbar.

The following toolbar buttons may display on the edit toolbar for a selected spline-based object:

- Click the **Select Next Object** edit button to select nearby objects instead of the selected object. See “Selecting Objects” on page 180.
- Click the **Open Object** edit button to open the specification dialog for the selected object(s). See “Polyline Specification Dialog” on page 1066.
- Click the **Copy/Paste** edit button to copy the selected object(s) to the Windows Clipboard so they can be pasted elsewhere. See “Copying and Pasting Objects” on page 168.
- Click the **Copy and Paste in Place** edit button to create a copy of the selected object(s) at the same location as the original. See “Copy and Paste in Place” on page 170.
- Click the **Delete** edit button to delete the selected object(s). See “Deleting Objects” on page 249.
- Click the **Transform/Replicate Object** edit button to copy, move, rotate, resize, or reflect the selected object(s). See “Transform/Replicate Object Dialog” on page 238.
- Click the **Multiple Copy** edit button to make a series of copies at set intervals. See “Multiple Copy” on page 171.
- Click the **Make Parallel/Perpendicular** edit button to make the selected spline edge parallel or perpendicular to

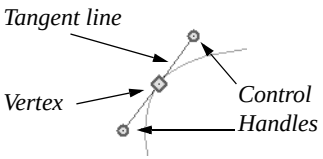
another straight edge. See “Using Make Parallel/Perpendicular” on page 224.

- Click the **Point to Point Move** edit button to accurately move the selected object(s). See “Point to Point Move” on page 219.
- Click the **Add to Library** edit button to add the selected object(s) to the library. See “Add to Library” on page 807.
- Click the **Center Object** edit button to center an object along along a wall within a room or relative to a cabinet fixture. See “Using Center Object” on page 224.
- Click the **Reflect About Object** edit button to reflect the selected object(s) about another object. See “Reflecting Objects” on page 234.
- Click the **Move to Front of Group** edit button to display the selected object in front of other objects in the same drawing group. See “Move to Front of Group” on page 216.
- Click the **Break Line** edit button to add a new corner or pivot point to the selected object. See “Break Line” on page 228.
- Click the **Trim Object(s)** edit button to shorten the length of object(s) intersected by the selected object. See “Trim and Extend” on page 240.
- Click the **Extend Object(s)** edit button to lengthen other object(s) until they intersect the selected object. See “Trim and Extend” on page 240.
- Click the **Convert Polyline** edit button to convert the object into a special polyline-based object. See “Convert Polyline” on page 235.
- Click the **Revision Cloud(s) Around Objects** edit button to create a revision cloud around each of the selected object(s). See “Revision Clouds” on page 1071.
- Click the **Fence Select** edit button to use the selected object(s) as a selection fence. See “Using a Fence” on page 184.
- Click the **Convert Spline to Polyline** edit button to convert the selected spline into a polyline. See “Convert Spline to Polyline” on page 238.
- Click the **Record Walkthrough Along Path** edit button to record a walkthrough video of your model along the path defined by the selected polyline. See “Walkthroughs” on page 1124.
- Click the **Object Layer Properties** edit button to access and edit layer information about the selected object. See “Object Layer Properties” on page 152.
- Click the **Advanced Splines** edit button to on advanced splines for the selected spline. See “Advanced Splines” on page 210.
- Click the **Straighten Spline Segment** edit button to straighten a segment of an advanced spline. See “Straighten Spline Segment” on page 210. Only available when Advanced Splines is turned on.

- Click the **Lock Control Handle Angle** edit button to maintain the relative angle between the vertex and its control handles. See “Lock Control Handle Angle” on page 211. Only available when Advanced Splines is turned on.
- Click the **Align/Distribute Objects** edit button to specify how the selected objects are distributed. See “Align/Distribute Objects” on page 221. Only available when multiple objects are selected.
- Click the **Align/Distribute Along Line** edit button, then click on a line-based object align the selected object(s) relative to that line. See “Align/Distribute Along Line” on page 222.

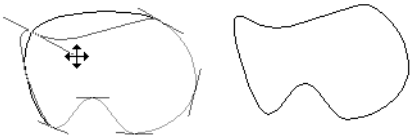
Advanced Splines

Click the **Advanced Splines** edit button to display additional edit handles called Control Handles. These edit handles allow you to reshape the spline with more control at each vertex.



The line between the vertex and the control handles defines the tangent to the spline through the vertex.

- Move the control handles at the end of the line to change the direction of the spline at that point. The spline curves away from its tangent direction at the vertex on its way to the next vertex.
- Change the shape of the spline by clicking and dragging the control handles.



Control handle *Result*

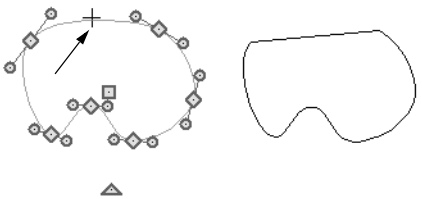
Notice that the control handles on either side of a vertex maintain their relationship to each other in a straight line. When one is moved, the other moves to keep the tangent line tangent with the vertex.

You can specify all subsequently drawn splines to be Advanced Splines in the **Preferences** dialog. See “CAD Panel” on page 108.

Straighten Spline Segment

The **Straighten Spline Segment** edit button is used to straighten a segment of an advanced spline between two vertex points.

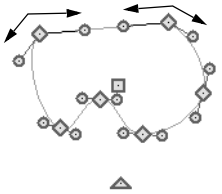
To use, first select the spline. Click the **Straighten Spline Segment** edit button, then click the spline between two vertices. That portion becomes straight.



Click a spline segment *Result*

If you reselect the spline, you see that the two control handles point toward the straight

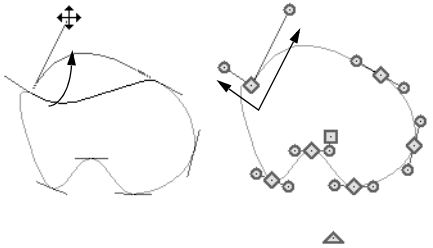
section from each vertex point on either end of the straight section.



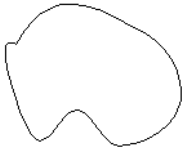
Lock Control Handle Angle

The **Lock Control Handle Angle** edit button is available when Advanced Splines is enabled, and is turned on by default, as well. This tool maintains the relative angle between the vertex and its control handles.

Click the **Lock Control Handle Angle** edit button to free the control of the relative edit angles between the vertex and its control handles. The control handles can now be adjusted individually. The opposite handle remains unaffected by the change. Notice that the spline adjusts so that it is tangent to the lines between the vertex and both of its control handles.



Notice that the control handles are not colinear



Result

Editing Circles, Ovals and Ellipses

Objects created using the **Circle Tools** are unusual in that no architectural objects share their functionalities.

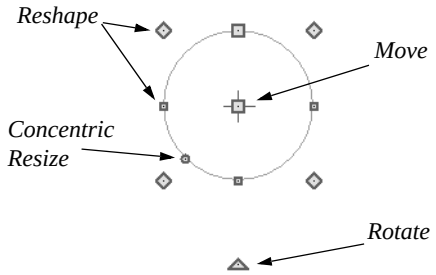
Using the Edit Handles

When selected, circles, ovals and ellipses display eleven edit handles.

Unlike **Ovals** and **Ellipses**, a **Circle** cannot be edited into any other shapes; it can only be a circle unless it is converted into a polyline. See “Convert Curve to Polyline” on page 230.

Any action performed using the edit handles can be cancelled by pressing the Esc key or any two mouse buttons at the same time.

The behavior of the edit handles may depend on the currently active Edit Behavior. See “Edit Behaviors” on page 176.

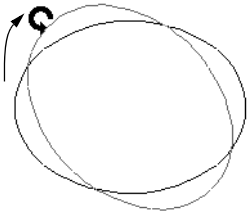


Move

- Click and drag the Move handle to move the object according to the currently active **Edit Behavior** . See “Edit Behaviors” on page 176.
- Movement may be limited or stopped by other objects or Snap Behaviors. Move restrictions can be overridden by holding down the Ctrl key while dragging. See “Unrestricted Movement” on page 218.

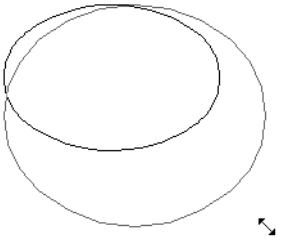
Rotate

- Click and drag the Rotate handle of an oval or ellipse to change its orientation.

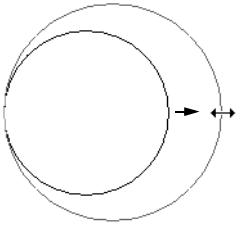


Reshape

- The eight edit handles beyond the perimeter are Reshape edit handles. Move them in or out to resize and reshape an oval or ellipse.

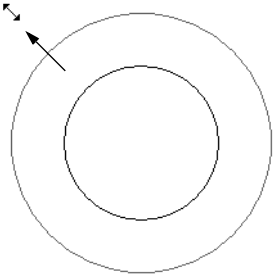


- Unlike ovals and ellipses, circles cannot be reshaped. When a Reshape handle is dragged on a circle, it is only resized.



Concentric Resize

- The Concentric Resize edit handle displays on the perimeter of a circle between a corner Reshape handle and the center. Click and drag this handle to resize the circle without moving its center point.



Using Dimensions

Dimensions can be used to move or resize circle-based objects. See “Moving Objects Using Dimensions” on page 989.

Using the Specification Dialog

Circles, ovals and ellipses can be edited using their specification dialogs. See “CAD Circle/Oval/Ellipse Specification Dialog” on page 1064.

Using the Edit Toolbar

A selected circle, oval or ellipse can be edited in a variety of ways using the buttons on the edit toolbar.

The following toolbar buttons may display on the edit toolbar for a selected circle, oval or ellipse:

- Click the **Select Next Object** edit button to select nearby objects instead of the selected object. See “Selecting Objects” on page 180.
- Click the **Open Object** edit button to open the specification dialog for the selected object(s). See “Specification Dialogs” on page 38.
- Click the **Copy/Paste** edit button to copy the selected object(s) to the Windows Clipboard so they can be pasted elsewhere. See “Copying and Pasting Objects” on page 168.
- Click the **Copy and Paste in Place** edit button to create a copy of the selected object(s) at the same location as the original. See “Copy and Paste in Place” on page 170.
- Click the **Delete** edit button to delete the selected object(s). See “Deleting Objects” on page 249.
- Click the **Transform/Replicate Object** edit button to copy, move, rotate, resize, or reflect the selected object(s). See “Transform/Replicate Object Dialog” on page 238.
- Click the **Multiple Copy** edit button to make a series of copies at set intervals. See “Multiple Copy” on page 171.
- Click the **Make Parallel/Perpendicular** edit button to make the selected edge parallel or perpendicular to another straight edge. See “Using Make Parallel/Perpendicular” on page 224.
- Click the **Point to Point Move** edit button to accurately move the selected object(s). See “Point to Point Move” on page 219.
- Click the **Center Object** edit button to center an object along along a wall within a room or relative to a cabinet fixture. See “Using Center Object” on page 224.
- Click the **Reflect About Object** edit button to reflect the selected object(s) about another object. See “Reflecting Objects” on page 234.
- Click the **Move to Front of Group** edit button to display the selected object in front of other objects in the same drawing group. See “Move to Front of Group” on page 216.

- Click the **Extend Object(s)** edit button to lengthen other object(s) until they intersect the selected object. See “Trim and Extend” on page 240. Not available for ellipses.
- Click the **Trim Object(s)** edit button to shorten the length of object(s) intersected by the selected object. See “Trim and Extend” on page 240. Not available for ellipses.
- Click the **Convert Polyline** edit button to convert the object into a special polyline-based object. See “Convert Polyline” on page 235.
- Click the **Revision Cloud(s) Around Objects** edit button to create a revision cloud around each of the selected object(s). See “Revision Clouds” on page 1071.
- Click the **Convert Curve to Polyline** edit button to convert the selected circle, oval or ellipse into a polyline. See “Convert Curve to Polyline” on page 230.
- Click the **Align/Distribute Objects** edit button to specify how the selected objects are distributed. See “Align/Distribute Objects” on page 221. Only available when multiple objects are selected.
- Click the **Object Layer Properties** edit button to access and edit layer information about the selected object. See “Object Layer Properties” on page 152.
- Click the **Align/Distribute Along Line** edit button, then click on a line-based object align the selected object(s) relative to that line. See “Align/Distribute Along Line” on page 222.

Displaying Objects

The display of objects in 2D and 3D views can be controlled by layer. See “Displaying Objects” on page 144.

Text, Line and Fill Styles

In addition to text-based objects like Text and Schedules, a variety of objects can display text as part of their line style or label. The appearance of this text can be controlled by layer. See “Line and Text Styles” on page 145.

Line style, weight and color can be controlled by layer or overridden in the specification dialogs for many objects. See “Line Style Panel” on page 1053.

You can also toggle the on screen display of line weights on and off. See “Line Weights” on page 1187.

In addition, many objects have a fill style that can be specified in the objects’ specification dialogs. See “Fill Style Panel” on page 1067.

Color On/Off

The display of color on-screen can be toggled on and off in any view by selecting **View> Color** or by clicking the toggle button.

- If **Color** is toggled off in any 3D view other than a Vector View or a Line Drawing view, the view will be displayed in grayscale.
- If **Color** is toggled off in any line based view, including floor plan view, Vector Views, Line Drawing views, CAD Details, and layout, the view will be displayed either in black and white or grayscale, depending on the **Color Off Is** setting in the **Preferences** dialog. See "Appearance Panel" on page 90.

To display views in gray scale

1. Select **View> Color** to toggle color off.
2. Select **Edit> Preferences** to open the **Preferences** dialog.
3. On the Appearance panel, select **Grayscale** as the **Color Off Is** setting. See "Appearance Panel" on page 90.

To display views in black and white

1. Select **View> Color** to toggle color off.
2. Select **Edit> Preferences** to open the **Preferences** dialog.
3. On the Appearance panel, select **Black and White** as the **Color Off Is** setting.

When **Color** is toggled off and **Black and White** is specified, all lines appear as black, regardless of their color. Solid fill colors appear as either white or black, depending on which is closer to the actual fill color when Color is turned on. The background remains as defined in the **Preferences** dialog. See "Colors Panel" on page 92.

You can specify whether cross section/elevations, camera views, and overviews using the Vector View Rendering Technique are generated with colors turned on in the **3D View Defaults** dialog. See "Options Panel" on page 873.

You can also print in color, black and white, or gray scale. See "Print View Dialog" on page 1194.

Arc Centers and Ends

The display of arc center- and endpoints, and the display of circle center points can be toggled by selecting **View> Arc Centers and Ends**, by clicking the toggle button, or in the **CAD Defaults** dialog. See "CAD Defaults Dialog" on page 1040.

Drawing Groups

Each object in a plan or layout file belongs to one of three drawing groups, which influences whether it displays in front of or behind other objects.

- The **Default Group** is where most objects are placed when first created.
- Objects moved to the **Back Group** display behind those in the other two drawing groups.
- Objects moved to the **Front Group** display in front of those in the other two drawing groups.

Most objects are drawn in the Default Group. Notable exceptions are imported pictures, which are placed in the Back Group, and

Walkthrough Paths, which are placed in the Front Group. Objects in the Default Group display in front or behind one another according to program-defined rules that can be modified in only limited ways.

Once most CAD or CAD-based objects are created, though, you can control how they display relative to other objects using their specification dialog. See “Line Style Panel” on page 1053.

For example, you can move an object to the **Back Group** or **Front Group** so that it displays behind or in front of objects in the other drawing groups.

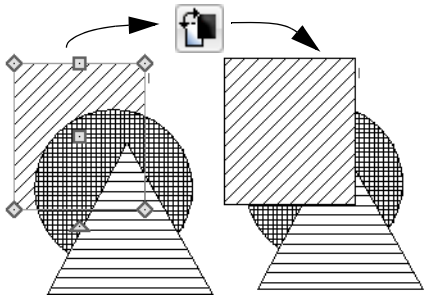
You can also check **Move to Front of Group** or use the edit button of the same name to display the object in front of other objects in its drawing group, but not necessarily in front of objects in other groups.

Move to Front of Group

Click the **Move to Front of Group** edit button to move the selected object(s) so that it displays in front of other objects in the same drawing group. **Move to Front of Group** functions like the checkbox of the same name in the object’s specification dialog.

An object moved to the front of the Default Group, for example, will display in front of objects in that group and those in the Back Group, but will still display behind objects in the Front Group.

Move to Front of Group only affects the display of objects in the Default Group when they are of the same type: for example, CAD objects, furnishings, base cabinets, or wall cabinets. It cannot make a base cabinet display in front of a wall cabinet; but it can make a selected wall cabinet display in front of other wall cabinets.



Move to Front of Group is useful for creating a sense of depth or to improve a drawing’s clarity. For example, in a cross section detail, you can move a CAD circle representing rebar to the front of a wall with a concrete fill pattern so that the rebar is not masked by the wall’s fill pattern.

Move to Front of Group is not available for Walkthrough Paths.

Patterns and Textures

The appearance of architectural objects in 3D views is affected by the materials applied to the objects’ surfaces. See “Materials” on page 827.

Material patterns display in Technical Illustration, Line Drawing and Vector Views, while textures display in other rendered views. See “Rendering Techniques” on page 928.

You can turn the display of patterns on or off in 3D views that use them by selecting **3D> Toggle Patterns**.

In 3D views that use textures, you can turn on or off the display of textures by selecting **3D> Toggle Textures** .

Delete Surface

In any 3D view, select **3D> Delete Surface**, then click a surface in the view to temporarily remove the surface from the current view. See “Delete 3D Surface” on page 888.

Refresh Display

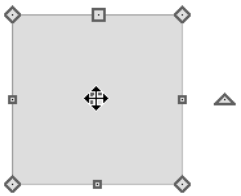
Refresh Display redraws the current window to clean up extra lines, show missing items, and correct random on-screen effects caused by changes to a model. Select **View> Refresh Display** or press the F5 key to refresh the on-screen display.

Moving Objects

Objects can be moved using the edit handles as well as a variety of edit tools. Multiple selected objects can also be moved as a group. See “Selecting Objects” on page 180.

Using the Edit Handles

Select an object, then click the **Move** edit handle and drag it to a new location. When your pointer is over the Move handle, it displays a four-headed arrow.



As an object is moved, it jumps at set increments when **Grid Snaps** are enabled. See “Grid Snaps” on page 164.

When **Object Snaps** are enabled, a selected object snaps to its original location if it passes over that location while being moved.

The behavior of the Move edit handle varies depending on the currently active **Edit Behavior** . See “Edit Behaviors” on page 176.

- If the **Default** , **Resize** , **Concentric** or **Fillet** edit behavior is active, the object moves orthogonal, or at a right angle to, any of its edges.
- If the **Alternate** edit behavior is active, the selected object(s) can be moved at Allowed Angles if **Angle Snaps** are enabled, or orthogonal to any of its edges if they are not. See “Alternate” on page 177.
- If the **Move** edit behavior is active, the selected object(s) can be moved by clicking and dragging any edit handle that would otherwise be used for resizing. See “Move” on page 177.

You can temporarily slow the movement of your mouse as you drag an edit handle by holding down the Shift key on your keyboard.

Bumping/Pushing

When **Edit> Snap Settings> Bumping/Pushing** is enabled, architectural objects as well as CAD and CAD-based objects with **CAD Stops Move** and/or **Wall Stops Move** enabled bump into and can push one another as they are moved. See “Line Style Panel” on page 1053.

When an object bumps into another similar object while it is being moved, it stops. If you do not release the mouse button and continue to drag, however, the selected object resumes movement and continues past the obstructing object.

Instead of dragging through and past an one or more obstructing objects, you can instead push them. To do this, bump an object into an obstructing object and release the mouse button. Then, click and drag the Move edit handle a second time in the same direction.

Walls, wall openings, cabinets, furnishings and fixtures, and CAD and CAD-based objects are examples of objects that can bump into as well as push other objects.

By default, **Bumping/Pushing** does not affect objects moved using dimensions or the **Enter Coordinates** dialog. See “Moving Objects Using Dimensions” on page 989 and “Entering Coordinates” on page 166.

The **Maximum Bump Distance**, which is the distance you must drag to override bumping, is set in the **Preferences** dialog. **Bumping/Pushing for Type-in Movement** can also be enabled there. See “Snap Properties Panel” on page 113.

Certain types of objects, notably roof planes, and objects on locked layers can be bumped but cannot be pushed. See “Layer Display Options Dialog” on page 148.

CAD Stops Move/ Wall Stops Move

CAD and CAD-based objects can be set to stop at other CAD objects and/or at walls as they are being moved. See “Line Style Panel” on page 1053.

Some objects, such as cross boxes, framing members and insulation, are automatically set to stop when moved against other CAD objects.

CAD Stops Move and **Wall Stops Move** do not function if **Bumping/Pushing** is turned off.

Unrestricted Movement

Many objects have restrictions placed on their movement by their own properties or specification settings. Architectural objects, for example, bump into other 3D objects as they are being moved when **Bumping/ Pushing** is enabled.

CAD-based objects can be set to stop at other CAD objects or at walls. See “Line Style Panel” on page 1053.

Other move restrictions are activated by the **Snap Settings**. See “Snap Behaviors” on page 160.

These restrictions can be overridden when necessary by holding down the Ctrl key while dragging to move an object.

To move an object freely

1. Select the object.

2. Hold down the Ctrl key.
3. Click the Move edit handle and drag it to the new location.

You can also press the Ctrl key while dragging an object's Move handle to override move restrictions.

Nudging

You can use your keyboard to move a selected object or objects by single **Snap Grid** increments in 2D and 3D views. This is referred to as nudging. See "Grid Snaps" on page 164.

By default, the Nudge commands are not assigned hotkeys and the arrow keys are programmed to nudge a selected object. If you press an arrow key when no object is selected, you will instead pan the view window. See "Panning the Display" on page 860.

If you wish, you can program assign hotkeys to the Nudge commands. When Nudge hotkeys are assigned, they cannot also be used to pan the display. See "Hotkeys" on page 138.

In Floor Plan View

To nudge an object in floor plan view, select it and press any of the four arrow keys: Up, Down, Left, or Right. These directions are relative to the Snap Grid: if **Rotate Plan View** is used to rotate floor plan view, the definitions of up, down, left, and right are affected. See "Rotate Plan View" on page 233.

In 3D Views

To nudge an object in camera views, overviews, and cross section/elevation views, you can program the keys of your choice for use as nudging hotkeys. See "Hotkeys" on page 138.

In 3D views, nudging is relative to the selected surface. If, for example, you select the front of a cabinet in 3D and nudge it to the left, it will move to the left in floor plan view. If you instead select the back of a cabinet in 3D and nudge it to the left, it will move to the right in floor plan view.

When multiple objects are selected, the surface that was clicked on last is considered the selected surface. When nudged, all selected objects will move relative to that surface. See "Shift and Ctrl Select" on page 183.

If an object is rotated, the directions that it can be nudged in 2D are not affected; however, in 3D, they are. If, for example, a cabinet is rotated 45º, it will nudge to the left as defined by the Snap Grid in floor plan view. When nudged in 3D, however, it will move at a 45º angle to the Snap Grid: or parallel to the selected surface.

Point to Point Move

The **Point to Point Move** edit button allows a selected object or group of objects to be accurately moved.

To use Point to Point Move

1. Select one or more objects that you would like to move, then click the **Point to Point Move** edit button.
2. Click a point that you want to accurately reposition.

3. Click the point in the plan where you would like the selected point to be relocated when it is moved.
4. The selected object(s) are moved so that they maintain their position relative to the point.

Point to Point Move can be used with the **Copy/Paste** edit button. See "To point to point copy" on page 174.

Point to Point Move can also be used with the **Edit Area** tools. See "Edit Area Tools" on page 246.

Center Object

The **Center Object** edit button allows you to move walls, cabinets and other objects so that they are centered along a wall within a room or relative to a window or cabinet.

Move to Framing Reference

Framing members can be positioned relative to a Framing Reference using the **Move to Framing Reference** edit tool. See "Framing Reference Marker" on page 569.

Using Dimensions

Objects or the selected edges of some objects can be moved using dimensions. See "Moving Objects Using Dimensions" on page 989.

When **Bumping/Pushing for Type-in Movement** is checked in the **Preferences** dialog, adjacent objects can be pushed when an object is moved using dimensions.

Enter Coordinates

Objects or the selected edges of some objects can be moved using the **Enter Coordinates** dialog. See "Entering Coordinates" on page 166.

To push additional objects using the **Enter Coordinates** dialog, check **Bumping/Pushing for Type-in Movement** in the **Preferences** dialog, then bump an object into another object. Click and drag a second time to begin pushing and press the Tab key to open the **Enter Coordinates** dialog.

> Note: By default, objects moved using either the Enter Coordinates dialog or dimensions are not subject to Bumping/Pushing. See "Bumping/Pushing" on page 218.

Using the Transform/ Replicate Object Dialog

Objects and groups of objects can be moved relative to themselves or an absolute location using the **Transform Replicate Object** dialog. See "Transform/ Replicate Object Dialog" on page 238.

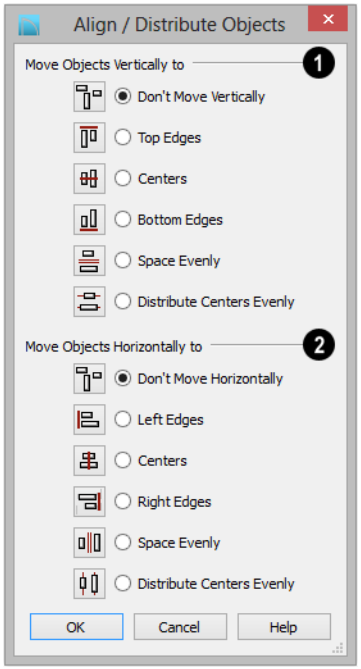
Aligning Objects

It is often important to align objects such as text boxes, roof plane edges or walls, or to align objects on different floors. There are several methods to choose from.

Align/Distribute Objects

Select two or more objects and click the **Align/Distribute Objects** edit button to open the **Align/Distribute Objects** dialog and specify how to align or distribute the selected objects vertically and/or horizontally.

Align/Distribute Objects is available in all views for most CAD objects. For architectural objects, it is only available in floor plan view.



1 Specify what edges or points on the selected objects to **Move Objects Vertically to**.

- Select **Don't Move Vertically** to make no changes to the vertical alignment of the selected objects.
- Select **Top Edges** to move the selected objects so their top edges are aligned. The object with the highest top edge in the selection set does not move.
- Select **Centers** to move the selected objects so their centers are aligned vertically. The object with the center closest to the vertical center of the selection set does not move.
- Select **Bottom Edges** to move the selected objects so their bottom edges are aligned. The object with the lowest bottom edge in the selection set does not move.
- Select **Space Evenly** to produce consistent vertical spacing between the top and bottom edges of the objects in the selection set. The highest and lowest objects on screen do not move and the ones in between move up or down as needed. Only available if three or more objects are selected.
- Select **Distribute Centers Evenly** to produce consistent on-center vertical spacing between the objects in the selection set. The highest and lowest objects on screen do not move and the ones in between move up or down as needed. Only available if three or more objects are selected.

2 Specify what edges or points on the selected objects to **Move Objects Horizontally to**.

- Select **Don't Move Horizontally** to make no changes to the horizontal alignment of the selected objects.
- Select **Left Edges** to move the selected objects so their left edges are aligned.

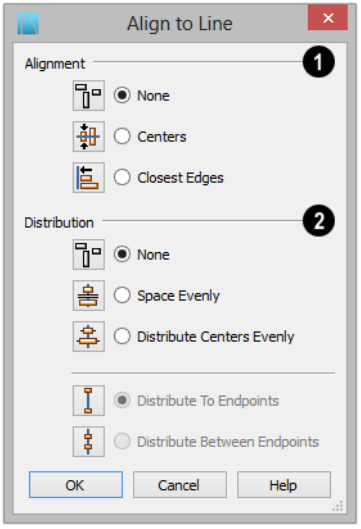
The object in the selection set with the leftmost edge does not move.

- Select **Centers** to move the selected objects so their centers are aligned horizontally. The object with the center closest to the horizontal center of the selection set does not move.
- Select **Right Edges** to move the selected objects so their right edges are aligned. The object in the selection set with the rightmost edge does not move.
- Select **Space Evenly** to produce consistent horizontal spacing between the left and right edges of the objects in the selection set. The left- and rightmost objects on screen do not move and the ones in between move left or right as needed.
- Select **Distribute Centers Evenly** to produce consistent on-center horizontal spacing between the objects in the selection set. The left- and rightmost objects on screen do not move and the ones in between move left or right as needed.

Align/Distribute Along Line

Select one or more objects, click the **Align/Distribute Along Line** edit button, then click on a line or line-based object to open the **Align To Line** dialog and specify how to align the selected objects relative to the line.

Align/Distribute Along Line is available in all views for most CAD objects. For architectural objects, it is only available in floor plan view.



1. Specify the **Alignment** to apply to the selected object(s) relative to the line.

- Select **None** to make no changes to the alignment of the selected objects.
- Select **Centers** to move the selected objects so their centers are aligned with the line.

- Select **Closest Edges** to move the selected objects so the edges closest to the line are aligned with the line.

❷ Specify the **Distributation** of the selected objects relative to the line.

- Select **None** to make no changes to the spacing of the selected objects.
- Select **Space Evenly** to produce consistent spacing between the edges of the objects in the selection set in the same direction as the line. The outermost objects in the group do not move and the ones in between move as needed.
- Select **Distribute Centers Evenly** to produce consistent on-center spacing in the same direction as the line between the objects in the selection set. The outermost objects in the group do not move and the ones in between move as needed.

Specify, too, how the first and last objects align with the line's endpoints. These options are only available if three or more objects are selected.

- Select **Distribute To Endpoints** to position the first and last objects in the array so they align with the line's endpoints.
- Select **Distribute Between Endpoints** to position the first and last objects in the array so inside the line's endpoints, spaced as though there were additional objects aligned with the endpoints.

Using the Mouse Cross Hairs

Objects can be aligned by eye using the mouse cross hairs as a reference. This method can help you draw, place and edit objects quickly and with reasonable accuracy, but is not necessarily as accurate as some of the other approaches described here.

The mouse cross hairs can be turned on and off and their size and aperture set in the **Preferences** dialog. See "Edit Panel" on page 110.

Using Snap Settings

With **Object Snaps** on, you can snap the edge of a selected object to that of another. Select an edge of an object. Drag it to the edge of another object to reveal an Object Snap point, then release the mouse.

With **Grid Snaps** on and **Angle Snaps** off, select the left side of the object, and drag from the center move handle. This snaps the selected side to the grid.

When both **Grid Snaps** and **Angle Snaps** on, objects snap at increments equal to the **Snap unit** specified in the **Plan Defaults** dialog rather than onto the grid itself. This does not align objects to the grid unless they were already snapped to the grid. See "Snap Behaviors" on page 160.

Using Dimensions

Create a temporary or manual dimension relative to an object such as a wall or line, and relocate the objects to the same dimension. See "Moving Objects Using Dimensions" on page 989.

Text objects can be aligned using settings in the Text Specification dialog. See "Aligning Text" on page 1018.

CAD Stops Move/ Wall Stops Move

CAD and CAD-based objects can be aligned using another CAD object or a wall as a guide. Check the **CAD Stops Move** and/or **Wall Stops Move** boxes in the objects' specification dialogs, then move them until they bump into the CAD object or wall that you wish to use as a guide for alignment. See "Line Style Panel" on page 1053.

Using Make Parallel/ Perpendicular

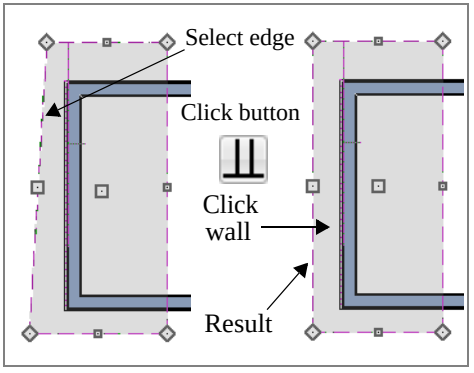
The **Make Parallel/Perpendicular** edit button allows you to make a selected object parallel or perpendicular to any straight edge.

If you select an edge of a polyline-based object, adjacent edges extend or contract to maintain contact, but other edges are remain unchanged. The selected edge rotates about its endpoint if selected near the end, or about its center if you click within its middle third.

The **Make Parallel** edit button displays for a selected CAD block instance when a line, including a straight polyline edge, or box edge within a block instance, straight polyline edge is selected. The entire block is rotated to make the selected line or edge perpendicular or parallel to the item subsequently clicked on.

To use Make Parallel/Perpendicular

1. Select an object such as a roof plane on the edge that you would like to make parallel or perpendicular to another object.
   - Click near the center of the edge to rotate it about the center.
   - Click near an end to rotate the edge about that end.
2. Click the **Make Parallel/ Perpendicular** edit button
3. Click on a straight edge such as a wall.
4. If the first object is within 45° of parallel to the second object, it is made parallel. Otherwise, it is made perpendicular to the second object.



You can also make the selected edge parallel by rotating the entire object. See "Make Parallel/Perpendicular with Polyline Based Objects" on page 232.

Using Center Object

The **Center Object** edit button can be used to center a variety of objects relative to another object. Center Object can be used to center architectural objects in floor plan and cross section/elevation views. It can also be used to center CAD objects in floor plan view, layout, and CAD Details.

To center an object

1. Select an object.
2. Click the **Center Object** edit button.
3. Move the mouse pointer over the object you would like to center the selected object relative to.
   - As the pointer passes over an eligible object, it becomes highlighted and a dashed centering axis line displays.
4. When the desired centering axis displays, click once to center the selected object along that axis line.

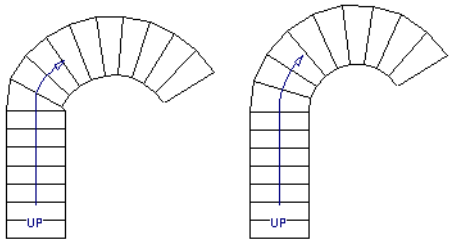
To center an object in a room

1. Select an object such a cabinet.
2. Click the **Center Object** edit button.
3. Move the mouse pointer in the room that you would like to center the selected object relative to.
   - As you move the pointer, a centering axis will display along the wall it is closest to.
   - The selected object does not have to be inside a room in order to be centered relative to that room.
4. When a centering axis displays along the correct wall, click once.
5. The object is moved perpendicular to the centering axis.

If you click outside an exterior wall instead of clicking inside, the selected object is centered along the edge of the Exterior Room. See “The Exterior Room” on page 326.

Using Make Arc Tangent

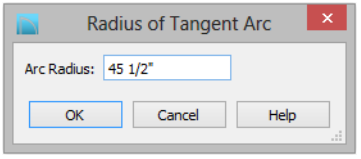
If a selected arc is attached on one or both ends to another line or arc, the **Make Arc Tangent** edit button displays. Click this button to adjust the arc and attached lines so they transition smoothly.



Before *After*

To use Make Arc Tangent

1. Select an arc-based object attached to like objects one or both ends.
2. Click the **Make Arc Tangent** edit button.
3. If the arc is attached to two objects, the **Radius of Tangent Arc** dialog opens.



4. The radius from the center of curvature to the middle of the arc-based object displays. Keep this radius or change it, and click **OK**.
   - If the arc is attached to two perpendicular lines, this dialog opens but the **Arc Radius** field is not enabled.
5. The arc and attached segments adjust so that the arc radius matches the target as

closely as possible and the arc is made tangent to the attached segments.

Aligning Arc Centers

The center points of circles and arc-based objects can be aligned, even if the objects are on different floors, when the Reference Display is turned on and **Show Arc Centers and Ends** is enabled. See “The Reference Floor” on page 434 and “CAD Defaults Dialog” on page 1040.

To align center points easily, it is helpful to turn on **Object Snaps** and turn off **Angle Snaps**. See “Object Snaps” on page 160 and “Angle Snaps” on page 162.

Aligning Objects on Different Floors

Objects on different floors can be aligned with one another using **Object Snaps** and the **Reference Display**. See “Object Snaps” on page 160 and “The Reference Floor” on page 434.

Resizing Objects

Objects can be resized using the edit handles, specification dialogs, and the **Transform/ Replicate Object** dialog.

Using the Edit Handles

Depending on the currently active **Edit Behavior**, the end, corner and/or side edit handles can be used to resize a selected object. See “Edit Behaviors” on page 176.

When the **Concentric** edit behavior is active, dragging an object’s corner or end handle resizes it according to the **Concentric Jump** value set in the **Preferences** dialog. See “Concentric” on page 178.

Objects can be resized about either their center points or the current CAD point. See “Behaviors Panel” on page 111.

To override any movement restrictions caused by snap settings or the presence of other objects, press the Ctrl key while dragging an edit handle.

As an object is resized, any dimensions indicating its size will update to reflect yoru changes. You can use dimensions as references to help you achieve the correct size for most objects.

You can temporarily slow the movement of your mouse as you drag an edit handle by holding down the Shift key on your keyboard.

Using the Specification Dialog

Most objects can be accurately resized in their specification dialogs. Some objects, such as images and some symbols, have a Retain Aspect Ratio option that lets you easily resize the object without distorting its shape. See “Specification Dialogs” on page 38.

Using Dimensions

Many objects can be resized by selecting an edge and then moving that edge using dimensions. See “Moving Objects Using Dimensions” on page 989.

Walls can also be resized using dimensions; however, it is important to understand that the selected edges of other objects cannot be resized using dimensions - they can only be moved. To resize an edge, select an adjacent edge and move that edge instead.

Using the Transform/ Replicate Object Dialog

Most objects can be resized about either their centers or an absolute point using the **Transform Replicate Object** dialog. See “Transform/Replicate Object Dialog” on page 238.

Reshaping Objects

There is a variety of ways to reshape objects using the edit handles, specification dialogs and edit toolbar buttons.

Some objects, notably circles and box-based objects, cannot be reshaped - only resized. See “Resizing Objects” on page 226.

Using the Edit Handles

Depending on the **Edit Behavior**  in use, the end, corner and/or side edit handles can be used to reshape a selected object. See “Edit Behaviors” on page 176.

When a line-based, arc-based, or open-polyline based object is selected, you can right-click and drag an end handle to change a line into an arc or vice versa. This behavior does not apply to closed polylines.

To override any movement restrictions caused by snap settings or the presence of other objects, press the Ctrl key while dragging an edit handle.

You can temporarily slow the movement of your mouse as you drag an edit handle by holding down the Shift key on your keyboard.

Using the Specification Dialog

A variety of CAD and CAD-based objects can be reshaped by editing values on either the Selected Line or Selected Arc panel of their specification dialogs. See “Polyline Specification Dialog” on page 1066.

Using Dimensions

Both temporary and manually drawn dimensions can be used to increase or decrease the distance between the edge a line- or polyline-based object and another, parallel edge or line.

Angular Dimensions  can be used to adjust the angle where two polyline segments meet. See “Using Angular Dimensions” on page 232.

Break Line

The **Break Line** edit button can be used to break an individual line-, arc-, or spline-based object into two segments. The edges of a polyline-based object can also be broken.

> Note: The Break Line edit button is not available for box-based objects, objects created with the Circle Tools, North Pointers, Sun Angles, Joist Direction Lines, or some architectural objects such as stairs and trusses.

The **Break Line** edit tool can be used to create two types of breaks: partial breaks and complete breaks.

When a partial break is created, a new corner edit handle is placed at the location of the break. Partial breaks are also referred to as joints, nodes or pivot points.

- Click the **Break Line** edit button to add a new corner or pivot point to the selected object.

To create a partial break

1. Click the object or edge that you want to break into two segments.
2. Click the **Break Line** edit button once or press the 3 key.
3. Click the edge to create a new corner edit handle at that location and two separate edges on either side of that handle.

If you click and drag one of the edit handles on either side of the partial break, the edge moves at a right angle to itself and another edge forms, connecting the moved edge with the one on the other side that does not move.

You can remove an edge from a polyline-based object by clicking and dragging a corner handle until it snaps to an adjacent corner handle.

When a complete break is created, the object or edge is totally severed at that point.

With the exception of framing members, complete breaks cannot be created on CAD-based architectural objects. In the case of framing members, only complete breaks can be created.

To create a complete break

1. Click the object or edge that you want to break into two segments.
2. Double-click the **Break Line** edit button.
3. Click the edge to create a complete break at that location.

You can now click either side of the location of the break and move the selected object or edge completely independent of the object or edge on the other side of the break.

When **Object Snaps** are enabled, breaks can be placed at snap locations such as midpoints. See “Object Snaps” on page 160.

If you place a complete break at a polyline corner, the adjacent polyline edges become disconnected.

To remove a break from an edge

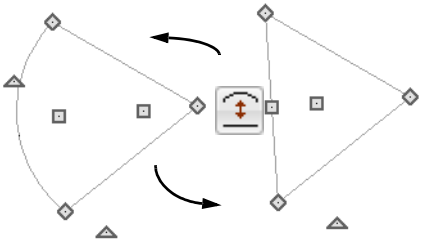
1. Make sure that **Object Snaps** are enabled.
2. Select the object that has a break that you want to remove.

3. Click on the corner edit handle associated with the break that you want to remove and drag it to an adjacent corner handle.

4. When you see an **Endpoint** snap indicator, release the mouse button. The hande that you selected will be removed.

Change Line/Arc

Select an individual line-based or arc-based object or a segment of a polyline-based object and click the **Change Line/Arc** edit button to convert the selected segement from a line to an arc or vice versa.



Make Parallel/Perpendicular

The **Make Parallel** edit button can be used to reshape a polyline by making a selected edge parallel or perpendicular to another straight edge. See “Using Make Parallel/Perpendicular” on page 224.

Intersect/Join Two Lines

The **Intersect/Join Two Lines** edit tool allows you to connect two non-parallel line- and/or arc-based objects or to join two edges of an open or closed polyline-based object. The lines or edges will shorten or lengthen as need to intersect at a point and join. If one or more edges exists between the two polyline edges, they will be removed.

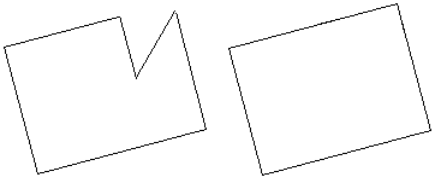
To use Intersect/Join Two Lines

1. Click on a line, arc, or polyline segment that you would like to connect to another line or segment.

2. Click the **Intersect/Join Two Lines** edit button.

3. Click on the other line or polyline edge.

4. If there are intervening polyline edges, a message will confirm that you would like them to be removed. Click **Yes**.



Fillet Two Lines

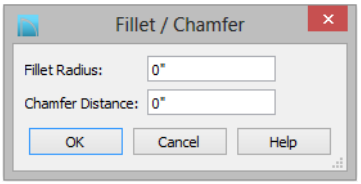
The **Fillet Two Lines** edit tool allows you to replace the angled corner where two polyline edges meet with an arc or to join two non-parallel line-based objects with an arc.

If one or both of the two objects is an arc, both will extend or contract as needed to become connected. No additional arc is created.

To use Fillet Two Lines

1. Click on a line or polyline segment that you would like to connect to another line or segment with a fillet, or arc.

2. Double-click the **Fillet Two Lines** edit button to open the **Fillet/Chamfer** dialog.



3. Specify the desired **Fillet Radius** and click OK. If the Fillet Radius is 0, no fillet will be created.

The Fillet/Chamfer Settings button also opens the Fillet/Chamfer dialog and can be added to your toolbars. See “To add a button to a toolbar” on page 132.

4. Click on the line or polyline segment that you want the selected line to connect to with a fillet.
5. Continue filleting two lines by clicking on one line, clicking the **Fillet Two Lines** edit button, then clicking on the second line. The same Fillet Radius is used until you open the **Fillet/Chamfer** dialog again and change it.

Once two lines are filleted, the arc between them can be edited. See “Editing Arc Based Objects” on page 188.

Chamfer Two Lines

The **Chamfer Two Lines** edit tool allows you to create a straight corner bevel of a specified size connecting any two non-parallel lines or polyline edges. It can also be used to extend an arc so that it joins to another arc or line.

If one or both of the two objects is an arc, both will extend or contract as needed to become connected. No additional chamfer is created.

The **Chamfer Two Lines** edit tool is used much the way the **Fillet Two Lines** edit tool is. See “To use Fillet Two Lines” on page 229.

The Fillet Two Lines and Chamfer Two Lines edit tools can also be used the same way as the Intersect/Join Two Lines tool to join lines and polyline edges and remove any intervening polyline edges.

Close Polyline

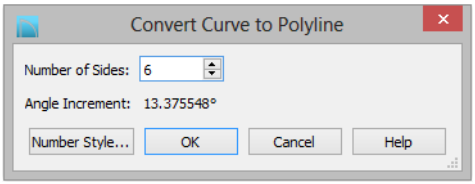
An open polyline-based object can be converted into a closed polyline using the **Close Polyline** edit tool. See “Using Close Polyline” on page 198.

Convert Curve to Polyline

The **Convert Curve to Polyline** edit button allows you to convert the selected arc- or circle-based object to a polyline composed of line segments.

To convert curve to polyline

1. Select an arc-based object or circle.
2. Click the **Convert Curve to Polyline** edit button.
3. In the **Convert Curve to Polyline** dialog, specify the number of sides you would like the converted arc or circle-based object to have.



- The initial values in this dialog may vary depending on the type of object selected.

4. Click **OK** to convert the selected arc or circle-based object into a polyline with the specified number of edges.

Convert to Spline

Click the **Convert to Spline** edit button to convert the selected polyline-based object into a spline. See “Convert to Spline” on page 231.

Union, Intersection, Subtract

Closed polyline-based objects can be reshaped using the **Union**, **Intersection** and **Subtract** edit buttons. See “Union, Intersection, and Subtract” on page 242.

Rotating Objects

Objects can be rotated using the edit handles as well as a variety of edit tools. Multiple selected objects can also be rotated as a group. See “Selecting Objects” on page 180.

By default, an object or group of objects rotate about the center point of the selection set. You can instead specify that objects rotate about the current CAD point. See “The Current Point” on page 1046.

Using the Edit Handles

Select an object, then click the triangular **Rotate** edit handle and drag it in any direction. When your pointer is over the Rotate handle, it displays a curved arrow.

The angles of line-based objects can also be changed by dragging an end handle in a direction other than parallel to the object. The object rotates about the opposite end point. See “Editing Line Based Objects” on page 184.

When **Angle Snaps** are enabled, objects snap to Allowed Angles as specified in the **Plan Defaults** dialog as they are rotated. See “Angle Snaps” on page 162.

To override any movement restrictions caused by snap settings or the presence of other objects, press the Ctrl key while dragging an edit handle.

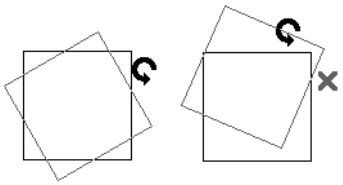
You can temporarily slow the movement of your mouse as you drag an edit handle by holding down the Shift key on your keyboard.

Using the Specification Dialog

The exact angle of some objects such as lines, arcs, walls and the selected edges of polylines can be specified on either the General panel, Selected Line panel, or Selected Arc panel of that object’s specification dialog. See “Polyline Specification Dialog” on page 1066.

Rotate/Resize About

Objects can be rotated or resized about either their own centers or the current CAD point. See “The Current Point” on page 1046.



You can specify which behavior is used by selecting **Edit> Edit Behaviors> Rotate/ Resize About Current Point**. When this option is selected, objects rotate about the current CAD point; when it is not selected, object rotate about their centers.

The Rotate/Resize About behavior can also be specified in the **Preferences** dialog. See “Behaviors Panel” on page 111.

Entering Coordinates

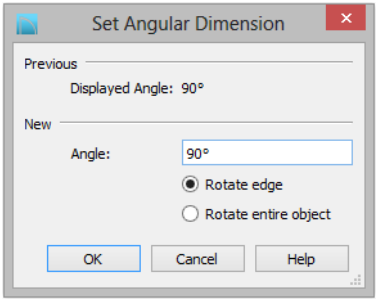
Objects can be rotated by entering coordinates or a distance and angle in the **Enter Coordinates** dialog. See “Entering Coordinates” on page 166.

Using Angular Dimensions

Angular Dimensions are useful for adjusting the angles of a variety of objects with straight edges. See “Angular Dimensions” on page 978.

To change an angular dimension

1. Draw an **Angular Dimension** between the objects you want to move.
   - Begin and end as close as possible to the two objects you wish to locate.
2. Select the edge that you want to move.
3. Click the dimension value to open the **Set Angular Dimension** dialog.
   - The **Previous Value** is indicated degrees, minutes and seconds.



4. Enter a value in the **New Value** field.
5. Select **Rotate Edge** to move the selected edge when OK is clicked or select **Rotate entire polyline** to rotate the entire object the selected edge is a part of, maintaining the Previous Value of the angle.
6. Click **OK** to apply the change.

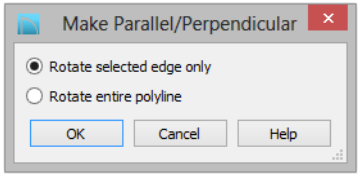
When an entire polyline is rotated using the **Set Angular Dimension** dialog, it rotates around the vertex of the angle.

Make Parallel/Perpendicular with Polyline Based Objects

The **Make Parallel/Perpendicular** edit button usually adjusts the angle of a selected polyline edge. See “Using Make Parallel/Perpendicular” on page 224.

To rotate the entire polyline instead, Shift + select the polyline before using the **Make Parallel** edit tool.

You can also double-click the **Make Parallel** edit button to open the **Make Parallel** dialog.



Choose to either **Rotate Selected Edge Only**, or **Rotate Entire Polyline**. This setting is global, affecting all files, and is retained during the current program session.

Polylines rotate according to the current **Rotate/Resize About** setting. See “Behaviors Panel” on page 111.

Using the Transform/ Replicate Object Dialog

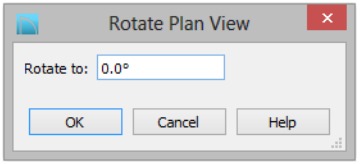
Objects and groups of objects can be rotated to a relative or absolute angle using the **Transform Replicate Object** dialog. See “Transform/Replicate Object Dialog” on page 238.

Using Multiple Copy

A rotated array of copies of the selected object(s) can be created using the **Multiple Copy** edit tool. See “To create an array of copies” on page 172.

Rotate Plan View

To rotate everything in floor plan view, including all objects on all floors, the Snap and Reference Grids, the plan’s Cartesian coordinates, and the drawing sheet, select **Tools> Rotate Plan View** to open the **Rotate Plan View** dialog.



Enter the degrees to rotate the floor plan view to using decimal units with either positive or negative values.

The degrees rotated displays in ±180º format. For example, if you enter 270º, it displays as -90º when the dialog is reopened.

Rotate Plan View rotates a plan relative to its original orientation. For example, entering 90º twice results in a rotation of 90º, not 180º.

Text objects rotate with the plan unless you uncheck **Rotate with plan** in the **Text Specification** dialog for each object. See “Rich Text Specification Dialog” on page 1004.

If you use **Rotate Plan View** and then use either the **CAD Detail from View** or **Plan Footprint** tool, the CAD Detail window that is created will permanently inherit the same rotation as the floor plan view. If you later modify the floor plan view’s rotation, the CAD Detail will not be affected. See “CAD Details” on page 1085 and “Plan Footprint” on page 1087.

The Rotate Plan View tool does not rotate objects; it literally rotates your view of those objects. As a result, it does not alter the orientation of the plan in layout views or on the printed page.

Reflecting Objects

There are several ways to reflect an object, group of objects, or an entire plan about an axis or another object. Either the original object(s) or copies of the original(s) can be reflected.

Reflect About Object

A selected object or objects can be reflected about another object, regardless of its angle, using the **Reflect About Object** edit tool.

Line-based objects are often used for reflecting a selection, but most objects have an axis that can be used.

- When an open or closed polyline-based object is used as the reflective object, the edge that is clicked on acts as the axis.
- When a circle or box-based object such as a CAD box or cabinet is used as the reflective object, the axis runs down the center of the object from back to front.
- In 3D views, architectural objects can only be reflected about a vertical axis - not a horizontal axis.

To use Reflect About Object

1. Draw a CAD line to act as the reflection line.
2. Select the object(s) to be reflected.
3. Click the **Reflect About Object** edit button.
4. Click the CAD line to reflect the selection about the line.
5. The selection is reflected around the CAD line, and the original is no longer there.

To retain a copy of the selected object(s) in the original location, click the **Copy/ Paste** edit button before clicking the **Reflect About Object** button.

Using the Transform/ Replicate Object Dialog

Objects and groups of objects can also be reflected horizontally or vertically using the **Transform Replicate Object** dialog. See “Transform/Replicate Object Dialog” on page 238.

Reverse Plan

The **Reverse Plan** tool is a quick way to mirror a plan so that everything on all floors of the entire plan is swapped left to right.

Select **Tools> Reverse Plan** to reflect an entire plan right to left, as though it were reflected about a vertical line.

Reversing a plan rebuilds the entire model and affects views sent to layout.

Reverse Direction

Select a line-based, arc-based or polyline-based object and click the **Reverse Direction** edit button to reverse its direction. Not available for Terrain Path objects.

Reversing a line or polyline is useful with certain line styles or with an arrow at one end.

Converting Objects

CAD objects and many CAD-based objects can be converted into a variety of other types of objects.

CAD to Walls

CAD to Walls allows you to convert a 2D line drawing into a 3D model. Double CAD lines and arcs drawn to represent wall layers and other structural items can be converted to actual Chief Architect walls, railings, windows, or doors. See “CAD to Walls” on page 293.

CAD Detail from View

Select **CAD> CAD Detail from View** to create a CAD drawing of the current view. See “CAD Detail from View” on page 1086.

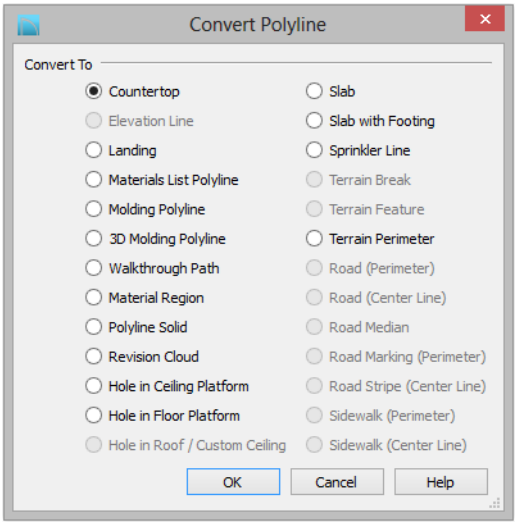
CAD Detail from View  does not truly convert objects in the current view into CAD objects; instead, it creates a copy of the original view composed of CAD objects instead of architectural objects, leaving the original view intact.

Convert Polyline

The **Convert Polyline** edit button lets you to turn CAD objects into CAD-based architectural objects such as counter tops and stair landings, special polylines such as materials list polylines, and a variety of slab, hole and terrain objects.

To convert a CAD object into one of these 3D objects, select the object and click the **Convert Polyline**  edit button to open the **Convert Polyline** dialog.

Convert Polyline Dialog



Click the radio button beside one of the objects in this dialog, then click OK.

Countertop - Convert the selected closed polyline to a countertop. See “Custom Countertops” on page 662.

Slab - Convert the selected closed polyline to a slab. See “The Slab Tools” on page 452.

Slab with Footing - Convert the selected closed polyline to a slab with footing.

Landing - Convert the selected closed polyline to a landing. Only available when the closed polyline is not a spline. See “Landings” on page 531.

Walkthrough Path - Convert the selected polyline to a Walkthrough Path. See “Walkthroughs” on page 1124.

Material Region - Convert the selected closed polyline to a Floor or Wall Material Region. See “Floor and Wall Material Regions” on page 779.

Materials List Polyline - Convert the selected closed polyline to a materials list polyline. See “Calculate From Area” on page 1248.

Molding Polyline - Convert to a molding polyline. See “Molding Polylines” on page 648.

3D Molding Polyline - Convert to a 3D molding polyline. See “3D Molding Polyline Tool” on page 649.

Hole in Roof/Custom Ceiling - Convert the selected closed polyline to a roof/ceiling hole. Only available when the polyline is contained inside a single roof plane or ceiling plane. See “Roof Hole/Skylight Specification Dialog” on page 507.

Hole in Ceiling Platform - Convert the selected closed polyline to a ceiling platform hole. Only available when the polyline is contained inside a single ceiling plane. See “Floor and Ceiling Platforms” on page 337.

Hole in Floor Platform - Convert the selected closed polyline to a floor platform hole. Only available when the polyline is contained inside a single floor platform. See “Floor and Ceiling Platforms” on page 337.

Polyline Solid - Convert the selected closed polyline to a polyline solid. See “Polyline Solids” on page 771.

Revision Cloud - Convert the selected closed polyline to a revision cloud. See “Revision Clouds” on page 1071.

Sprinkler Line - Convert to a sprinkler line. See “Sprinkler Tools” on page 755.

Terrain Perimeter - Convert to the terrain permeter. See “Terrain Perimeter” on page 696. This option is only available when:

- The polyline is closed
- A terrain perimeter does not yet exist
- Only one polyline is currently selected

Elevation Line - Convert to an elevation line. See “Elevation Lines” on page 700. Only available when a terrain perimeter exists.

Terrain Break - Convert to a terrain Break. See “Terrain Breaks” on page 702. Only available when a terrain perimeter exists.

Terrain Feature - Convert to a terrain feature. See “Terrain Feature Tools” on page 704. Only available when a terrain perimeter exists.

Road (Perimeter) - Convert the selected closed polyline to a road polyline where the polyline represents the perimeter of the road. See “Polyline Road” on page 737. Only available when a terrain perimeter exists.

Road (Center Line) - Convert to a road where the polyline represents the center line for the road. See “Straight Road” on page 737. Only available when a terrain perimeter exists.

Road Median - Convert the selected polyline to a road median. This is helpful for creating medians on curved roads. See “Median” on page 737.

Road Marking (Perimeter) - Convert to a road marking where the polyline represents the perimeter of the road marking. See “Road Marking” on page 738. Only available when a terrain perimeter exists and the polyline is closed.

Road Stripe (Center Line) - Convert to a road stripe where the polyline represents the centerline of the road stripe. See “Road Marking” on page 738. Only available when a terrain perimeter exists.

Sidewalk (Perimeter) - Convert to a sidewalk polyline where the polyline represents the perimeter of the sidewalk. See “Polyline Sidewalk” on page 739. Only available when a terrain perimeter exists and the polyline is closed.

Sidewalk (Center Line) - Convert to a sidewalk where the polyline represents the center line of the sidewalk. See “Straight Sidewalk” on page 739. Only available when a terrain perimeter exists.

Click **OK** to convert the object or objects.

The specification dialog appropriate to the newly converted object opens, allowing you to specify its height, material and other information.

Convert to Plain Polyline

Click the **Convert to Plain Polyline** edit button to convert special polylines to plain polylines.

After a special polyline is converted into a plain polyline, it can be converted into a special of the same or different type.

Convert to Solid

Click the **Convert To Solid** edit button to convert the selected object into a Primitive object, or solid, so that it can be used with other solids to create complex structures. See “Primitive Tools” on page 759.

Convert to Symbol

Create a 3D view of a custom object, then select **Tools> Symbol> Convert to Symbol** to convert the object into a symbol. See “Convert to Symbol” on page 1173.

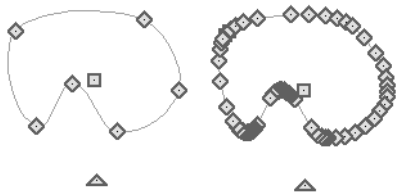
Convert to Spline

Click the **Convert to Spline** edit button to convert some CAD-based objects such as Custom Countertops or splines that have been converted to polylines to spline-based objects. See “Editing Spline Based Objects” on page 206.

Unlike polylines, splines form smooth curves rather than angled corners where their direction changes. See “Splines” on page 1073.

Convert Spline to Polyline

Click the **Convert Spline to Polyline** edit button to convert the selected spline-based object into a polyline.



The spline is replaced by the new polyline

A curved portion in a spline is represented as a number of smaller straight lines. You can change a spline into a normal polyline that is made up of these straight lines using this edit tool.

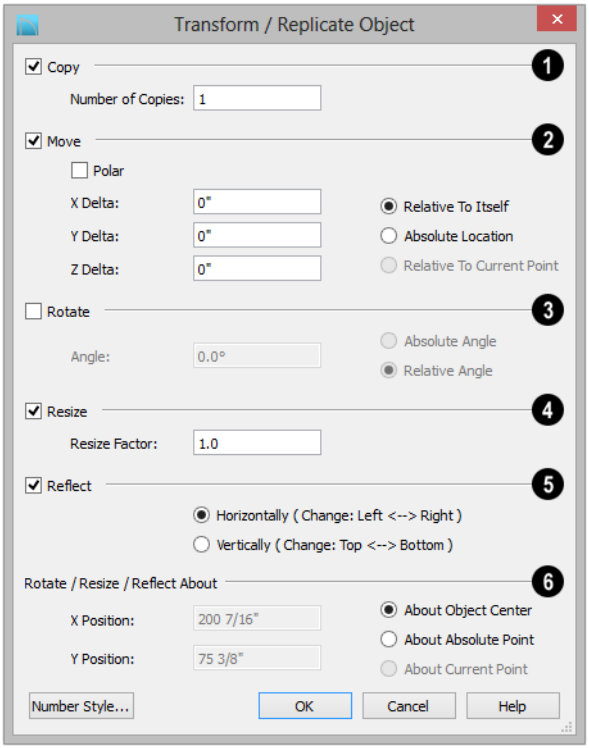
Transform/Replicate Object Dialog

Select any object or group of objects and click the **Transform/Replicate Object** edit button to open the **Transform/Replicate Object** dialog.

If multiple options are selected in the **Transform/Replicate Object** dialog, they are performed in the order they appear in the dialog, from top to bottom.

> Always double-check values entered in the Transform/Replicate Object dialog. Large offset values, resize factors, or numbers of copies can result in objects that are time-consuming to create or may be off the screen.

Transform/Replicate Object Dialog



1 Check **Copy**, then specify the **Number of Copies** to make.

2 Check **Move**, then specify how far or where to move the object(s).

- Select **Relative to Itself** to move the object relative to its current position, then specify the **X Delta**, **Y Delta** and **Z Delta** values, which are the object's changes in position along each axis.
- Select **Absolute Location** to move the object to an absolute location. You can either specify its **X** and **Y Position**, or **Angle** and **Distance**, if **Polar** is checked.
- Select **Relative to Current Point** to move the object relative to the current CAD point. See "Point Tools" on page 1044. You can either specify its **X Delta** and **Y Delta**, or **Angle** and **Distance**, if **Polar** is checked.

> When a CAD-based object is moved to a new floor, only its display in floor plan view is moved - its physical locations in the model remains unchanged. See "Architectural vs CAD Objects" on page 158.

3 **Rotate** - Select this option, then specify the **Angle** to rotate the object(s).

- Select **Absolute Angle** to rotate the object relative to an imaginary horizontal line drawn in the positive X direction from the origin. See “3D Drafting” on page 29.
- Select **Relative Angle** to rotate the object the specified angle relative to its current orientation.

You can also specify the point the selected object(s) rotate about, below.

❹ Select **Resize**, then specify the **Resize Factor** in decimals. A resize factor of 2 doubles the size of the object, while a resize factor of 0.5 halves the object’s size. Not available for all objects, including line- and arc-based objects and Primitives.

You can also specify the point the selected object(s) is resized about, below.

❺ **Reflect** - Select this option, then specify which axis to reflect about.

- **Horizontally** - Select this option to reflect the object horizontally.
- **Vertically** - Select this option to reflect the object vertically.

You can also specify the point the selected object(s) is reflected about, below.

❻ **Rotate/Resize/Reflect About** - This section is enabled when the **Rotate**, **Resize** and/or **Reflect** functions are selected.

- **X Position** - Specify the X coordinate of the point to perform the selected edit function(s) about when **About Absolute Point** is selected.
- **Y Position** - Specify the Y coordinate of the point to perform the selected edit function(s) about when **About Absolute Point** is selected.
- **About Object Center** - Select this option to perform the selected edit function(s) about the object’s center.
- **About Absolute Point** - Select this option to perform the selected edit function(s) about the specified point.
- **About Current Point** - Select this option to perform the selected edit function(s) about the current CAD point.

Trim and Extend

The **Extend Object(s)** and **Trim Object(s)** edit tools allow you to lengthen or shorten a variety of CAD objects and framing members. See “Framing” on page 561.

When either the **Extend Object(s)** or **Trim Object(s)** edit buttons are clicked, its edit mode is enabled and three new edit buttons display on the edit toolbar.

- Click the **Sticky Mode** edit button remain in the current mode and edit multiple objects or select multiple fences.
- Click the **Select Fence** edit button, then click an object to use it as a fence. See “Using a Fence” on page 184.
- Click the **Main Edit Mode** edit button or press the Esc key to return to the selected objects’s main edit toolbar.

If you did not do a fence selection and then immediately click either **Extend Object(s)** or **Trim Object(s)** after returning to the Main Edit Mode, **Sticky Mode** is still enabled.

Note: Trim Objects and Extend Objects cannot be used to modify closed polyline-based objects. See “Editing Closed-Polyline Based Objects” on page 198.

Trim Objects

Lines, arcs, open polylines, circles and framing items can be trimmed. The trimming, or cutting, object may be any CAD object, a group of CAD objects, or even a CAD block. Select the trimming object(s) and click the **Trim Object(s)** edit button.

The **Trim Object(s)** edit tool can be used in three different ways:

- Individually clicking on objects to be trimmed.
- Selecting objects to be trimmed using a fence. See “Using a Fence” on page 184.
- Selecting objects to be trimmed using a temporary fence.

To trim by clicking

1. Draw the cutting line(s) or polyline(s) through the objects to be trimmed.
2. Select the cutting line(s) and click the **Trim Object(s)** edit button.
3. Click the **Sticky Mode** edit button if you wish to click multiple objects to trim them.
4. Click each segment intersected by a cutting line one-by-one to trim it back to the cutting line.

To trim using a fence

1. Draw the cutting line(s) or polyline(s) through the objects to be trimmed.
2. Draw a fence through the object segments to be trimmed. Be sure that the fence intersects the objects on the side of the cutting line(s) that you want to edit. See “Using a Fence” on page 184.
3. Select the cutting line(s) and click the **Trim Object(s)** edit button.
4. Click the **Sticky Mode** edit button if you wish to trim objects using multiple fences.
5. Click the **Select Fence** edit button.
6. Click the fence(s) to trim the object segments intersected by the fence.

To trim using a temporary fence

1. Draw the cutting line(s) or polyline(s) through the objects to be trimmed.
2. Select the cutting line(s) and click the **Trim Object(s)** edit button.
3. Click the **Sticky Mode** edit button if you wish to trim objects using multiple temporary fences.
4. Click and drag a temporary line to act as a fence, trimming the object segments intersected by it. Be sure to draw this fence on the side of the cutting object(s) that you wish to edit.

Extend Objects

Lines, arcs, open polylines, and framing items can also be extended to any CAD object, group of CAD objects, or a CAD block.

As with **Trim Objects**  , there are three ways to use **Extend Objects**  :

- Individually clicking on objects to be extended.
- Selecting objects to be extended using a fence.
- Selecting objects to be extended using a temporary fence.

To extend by clicking

1. Draw the boundary line(s) or polyline(s) you want the objects to extend to.
2. Select the boundary line(s) and click the **Extend Objects**  edit button.
3. Click the **Sticky Mode**  edit button if you wish to extend multiple objects.
4. Click an object that you would like to extend to the boundary line(s).

To extend using a fence

1. Draw the boundary line(s) or polyline(s) you want the objects to extend to.
2. Draw a fence through the objects to be extended. See “Using a Fence” on page 184.
3. Select the boundary line(s) and click the **Extend Objects**  edit button.
4. Click the **Sticky Mode**  edit button if you wish to extend objects using multiple fences.
5. Click the **Select Fence**  edit button.
6. Click the fence to extend the objects segments intersected by the fence until they meet the boundary line(s).

To extend using a temporary fence

1. Draw the boundary line(s) or polyline(s) you want the objects to extend to.
2. Select the boundary line(s) and click the **Extend Objects**  edit button.
3. Click the **Sticky Mode**  edit button if you wish to extend objects using multiple temporary fences.
4. Click and drag a temporary line to act as a fence, trimming the object segments intersected by it.

Union, Intersection, and Subtract

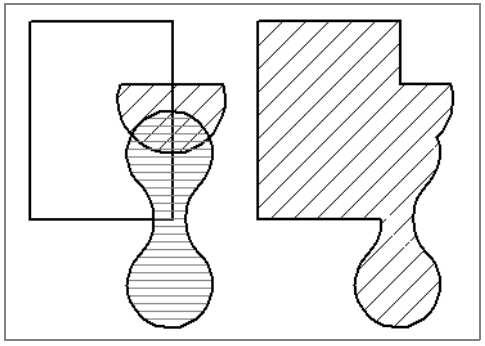
New closed polyline-based objects and solids can be created based on existing closed polyline-based objects of the same type or solid objects. The **Polyline Union**, **Polyline Intersection** and **Polyline Subtract** edit tools are provided for this purpose.

Note: The Union Intersection and Subtract edit tools are not available for objects specified as holes, such as Slab Holes or Custom Countertop Holes.

Polyline Union

Use the **Polyline Union** edit button to combine two or more closed polylines or solids into a single object.

The following example shows three closed polylines and the single closed polyline that results when the three are merged using the **Polyline Union** edit button.



There are two methods of combining closed polylines or solids using the **Polyline Union** edit button: the single selection and group selection methods.

Begin by creating two or more overlapping objects of the same type. If one object is a countertop, for example, the others should be countertops, as well.

If the original objects do not overlap, they will either not produce a new object or will be duplicated on top of themselves.

To use the single selection method

1. Select a single closed polyline or solid object.
2. Click the **Polyline Union** edit button.
3. Click another closed polyline or solid.
4. If the object is a polyline, a message box will let you choose to either retain or delete the original objects.
5. A new polyline of the same type as the originals is created and is selected. Its shape is defined by the boundaries of the original objects. If the original objects were retained, it is superimposed over them and can be moved.

To use the group selection method

1. Group-select two or more closed polylines or solid objects.
2. Click the **Polyline Union** edit button.
3. If the object is a polyline, choose to retain or delete the original objects in the dialog that opens.
4. A new object of the same type as the originals is created, is selected, and is superimposed over the originals if they were retained.

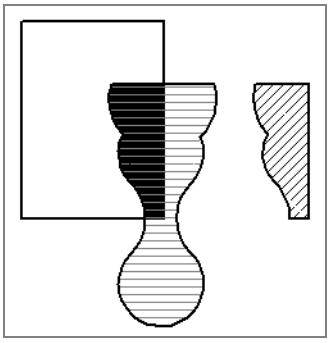
This second method allows you to combine more than two polylines simultaneously.

Note: If the original objects do not overlap, the Union edit tool duplicates them and then either deletes or retains the originals.

Intersection

Use the **Polyline Intersection** edit button to create a single polyline based on the overlap area of two or more closed polyline-based objects or solids.

The following example shows two closed polylines and the single closed polyline that results when the **Polyline Intersection** edit button is used.



There are two methods of combining closed polylines or solids using the **Polyline Intersection** edit button: the single selection and group selection methods. The second method allows you to work with more than two objects simultaneously.

Begin by creating two or more overlapping objects of the same type. If one object is a countertop, for example, the others should be countertops, as well.

If the original objects do not intersect, no new object is created.

To use the single selection method

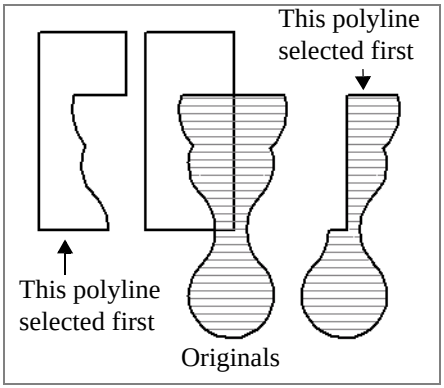
1. Select a single closed polyline or solid object.
2. Click the **Polyline Intersection** edit button.
3. Click another closed polyline or solid.
4. If the object is a polyline, choose to retain or delete the original objects in the dialog that opens.
5. A new object of the same type as the originals is created and is selected. Its shape is defined by the area shared by the original objects and, if the originals were retained, it is superimposed over them and can be moved.

To use the group selection method

1. Group select two or more closed polylines or solid objects.
2. Click the **Polyline Intersection** edit button.
3. If the object is a polyline, choose to retain or delete the original objects in the dialog that opens.
4. A new object of the same type as the originals is created, is selected, and is superimposed over the originals if they were retained.

Subtract

Use the **Polyline Subtract** edit button to subtract the area of one object that overlaps another object of the same type to create a third, new object.



There is one method for using the **Polyline Subtract** edit button.

To use the Subtract edit tool

1. Draw two or more closed polyline-based objects or solids that overlap. One object can be completely enclosed by another.
2. Select one or more of these objects that you want to remove a portion from as defined by the area shared in common with the remaining, unselected object.
3. Click the **Polyline Subtract** edit button and then click the unselected object.
4. If the object is a polyline, choose to retain or delete the original objects in the dialog that opens.
5. A new object of the same type as the originals is created, is selected, and is superimposed over the originals if they were retained.

Note: If the original objects do not overlap, the Subtract edit tool duplicates the first object selected and then either deletes or retains it.

Select Same / Load Same

The **Select Same/Load Same** edit tools provide a fast way to locate and modify rooms, cabinets, windows, doors, and wall hatching in your plan based on attributes that you specify.

Select Same Type

The **Select Same Type** edit tool allows you to quickly select all cabinets, doors, windows, wall hatching, or rooms on the current floor of your plan that share the same set of specified attributes as the selected object.

With the exception of rooms, all selected objects can then be opened for specification and/or edited using the toolbar buttons.

Although multiple rooms cannot be edited, the **Load Values to Make Same** edit tool can be used to quickly modify multiple rooms. Click any rooms that are not highlighted to change their attributes so that they match those that you specify.

Load to Make Same Value

The **Load Values to Make Same** edit button can be used to apply the selected attributes, or values, to any other

objects on the current floor that do not yet share them.

Load Values to Make Same becomes available only after the **Select Same Type** edit tool has been used to select a group of objects that share the same attributes.

Some attributes can only be used for selecting objects and cannot be loaded from one object to another. These attributes display in the **Select Similar Objects** dialog followed by an asterisk.

To use Select Same/Load Same

1. Select a room, cabinet, window, door, or wall hatching with attributes that you would like to apply to other like objects on the current floor.
2. Click the **Select Same Type** edit button.
3. In the **Select Similar Objects** dialog, check the box beside attributes that you want to load into other similar objects and click OK. The set of attributes available varies depending on the type of object selected.
4. All objects sharing all of the specified attributes are now selected in the drawing area.
5. Click the **Load Values to Make Same** edit button, then click any like object that is not currently highlighted to apply the specified attributes to it and add it to the selection set.
6. You can continue selecting/loading objects until the Esc key is pressed or another tool is activated.

Edit Area Tools

The **Edit Area Tools** allow you to quickly define an area of your plan and select the objects in that area. Once selected, they can then be repositioned, copied or deleted. Select **Edit> Edit Area** to access the **Edit Area Tools**.

Unlike other selection methods, the **Edit Area Tools** cut walls, railing and fencing where the selection marquee intersects them, allowing you to edit only the selected portion of these objects.

Some objects, such as cabinets, are included in the selection only if more than half of the object is contained within the marquee.

A few objects, notably CAD points, are not affected by the **Edit Area Tools**.

> The Edit Area tools can cause widespread changes across an entire plan and should always be used with caution.

Edit Area

Select **Edit> Edit Area> Edit Area** and draw a rectangular marquee around the area of the plan to be edited.

Edit Area affects all objects included in the selection marquee that are located on the current floor, regardless of whether they are displaying in floor plan view or not.

Edit Area Visible

 Select **Edit> Edit Area> Edit Area Visible** and draw a marquee around the area of the plan to be edited.

Edit Area Visible  only affects visible objects included in the selection marquee: objects not currently displayed in floor plan view are unaffected.

Edit Area (All Floors)

 Select **Edit> Edit Area> Edit Area (All Floors)** and draw a marquee around the area of the plan to be edited.

Edit Area (All Floors)  affects all objects on all floors of the plan that are included in the selection marquee, regardless of whether they display in floor plan view.

Edit Area (All Floors) Visible

 Select **Edit> Edit Area> Edit Area (All Floors) Visible** and draw a marquee around the area of the plan to be edited.

Edit Area (All Floors) Visible  affects all visible objects on all floors of the plan that are included in the selection marquee. Objects not currently displaying in floor plan view are not affected.

Edit Area Polyline

If a rectangular marquee's shape does not allow you to define an area precisely, use a closed polyline instead.

Select a polyline that defines the desired area in floor plan view and then select one of the **Edit Area Tools**  . The polyline becomes temporarily highlighted and acts as an Edit Area marquee.

Using the Edit Handles

An Edit Area marquee displays edit handles that are similar to those of a closed polyline. See "Using the Edit Handles" on page 199.

- Click the **Move** edit handle to move the entire selection set. See "Moving Objects" on page 217.
- Click the **Rotate** edit handle to rotate the entire selection set. See "Rotating Objects" on page 231.
- Click and drag the **Reshape** and **Resize** edit handles at each corner and along each edge to adjust the size and shape of the marquee. See "Using the Edit Handles" on page 199.

Adjusting the size or shape of an Edit Area marquee may change which objects are included in the selection set but does not otherwise affect those objects.

Using the Edit Toolbar

A selected Edit Area marquee and/or the objects within it can be edited in a variety of ways using the buttons on the edit toolbar. See "Using the Edit Toolbar" on page 200.

The following toolbar buttons may display on the edit toolbar for an Edit Area marquee:

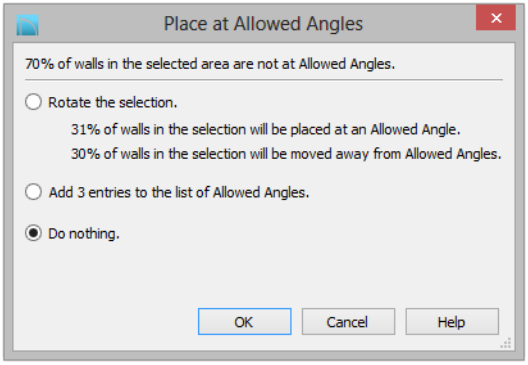
- Click the **Copy/Paste**  edit button to copy the selection set to the Windows Clipboard so it can be pasted elsewhere. See "Copying and Pasting Objects" on page 168.

- Click the **Delete** edit button to delete the selection set. See “Deleting Objects” on page 249.
- Click the **Transform/Replicate Object** edit button to copy, move, rotate, resize, or reflect the selection set. See “Transform/Replicate Object Dialog” on page 238.
- Click the **Multiple Copy** edit button to make a series of copies of the selection set at regular intervals. Concentric copies are not possible using the Edit Area tools. See “Multiple Copy” on page 171.
- Click the **Make Parallel/Perpendicular** edit button to rotate the Edit Area marquee and the selection set so that the selected marquee edge is parallel or perpendicular to another straight edge. See “Using Make Parallel/Perpendicular” on page 224.
- Click the **Point to Point Move** edit button to accurately move the selection set. See “Point to Point Move” on page 219.
- Click the **Center Object** edit button to center the selection along along a wall within a room or relative to a cabinet fixture. See “Using Center Object” on page 224.
- Click the **Reflect About Object** edit button to reflect the selection set about another object. See “Reflecting Objects” on page 234.
- Click the **Allowed Angles** edit button to open the **Place at Allowed Angles** dialog.

Place at Allowed Angles Dialog

If more than one percent of the straight walls included in an Edit Area marquee are not at an allowed angle, the **Allowed Angles** edit button displays.

Click the **Allowed Angles** edit button to display the **Place at Allowed Angles** dialog.



Select the first option and click **OK** to rotate the plan so that the largest group of off-angle walls move to an Allowed Angle. This may place this largest group at Allowed Angles, but has two disadvantages.

- First, other groups of off angle walls remain off angle.
- Second, any walls that were at an allowed angle before this action will move to an off angle. The dialog shows how much (weighted by length) of the selected walls are in each category.

Select the second option and click **OK** to add new entries to the Allowed Angles list and allow new walls to be placed at these angles. Walls already at Allowed Angles remain so. See “Angle Snaps” on page 162.

Select the third option and click **OK** to do nothing, which is the same as clicking **Cancel**.

You may want to rotate the majority of the walls to one of the normal allowed angles.

Then, use an **Edit Area** tool to select everything again and select the second option to provide new angle entries to cover the remaining walls.

Deleting Objects

Objects can be deleted in a variety of ways:

- Select an object or group of objects, then click the **Delete** edit button, select **Edit> Delete** from the menu, or press the either the Delete or Backspace key on your keyboard.
- Entire categories of objects can be deleted using the **Delete Objects** dialog.
- Objects are deleted if the floor they are placed on is deleted. See “Deleting Floors” on page 431.

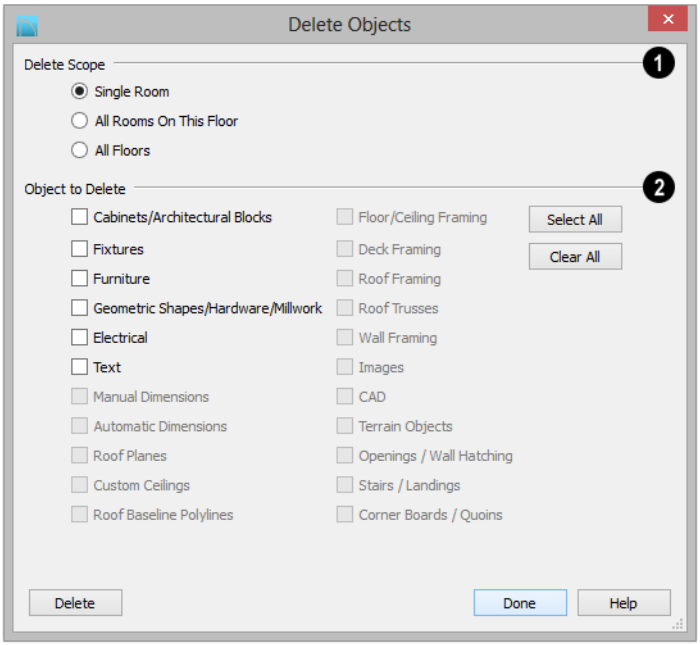
If an object has a line with arrow or text leader attached to it, the arrow or leader is deleted if the object is deleted. To prevent the arrow from being deleted, drag the attached end away from the object before deleting it.

A variety of objects in the program can be generated automatically, including roofs, the foundation, and framing. Automatically generated objects cannot be deleted unless the automatic creation option is disabled.

Delete Objects Dialog

Use the **Delete Objects** dialog to delete all objects of one or more specified types in one room, on the current floor, or in the entire plan.

> Although objects on locked layers cannot be selected, most can nevertheless be deleted using the Delete Objects dialog.



1 Select a **Delete Scope**:

•Choose **Single Room** to delete objects only in specific rooms on the current floor.

- Choose **All Rooms on This Floor** to delete objects in all rooms on the current floor.
- Choose **All Floors** to delete objects on all floors in the plan.

2 Specify categories of **Objects to Delete** by checking the box beside each category that you wish to delete.

- Click the **Select All** button to check the boxes beside all of the categories.
- Click the **Clear All** button to uncheck the boxes beside all of the categories.

To use the Delete Objects dialog

1. Select **Edit> Delete Objects** to open the **Delete Objects** dialog.
2. Specify the **Delete Scope** as **Single Room**, **All Rooms On This Floor**, or **All Floors**.
3. In the **Delete** section, check the box for each category of objects you want to delete. Click **Select All** to check all the boxes or **Clear All** to uncheck all boxes.
   - If “Roof Planes” cannot be selected, they may be locked. See “Editing Roof and Ceiling Planes” on page 480.
4. When the scope is set to **Single Room**:
   - Move your cursor into the drawing area and click in a room of the plan to delete objects of the selected type within that room without closing the dialog.

- Continue clicking on rooms or choose a different Delete Scope.
- Click **Done** when all selections have been deleted.

5. If you select **All Rooms On This Floor** or **All Floors**, you do not need to click in floor plan view. The **Delete** button becomes available, and clicking it closes the dialog and deletes the specified objects.

Objects such as roofs, framing, or Auto Exterior Dimensions that are set to automatically rebuild or refresh cannot be deleted while that behavior is enabled. If objects of this sort are selected for deletion, the program will ask whether you want to turn off the automatic redraw behavior.

Deleting Polyline Edges

There are number of different ways to delete individual edges of polyline-based objects:

- Select **Edit Object Parts**  . Select the edge and delete. See “Edit Object Parts” on page 182.
- Drag a corner handle until it overlaps an adjacent corner handle to remove the edge between them and merge them into a single handle.
- Create a complete break at both ends. Select the edge and delete. See “To create a complete break” on page 228.
- The **Fillet Two Lines**  and **Chamfer Two Lines**  tools can be used to delete polyline edges. See “Reshaping Objects” on page 227.

Delete Surface

In any 3D view, select **3D> Delete Surface**, then click a surface in the view to temporarily remove the surface from the current view without permanently affecting the object. See “Delete 3D Surface” on page 888.

Undo and Redo

The **Undo** and **Redo** commands allow you to both undo the last action performed, as well as redo actions that were recently Undone.

The ten most recent actions can be Undone or Redone, depending on your settings in the **Preferences** dialog. See “General Panel” on page 96. Actions that can be Undone and Redone include creating, editing, and deleting objects.

It is important to note that **Undo**  and **Redo**  do not affect all actions in the program, including:

To Undo an action, select **Edit> Undo**  , click the **Undo**  button, or press Ctrl + Z on your keyboard.

The Redo command is only available immediately after Undo has been used. To Redo an Undone action, select **Edit> Redo**  , click the **Redo**  button or press Ctrl + Y on your keyboard.

- Save and Save As. See “Saving, Exporting, and Backing Up Files” on page 53.
- Changes made in the Library Browser. See “The Library Browser” on page 798.
- Changes made in a Materials List. See “Materials Lists” on page 1247.
- Changes made in a dialog while the dialog box is open. See “Dialogs” on page 36.
- Changes made to the display by panning the display or zooming in or out. See “Undo Zoom” on page 859.

Chapter 8:

Walls, Railings, and Fencing

Walls are the single most important building component in Chief Architect. By creating walls and defining the rooms created by the walls, you are telling the program how you want the 3D model built.

There are several ways that walls can be created in Chief Architect. The most common is to simply draw them with the Wall Tools.

In addition, exterior walls can be generated automatically when a new floor is built by using another floor as a model. For more, see “Adding Floors” on page 427.

2D CAD lines can also be converted into actual walls using the **CAD to Walls** tool.

Another feature that can be used to generate walls automatically is the **Space Planning Assistant**. See “Space Planning” on page 1095.

Chapter Contents

- Stepped and Raked Walls
- Double Walls
- CAD to Walls
- Wall Type Definitions
- Wall Type Definitions Dialog
- Exporting and Importing Wall Types
- Wall Specification Dialog
- Railing and Fencing Specification Dialogs
- Wall Hatch Specification Dialog

Wall, Railing, and Fencing Defaults

There are several defaults dialogs for walls. Default Settings can be accessed by selecting **Edit> Default Settings**. Click the + next to “Walls” to display the walls sub-headings. Select a subheading and click the **Edit** button to open the **Wall Defaults** dialog associated with your selection:

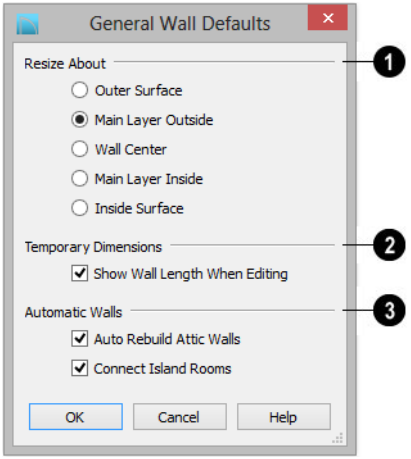
The defaults dialog for each wall tool can also be accessed by double-clicking the tool’s toolbar button.

The settings in the various wall defaults dialogs determine what wall types are drawn when the different wall tools are used. It is a good idea to be familiar with these settings and how they relate to your style of building. See “Wall Type Definitions” on page 295.

General Wall Defaults

The **General Wall Defaults** dialog controls the general behavior and display attributes of all walls, railings and fencing.

For quick access, the **General Wall Defaults** button can be added to the toolbar or you can press Alt+Q on your keyboard.



❶ **Resize About** - These radio buttons determine what part of a wall retains its position when its wall type or wall type definition is changed. See “Resize About” on page 285.

The **Resize About** location is also where any snap points will be located along a wall as it is drawn or connected to other walls, and is where a wall’s length is measured.

- **Outer Surface** - Snap to and resize about the exterior surface. When a wall is resized, its exterior surface does not move.
- **Main Layer Outside** - Snap to and resize about the outer line of the Main Layer. When a wall is resized, the outer line of its Main Layer does not move. When multiple Main Layers are specified, the outer line of the outermost Main Layer is used.
- **Wall Center** - Snap to and resize about the center line. When a wall is resized, its center line does not move, but wall layers on either side may.
- **Main Layer Inside** - Snap to and resize about the inner line of the Main Layer. When a wall is resized, the inner line of its Main Layer does not move. When multiple Main Layers are specified, the inner line of the innermost Main Layer is used.
- **Inside Surface** - Snap to and resize about the interior surface. When a wall is resized, its interior surface does not move.

Note: In most circumstances, it is recommended that you Resize About the Main Layer Outside to avoid unexpected results.

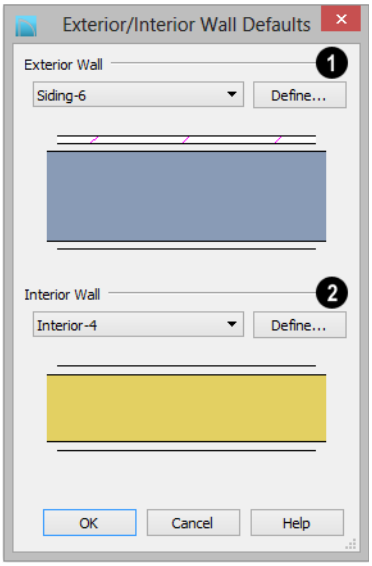
❷ Check **Show Wall Length When Editing** to display a temporary length dimension when a wall is drawn or edited. Wall length only displays when **Temporary Dimensions** are on. See “Temporary Dimensions” on page 980.

❸ The **Automatic Walls** options control the automatic creation of Attic Walls and Room Dividers.

- Uncheck **Auto Rebuild Attic Walls** to prevent Attic walls from automatically generating when the model changes. When checked, Attic Walls are automatically generated. See “Attic Walls” on page 290.
- Uncheck **Connect Island Rooms** to prevent Room Dividers from automatically connecting “island” rooms to the larger structure around them. When checked, Room Dividers are generated to prevent room definition problems. See “Room Definition” on page 325.

Exterior/Interior Wall Defaults Dialog

Specify which wall types are drawn using the **Exterior** and **Interior Wall** tools in the **Exterior/Interior Wall Defaults** dialog.



1 **Exterior Wall Tool** - From the drop-down list, select the wall type drawn with the **Exterior Wall** tool.

Click the **Define** button to open the **Wall Type Definitions** dialog. See “Wall Type Definitions Dialog” on page 298.

2 **Interior Wall Tool** - From the drop-down list, select the wall type drawn by the **Interior Wall** tool.

Click the **Define** button to open the **Wall Type Definitions** dialog.

Foundation Wall Defaults

Specify which wall types is drawn when the **Foundation Wall** tool is used either manually or when a stem wall or pier foundation is generated in the **Foundation Wall Defaults** dialog. See “Foundation Walls” on page 264.

The **Foundation Wall Defaults** dialog also controls the wall type drawn by the **Retaining Wall** tool. Unlike other walls, **Retaining Walls** are used to modify your terrain rather than build a structure. See “Terrain Wall and Curb Tools” on page 707.

Footing size and other information used when building stem wall or pier foundations is also specified here. For more information, see “Foundation Defaults” on page 438.

The panels in this dialog are the same as their respective panels in the **Wall Specification** dialog. See “Wall Specification Dialog” on page 301.

Slab Footing Defaults

Specify which wall type is drawn when the **Slab Footing** tool is used either

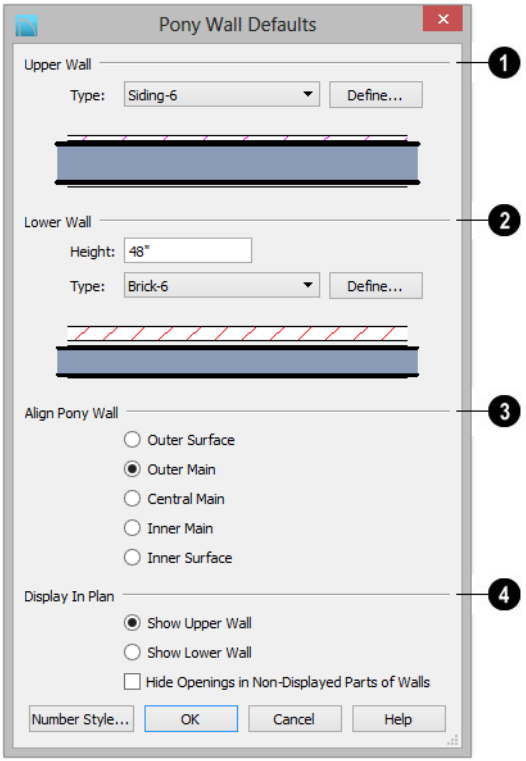
manually or when a foundation is generated in the **Slab Footing Defaults** dialog. See “Foundation Walls” on page 264.

Footing size and other information used when building a monolithic slab foundation is also specified here. See “Foundation Defaults” on page 438.

The panels in this dialog are the same as their respective panels in the **Wall Specification** dialog. See “Wall Specification Dialog” on page 301.

Pony Wall Defaults

Specify the wall types used for the upper and lower portions of Pony Walls and other data associated with pony walls in the **Pony Wall Defaults** dialog. See “Pony Walls” on page 266.



1 **Upper Wall** - From the drop-down list, select the default wall type for the upper portion of pony walls.

- Click the **Define** button to open the **Wall Type Definitions** dialog, where you can create and modify wall types. See “Wall Type Definitions Dialog” on page 298.

❷ **Lower Wall** - From the drop-down list, select the default wall type for the lower portion of pony walls.

- **Height of Lower Wall** - Specify the default height of the lower portion of pony walls.
- Click the **Define** button to open the **Wall Type Definitions** dialog.

❸ **Align Pony Wall** - Specify the default option for aligning the layers of the upper and lower pony walls. See “Wall Types Panel” on page 312.

❹ **Display In Plan View** - Specify how pony walls appear in floor plan view.

- Select **Show Upper Wall** to display this wall type in floor plan view instead of the lower wall type.
- Select **Show Lower Wall** to display this wall type in floor plan view instead of the upper wall type.
- Check **Hide Openings in Non-Displayed Parts of Walls** to hide any doors and windows located in the parts of pony walls that are not visible. When unchecked, these openings will display along with those located in the visible parts of pony walls.

Railing and Deck Railing Defaults

Specify the types of railings created when the Railing and Deck Railing tools are used. See “Railing and Deck Tools” on page 261.

The panels in these dialogs are the same as their respective panels in the **Wall Specification** dialog. See “Wall Specification Dialog” on page 301.

Note: By default, Railiings and Deck Railngs are drawn using two separate wall types: “Interior Railing” and “Deck Railing/Fence”. See “Wall Type Definitions” on page 295.

Half-Wall Defaults

Specify the attributes of a solid railing drawn using either **Half Wall** tool.

The panels in this dialog are the same as their respective panels in the **Wall Specification** dialog. See “Wall Specification Dialog” on page 301.

Fencing Defaults

Specify the attributes of fencing drawn using either of the **Fencing Tools**.

The panels in this dialog are the same as their respective panels in the **Wall Specification** dialog. See “Wall Specification Dialog” on page 301.

Room Divider Defaults

Specify what type of wall is drawn when using the **Room Divider** tool. See "Room Dividers and Invisible Walls" on page 267.

The panels in this dialog are the same as their respective panels in the **Wall Specification** dialog. See "Wall Specification Dialog" on page 301.

Wall Tools

Select **Build> Wall** to access the Wall Tools. The type of wall drawn by each wall tool is specified in its corresponding defaults dialog.

The **Curved Wall** tools are similar to their corresponding **Straight Wall Tools**. Select **Build> Curved Wall** to access these tools.

Exterior Walls

The **Exterior Wall** and **Curved Exterior Wall** tools draw walls using the default wall type specified for exterior walls in the **Exterior/Interior Wall Defaults** dialog. See "Exterior and Interior Walls" on page 263.

Interior Walls

The **Interior Wall** and **Curved Interior Wall** tools draw walls using the wall type specified for interior walls. The interior wall type is defined in the **Exterior/Interior Wall Defaults Defaults** dialog.

Note: Whether a wall is recognized as an exterior or interior wall by the program is determined by its position in the model, not by the tool used to draw it. See "Exterior and Interior Walls" on page 263.

Foundation Walls

The **Foundation Wall** and **Curved Foundation Wall** tools draw foundation walls according to the information specified in the **Foundation Defaults** dialog. Foundation walls normally have a footing and can be drawn on any floor of the model, not just the foundation floor. See "Foundation Walls" on page 264.

The **Slab Footing** tool draws a single-layer concrete wall the same width as that specified for footings in the **Foundation Defaults** dialog. Rooms defined entirely by Slab Footings will have a Ceiling Height of 0 and a Monolithic Slab Foundation specified. See "Foundation Defaults" on page 438.

Pony Walls

A **Pony Wall**, also called a split wall, is defined as a wall with two separate wall types, one for the upper portion and another for the lower portion.

The **Pony Wall** and **Curved Pony Wall** tools draw pony walls using the information specified in the **Pony Wall Defaults** dialog. You can also convert a normal wall into a pony wall and vice versa in the **Wall Specification** dialog. See "Pony Walls" on page 266.

Half-Walls

The **Half-Wall** and **Curved Half-Wall** tools create solid railings: walls that are 36” (900 mm) high topped with a handrail. The height and other attributes of solid railings drawn with this tool are defined in **Half-Wall Defaults** dialog. See “Half-Wall Defaults” on page 258.

Room Dividers

Room Dividers are Invisible walls with a thickness of 0” (mm) that are used to define separate room areas in a plan. They can display in floor plan view but not in 3D views. See “Room Dividers and Invisible Walls” on page 267.

Polygon Shaped Room

The **Polygon Shaped Room** tool opens the **New Polygon Shaped Room** dialog, where you can specify the exact size and number of sides of a new polygonal room and then click in floor plan view to create that room. See “Polygon Shaped Rooms and Decks” on page 268.

Hatch Wall

The **Hatch Wall** tool applies a hatch pattern to a wall that displays in floor plan views. You must click the wall that you want to apply the hatch pattern to. You can then select the hatch and resize it if you want to only hatch a portion of a wall. See “Hatch Wall” on page 269.

Break Wall

The **Break Wall** tool applies a break in a wall. Once a wall is broken, the two wall segments are separate walls that can be modified independent of each other. See “Break Wall” on page 270.

Fix Wall Connections

The **Fix Wall Connections** tool connects walls whose ends are within a few inches of each other but are not connected. See “Fix Wall Connections” on page 273.

Define Wall Types

The **Define Wall Types** tool opens the **Wall Type Definitions** dialog, where wall types can be created, copied and edited. See “Wall Type Definitions Dialog” on page 298.

Library Walls

You can also add a wall to the library, and then draw a new wall in any plan using its wall type and specifications by simply selecting it and then clicking and dragging in the drawing area. See “Adding Library Content” on page 807.

Layered Material Polylines

Select **Build> Wall> Layered Material Polyline** to draw a Layered Material Polyline. See “Floor and Wall Material Regions” on page 779.

Railing and Deck Tools

Select **Build> Railing and Deck** to access the Railing and Deck Tools. Railings are typically used to define interior spaces, while the various Deck tools are used to define exterior Deck rooms.

With the exception of the Polygon Shaped Deck tool, each of the tools in this family have both Straight and Curved versions, and are created and edited just like walls. See “Drawing Walls” on page 270.

To create a break in a railing for a stairway or other access, use a **Doorway** . This keeps the railing continuous and maintains room definition. See “Room Definition” on page 325.

When first drawn, railings are specified as **No Locate**, which prevents **Auto Exterior Dimensions** from locating them. This attribute may also be helpful if you do not want a railing to divide an area into two separate rooms. See “General Panel” on page 302.

The attributes for railings when they are first drawn are defined in the **Railing Defaults** dialog. See “Railing and Deck Railing Defaults” on page 258.

Railings

The **Railing** and **Curved Railing** tools create railings that are primarily used to define interior spaces. The style and height of railings drawn with this tool are defined in **Railing Defaults** dialog. See “Railing and Deck Railing Defaults” on page 258.

Railings are ideal for a number of tasks:

- Creating changes in floor and/or ceiling height. See “Floor and Ceiling Heights” on page 335.
- Creating stairwells. See “Creating a Stairwell” on page 544.

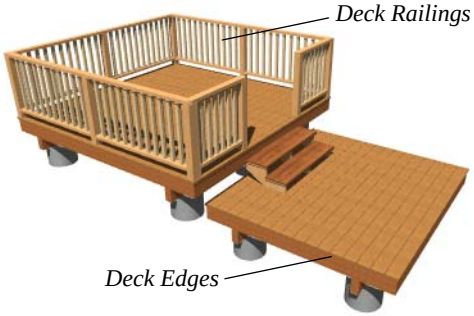
Deck Railing

The **Straight Deck Railing** and **Curved Deck Railing** tools draw decks, complete with framing and bounded by a railing. If a foundation level exists, supports for the deck are also created. See “Decks” on page 334.

When a room is defined using deck railing, its **Room Type** is automatically set to “Deck”. See “Decks” on page 334.

Deck Edges

The **Straight Deck Edge** and **Curved Deck Edge** draw decks complete with framing, but without a railing. No deck supports are created.



Polygon Shaped Deck

The **Polygon Shaped Deck** tool opens the **New Polygon Shaped Deck** dialog, where you can specify the exact size and number of sides of a new polygonal deck room and then click in floor plan view to create that deck room. See “Polygon Shaped Rooms and Decks” on page 268.

Railing Types

A variety of railing types can be specified in the **Railing** and **Deck Railing Specification** dialogs. See “Rail Style Panel” on page 316. Available types include:

- **Baluster** creates railings composed of newel posts, balusters, a railing, and an optional bottom rail.
- **Solid** produces a framed railing wall, or Half Wall. See “Half-Walls” on page 260.
- If **Panels** is selected, you can choose a panel style such as cable, glass, or ironwork from the library. See “Newels/Balusters Panel” on page 318.

By default, newels and balusters do not display in floor plan view, but their display can be turned on. See “Newels/Balusters Panel” on page 318.

Wall Types and Railings

Just like regular walls, railings are assigned a wall type: “Interior Railing”. This wall type has three layers: a framing layer in the middle and a layer of drywall on each side. See “Wall Type Definitions” on page 295.

You can use a different wall type definition for railings if you wish, but bear in mind that this wall type definition determines several important things:

- The railing’s appearance in floor plan view. See “Displaying Walls” on page 274.
- The actual thickness of Solid railings in 3D views.
- The extent of the floor platform, if a platform edge is defined by the railing. is defined by the outer surface of the wall type. See “Floor and Ceiling Platforms” on page 337.
- If the railing is used to create a change in floor height, this wall type controls the structure and position of the partial wall built beneath the railing, if one is required. See “Floor and Ceiling Heights” on page 335.

If the railing is a type other than Solid, its sizing is specified on the Newels/Balusters panel of the **Railing Specification** dialog, and the railing is centered along the width of the wall type. This will not be evident in floor plan view unless newels and balusters are set to display.

Deck Railing is also assigned a wall type: “Deck Railing/Fencing”. This wall type has a single framing layer and is recommended for use only with deck railing and fencing.

Fencing Tools

Select **Build> Fencing** or click the **Fencing Tools** to access the fencing tools. Fencing automatically follows the shape of the terrain. You can choose to have the fencing follow the terrain smoothly or to have each segment step as it follows the terrain. See “Rail Style Panel” on page 316.

The **Fencing** and **Curved Fencing** tools are used to draw fences, which are similar to railings but by default do not define room areas. Fencing is created and edited much like walls and railings, and normally used outside of a building and follows the shape of the terrain. See “Terrain” on page 695.

Define the default fence style in the **Fencing Defaults** dialog. See “Fencing Defaults” on page 258.

Exterior and Interior Walls

Most walls are drawn using either the **Straight Exterior Wall** and **Straight Interior Wall** tools.

Exterior and interior walls can also be drawn using the **Curved Exterior Wall** and **Curved Interior Wall** tools.

The only difference between the Exterior and Interior Wall Tools is the wall type used: Exterior Walls use a wall type set up to model a wall with siding, while Interior Walls model interior walls with sheetrock. You can specify the default wall type for each tool in the **Exterior/Interior Wall Defaults** dialog. See “Exterior/Interior Wall Defaults Dialog” on page 255.

To draw a wall using a different wall type, you can change the default wall type for either tool in the **Exterior/Interior Wall Defaults** dialog. You can also draw a wall using the default type and then change the wall type in the **Wall Specification** dialog.

Whether a wall is recognized by the program as an actual exterior or interior wall is based on the model, not by which tool you use to draw the wall. Any wall that is entirely surrounded by interior room areas is considered an interior wall. Any wall exposed to the outside of the building is considered an exterior wall. See “Room Types” on page 329.

Foundation Walls

Foundation walls are similar to the interior and exterior walls but also have a footing. Foundation walls can either be created automatically when a foundation floor is created or manually by drawing them using the **Straight** or **Curved Foundation Wall** tool. See “Building a Foundation” on page 442.

The initial foundation wall type and footing size are specified in the **Foundation Wall Defaults** dialog. These values can be changed for individual walls in the **Wall Specification** dialog. See “Wall Specification Dialog” on page 301.

You can draw a foundation wall on any floor of a plan, not just on the foundation level. Any wall can be specified as a foundation wall, regardless of the tool used to draw it. See “Foundation Panel” on page 310.

Foundation walls are placed on the “Walls, Foundation” layer by default, but can be put on any layer you choose. In floor plan view, foundation wall footings are placed on the “Footings” layer and cannot be moved; in 3D views, they are on the “Walls, Foundation” layer. See “Displaying Walls” on page 274.

Slab Footing

The **Slab Footing** tool draws a single-layer concrete wall using the wall type and other attributes specified in the **Slab Footing Defaults** dialog. Slab Footings are used to define Monolithic Slab foundations, garage curbs, and interior footings.

Typically, the wall type should have the same width as that specified for footings. For Garage curbs, the footings should be wider than the wall type. See “Foundation Panel” on page 310.

Rooms defined by walls drawn using this tool will have a Ceiling Height of 0 and a Monolithic Slab Foundation. See “Structure Panel” on page 348.

Foundation Wall Footings

Normally, a foundation wall’s footing is centered on the wall. If you prefer, you can:

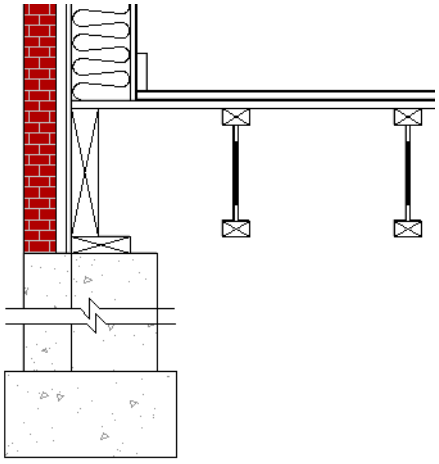
- Center the footing on the main wall layer.
- Align the footing along the wall’s exterior.
- Specify an offset, as measured from the wall’s centerline.

These offset options are set in the **Wall Specification** dialog. See “Foundation Panel” on page 310.

You can select the footing in 3D views and edit its size and shape using the edit handles. See “Stepped and Raked Walls” on page 291.

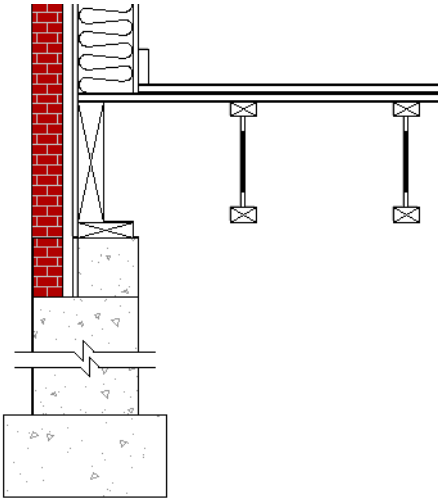
Brick Ledges

Brick ledges can be produced in stem wall and pier foundations if you specify **Foundation to this Line** for the exterior wall material of the brick or stone wall type, and specify a sufficiently thick foundation wall. Brick ledges in these foundation types are flush with the top of the stem wall. See “Wall Type Definitions” on page 295.



Cross section of a stem wall brick ledge

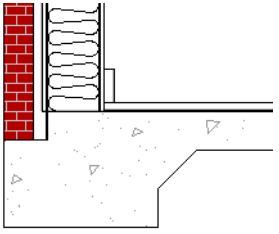
To produce a lowered brick ledge in a stem wall, the stem wall must be specified as a Pony Wall. See “Pony Walls” on page 266.



Cross section of a Pony Wall brick ledge

- The upper and lower pony walls should be aligned by their outer layers.
- The framing layer of the wall above must have **Foundation to This Line** checked. See “Wall Type Definitions Dialog” on page 298. See “Wall Type Definitions Dialog” on page 298.

You can also create brick ledges in monolithic slab foundations:



Cross section of monolithic slab brick ledge

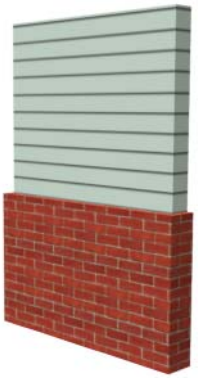
- The width of the ledge is equal to that of the wall layers outside of the Main Layer of the wall above the ledge.

- The depth of the ledge is specified in the Wall Type Definition of the wall above the ledge.
- The wall type's exterior layer must have **Foundation to This Line** checked in order for the brick ledge to generate.

Brick ledges in monolithic slab foundations do not extend under door openings.

Pony Walls

A **Pony Wall**, sometimes called a split wall, is a wall with two separate wall types, one above the other.



Walls drawn using the **Pony Wall** tool are created using the wall types and other information specified in the **Pony Wall Defaults** dialog. See "Pony Wall Defaults" on page 257.

You can also convert a normal wall into a pony wall and vice versa in the **Wall Specification** dialog. See "Wall Types Panel" on page 312.

The height where the upper portion meets the lower can be adjusted in 3D views using the wall's edit handles as well as in the **Wall Specification** dialog. The upper and lower sections of a pony wall are linked, so if either portion is modified along the division between the two, such as raking or the stepping of a footing, the other portion of the pony wall adjusts to match. See "Stepped and Raked Walls" on page 291.

Displaying Pony Walls

You can specify whether the upper or lower portion of pony walls displays in floor plan view in the **Pony Wall Defaults** dialog. This **Display in Plan View** option can also be set for individual walls in the **Wall Specification** dialog. See "Wall Types Panel" on page 312.

Just as with other walls, the appearance of the portion of a pony wall that displays can be controlled. See "Displaying Walls" on page 274.

Only the portion of a pony wall that displays can be snapped to; however, regardless of what part is displaying, the upper wall will be used to **Align with Wall Above**, and the lowe part will be used to **Align with Wall Below**. See "Editing Walls" on page 278 and "Aligning Walls" on page 285.

By default, windows and doors in pony walls are visible in floor plan view regardless of which part of the pony wall displays. You can, if you wish, select **Hide Openings in Non-Displayed Parts of Walls** in the **Pony Wall Defaults** dialog.

If a window or door is completely contained by one part of a pony wall, it will display in floor plan view if the other part of the pony wall is shown; but the wall's layer fill pattern or Hatch Wall fill pattern will display over it.

In views sent to layout, the default **Display in Plan View** option for pony walls is static: if the default is changed in the plan, views previously sent to layout are unaffected. The display of pony walls that are not using the default, however, are dynamic: if you change an individual pony wall's **Display in Plan View** setting, layout views will show the change. See "Keeping Layout Views Current" on page 1210.

Changing Wall Types

The default upper and lower parts of a pony wall can be specified in the **Pony Wall Defaults** dialog. See "Pony Wall Defaults" on page 257.

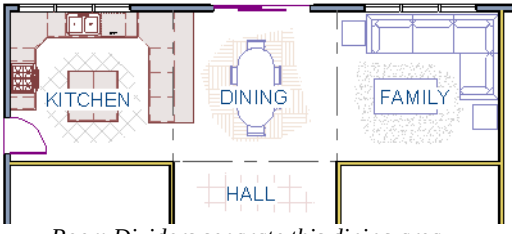
The upper and lower parts of a pony wall can be redefined as different wall types in the **Wall Specification** dialog. See "Wall Types Panel" on page 312.

Note: The only way to control the materials displaying on a pony wall is by changing the wall types.

Room Dividers and Invisible Walls

The **Room Divider** tool is used to define separate room areas in a plan; typically, by dividing a large room area into two or more smaller areas. See "Room Definition" on page 325.

Common uses for Room Dividers include dividing areas of an open floor plan into areas with different purposes.



Room Dividers separate this dining area from adjacent rooms

Room Dividers can also be used to define areas with different floor or ceiling materials or heights.

Room Dividers are drawn using the attributes specified in the **Room Divider Defaults** dialog; which means they are simply walls that are specified as Invisible and have a single layer of an "Air Gap" material with a thickness of 0" (mm).

If a zero-thickness **Room Divider** separates two rooms with different floor and/or ceiling heights, its wall type will be changed to the current plan's default Interior Wall so that the platform step created by the height difference can be enclosed. See "Floor and Ceiling Platforms" on page 337.

Any wall, regardless of its wall type or thickness, can also be specified as Invisible - or vie versa - in the **Wall Specification** dialog. See "General Panel" on page 302.

Room Dividers are placed on the "Walls, Invisible" layer by default, as are walls that are specified as Invisible. A wall placed on a

non-default layer and then specified as Invisible, however, will not move to the "Walls, Invisible" layer. See "Room Divider Defaults" on page 259.

Walls specified as Invisible can display in floor plan view but not in 3D views or the Materials List. See "Displaying Walls" on page 274.

It is not possible to place doors, windows, or fireplaces into an Invisible wall; however, if a wall with openings in it is specified as Invisible, any openings in it will remain.

Important Notes on Invisible Walls

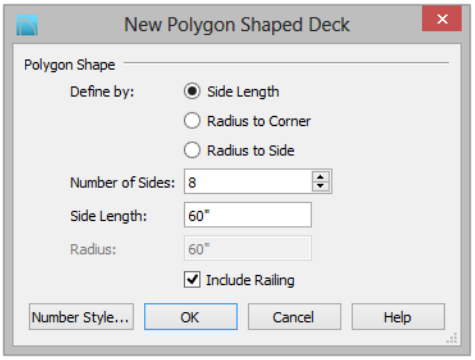
- Floor, wall and ceiling areas are calculated separately for rooms divided by Invisible walls.
- Invisible walls are ignored by the **Auto Place Outlets** tool; it functions as though they were not present.
- Cabinets, fixtures and furniture can be moved freely through Invisible walls.
- Invisible walls can be drawn through a cabinet to attach to the wall behind.
- By default, Room Dividers are automatically generated to connect "island" rooms to the larger structure around them. You can turn this behavior off in the **General Wall Defaults** dialog. See "General Wall Defaults" on page 254.

Polygon Shaped Rooms and Decks

The **Polygon Shaped Room** and **Polygon Shaped Deck** tools allow you to create rooms with regular sides and work similar to the **Regular Polygon** CAD tool. See "Regular Polygon" on page 1069.

Select **Build> Wall> Polygon Shaped Room** to open the **New Polygon Shaped Room** dialog and create a polygon shaped room with regular sides.

Select **Build> Railing and Deck> Polygon Shaped Deck** to open the **New Polygon Shaped Deck** dialog and create a polygon shaped deck with regular sides.



The settings in these two dialogs are identical and are saved between program sessions. They are also independent of one another so different settings can be retained for each.

To create a polygon shaped room or deck

1. Click the radio button beside an option to specify whether you want to **Define Polygon by Side Length**, **Radius to Corner** or **Radius to Side**.
2. Specify the desired **Number of Sides**.
3. Specify the desired **Side Length** or,
4. Specify the desired **Radius**.
5. Uncheck **Include Railing** to produce a deck platform defined by Deck Edges. This option is not available in the **New Polygon Shaped Room** dialog.
6. Click **OK**, then click once in floor plan view to create the specified polygon shaped room.

Hatch Wall

The **Hatch Wall** tool can be used to fill wall segments with a single hatch pattern in floor plan view.

To apply wall hatching, select **Build> Wall> Hatch Wall**  , then click on a wall. The hatch pattern covers the entire length and width of the wall segment.

> Note: The Hatch Wall tool cannot be used to apply a hatch pattern to Invisible Walls or to walls on a locked layer. See “Room Dividers and Invisible Walls” on page 267 and “Locking Layers” on page 145.

Hatch Wall  places a hatch pattern across all layers of the selected wall, covering any fill styles specified for that wall type.

In many cases, it is preferable to create a wall type definition rather than use the **Hatch Wall**  tool because multiple fill styles can be created for display purposes. See “Wall Type Definitions Dialog” on page 298.

Once created, wall hatching can be selected, edited and deleted much like other line-based objects. See “Editing Line Based Objects” on page 184.

If you use the **Hatch Wall**  tool to apply a hatch pattern to a wall that has been divided into multiple segments using the **Break Wall**  tool, the pattern is only applied to the segment that you clicked on . See “Break Wall” on page 270.

Like doors and windows, wall hatching cannot extend across multiple wall segments. Unlike these objects, hatching cannot be located by dimension lines.

The wall hatch pattern and its line weight can be specified in the **Wall Hatch Specification** dialog. See “Wall Hatch Specification Dialog” on page 321.

When editing or deleting wall hatching, make sure that it is selected rather than the wall by noting that “Wall Hatching” displays in the Status Bar. See “The Status Bar” on page 39.

Break Wall

To divide a wall or railing, select **Build> Wall> Break Wall** and click on the wall. The wall is divided into two wall sections at the point where you click.

The **Break Wall**  tool remains active, so you can continue to place breaks in walls. When you are finished, select a different tool.

If a wall break is placed near the intersection of two walls, the break is positioned at the center of the intersection.

Once a break is placed, click the **Select Objects**  tool and select the original wall. If edit handles display near the break, the wall was correctly broken.

Walls separated by a break can be rejoined. Select one of the segments, then click on the end edit handle located at the break and drag it a few plan inches (mm) away from the break. See “Connecting Walls” on page 273.

The **Break Wall**  tool can be used to create aligned walls on either side of a gap. See “Creating a Nook” on page 285.

Drawing Walls

Walls, railings, and fencing are drawn similar to the way CAD lines are drawn: select a Wall Tool or a wall saved in the Library Browser, and then click and drag from end to end in the drawing area. Walls can be drawn in floor plan view, camera views, and overviews. See “Draw Line” on page 1048.

Drawing walls to create a floor plan is simple if you keep a few things in mind:

- Draw exterior walls first to define the building’s footprint, then draw the interior walls after the perimeter is in place.
- It is easiest to draw walls at the approximate location and length needed and then move or resize them precisely using dimensions later. See “Moving Objects Using Dimensions” on page 989.
- When drawing and positioning exterior walls, make sure **Grid Snaps**  are enabled. Once these walls are in place, you may prefer to turn Grid Snaps off to draw and position interior walls and other objects. See “Grid Snaps” on page 164.
- If you wish to input wall lengths as you draw, make sure your General Wall Defaults are set to **Resize About Outer Surface**. See “Entering Wall Lengths and Angles” on page 271.
- As walls are drawn, Intersection Snap indicators, “sticky” points and extension lines identify points that are either collinear or orthogonal to the end points of other walls, making alignment easier. See “Wall Intersection Extension Snaps” on page 162.
- As walls are drawn, Angle Snaps take priority over Object Snaps. If you prefer that walls draw at any angle so that they can snap to other objects, uncheck **Always**

Snap Walls On Allowed Angles in the **Preferences** dialog. See “Snap Properties Panel” on page 113.

- When walls enclose an area to form a room, the program will orient all exterior walls so that the siding material faces outward. See “Wall Type Definitions” on page 295.
- To flip the layers of a wall after it is drawn, select it and click the **Reverse Layers** edit button. See “Editing Walls” on page 278.
- Initial wall heights are determined by the default floor and ceiling heights of the current floor. See “Floor Defaults Dialog” on page 426.

Wall Positioning

The recommended method of drawing walls is to draw them at their approximate location and length, then move them into position with accuracy using dimensions. To make this task quick and efficient:

- Notice the temporary wall that displays as you draw. Its length and angle display in the Status Bar at the bottom of the window and adjust as you move the mouse. Release the mouse button to draw the wall at the displayed length and angle. See “The Status Bar” on page 39.
- Use Snaps to help ensure proper wall alignment and orientation. See “Snap Behaviors” on page 160.

Once walls are drawn, they can be accurately dimensioned and moved as needed. See “Measuring Walls” on page 277.

Entering Wall Lengths and Angles

The fastest way to draw walls is to draw them at their appoximate position and length, and then move or resize them accurately using dimensions. See “Using Dimensions” on page 279.

For those that wish to enter walls’ lengths and angles as they are drawn, first select **Resize About Outer Surface** in the **General Wall Defaults** dialog. See “Resize About” on page 285.

Then draw a wall, select it, and specify its **Length** and **Angle** in the **Wall Specification** dialog. Draw a second wall and specify its length and angle, and so on. See “General Panel” on page 302.

You can also press the Tab key while you are dragging to draw a wall to open the **Enter Coordinates** dialog, where you can enter the wall’s **Distance**, or length, and **Angle**. See “Entering Coordinates” on page 166.

Wall Openings

To create a door or doorway, do not draw wall sections with a gap between them. Walls should be drawn to completely enclose rooms, and then door and window objects should be placed in the walls to create openings later. See “Doors” on page 355 and “Windows” on page 383.

Masonry fireplaces placed in walls are also considered to be types of wall openings. See “Fireplaces” on page 455.

Temporary Dimensions

Temporary dimensions will display along the length of a wall as it is drawn when

Temporary Dimensions are toggled on and **Show Wall Length When Editing** is checked in the **General Wall Defaults** dialog. See “Temporary Dimensions” on page 980 and “General Wall Defaults” on page 254.

Continuous Wall Drawing

You can draw walls continuously by right-clicking, Alt+clicking or Alt+dragging. See “To draw continuous lines” on page 1049.

By default, this continuous drawing behavior will turn off when walls are drawn to form an enclosed area. You can specify that this behavior remain on in the **Preferences** dialog. See “Behaviors Panel” on page 111.

Drawing Curved Walls

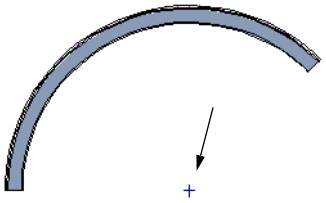
Drawing a curved wall, curved railing, or curved fence is similar to drawing a CAD arc. See “Arc Tools” on page 1058.

As with CAD arcs, the method used to draw a curved wall depends on which **Arc Creation Mode** is currently active. See “Drawing Arcs - Arc Creation Modes” on page 1056.

A straight wall can also be converted into a curved wall and vice versa using the **Change Line/Arc** edit button. See “Change Line/Arc” on page 229.

To create a room in the shape of a circle, you must draw two curved walls.

A curved wall always has a center point. The center displays as a small cross when **Show Arc Centers and Ends** is enabled. See “Arc Centers and Ends” on page 192.



Show Arc Center

The radius of a curved wall is measured from the center to a surface or layer of the wall. The radius can be defined in the **Wall Specification** dialog. You may elect to define the radius to the exterior or interior wall layers. See “General Panel” on page 302.

Space Planning Assistant

The **Space Planning Assistant Tools** allow you to place and arrange room boxes that can then be converted into a fully editable house plan, including walls. See “Space Planning” on page 1095.

Wall Framing

Once walls have been drawn, they can be framed. For best results, avoid generating framing until your model is in its final form. See “Wall Framing” on page 562.

Framing for an individual wall can be built or rebuilt using the **Build Framing for Selected Object** edit tool. This tool is only available if the selected wall has a framing material assigned to its Main Layer, and is not available if Retain Wall Framing is checked in the **Wall Specification** dialog. See “Build Framing for Selected Object” on page 593.

Connecting Walls

When walls are drawn sufficiently close to one another, they will snap together to form an intersection. This snapping occurs when the walls' center lines are within a distance defined by the larger of the two walls' widths and will occur even when **Object Snaps** are turned off. See "Object Snaps" on page 160.

If the two walls in question have identical specifications and are collinear, they will merge to become a single wall. See "Aligning Collinear Walls" on page 285.

When three or more walls connect to form a completely enclosed area, that area defines a room. See "Rooms" on page 323.

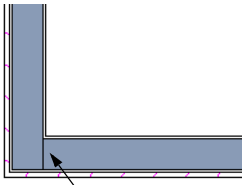
When walls snap together to form an intersection and **Object Snaps** are enabled, the program joins them at their **Resize About** line, which is specified in the **General Wall Defaults** dialog. See "Aligning Walls" on page 285.

- The wall that is being drawn or edited will move, lengthen, or shorten slightly to meet the other wall.
- The other wall will not move; however, its length may be affected.

Wall Intersections

Any time two walls intersect, one wall will build through the other. You can turn on the display of.the "Walls, Thru Wall Lines" layer in floor plan view to see which walls build through and which do not. See "Displaying Objects" on page 144.

When a wall builds through another wall, it will extend into the intersected wall until it meets the interior surface of that wall's Main Layer. See "The Main Layer" on page 295.



Wall Build Thru Line

You can specify which walls build through wall intersections at corners in the **Wall Specification** dialog..See "Structure Panel" on page 304.

You can also control how the individual layers of one wall build into another using the **Edit Wall Layer Intersections** edit tool..See "Wall Layer Intersections Edit Handles" on page 283.

Fix Wall Connections

Occasionally, intersecting walls may not properly connect. When this is the case and the connection in question is on the current floor, a circle will display at its location and the Connect Walls icon will display near your mouse pointer. You can turn off this feedback in the **Preferences** dialog. See "Architectural Panel" on page 107.

To correct wall connections throughout the current plan, select **Build> Walls> Fix Wall Connections**.

Alternatively, you can fix an individual wall connection using the **Connect Walls** edit tool.

To use the Connect Walls edit tool

1. Select a wall.
2. Click the **Connect Walls** edit button.
3. Click on a wall that you want to connect to the selected wall.
   - If the unconnected wall ends are sufficiently close to one another, the tool connects them.
   - If the separation is too great, extend one towards the other and try again.

Removing Wall Breaks

The **Break Wall** tool allows you to break a wall into two or more separate wall segments. See “Break Wall” on page 270.

To merge two collinear walls separated by a break,select one of the segments, then click on the end edit handle located at the break and drag it a few plan inches (mm) away from the break.

If the two walls do not merge, either one or both walls have been moved and they are no longer collinear, or one or both has been edited in some way and they are no longer identical. Open the **Wall Specification** dialog for each wall and determine how they differ. See “Wall Hatch Specification Dialog” on page 321.

Displaying Walls

While the structure and appearance of each wall type is controlled in the **Wall Type Definitions** dialog, the display of walls in all views is controlled in the **Layer Display Options** dialog. See “Displaying Objects” on page 144.

The program installs with a number of layers intended for specifically for various types of walls; however, you can specify any layers as the defaults for most of these walls. Once created, you can also place a selected wall on any layer. See “Layer Panel” on page 315.

If a “Walls” layer is turned off, any doors and windows placed in walls on that layer will not display, either. See “Displaying Doors” on page 359 and “Displaying Windows” on page 393.

In Floor Plan View

The appearance of each wall type, including line weights and colors and wall layer fill styles, is specified in the **Wall Type Definitions** dialog. See “Wall Type Definitions Dialog” on page 298.

There are also several options for controlling how walls are displayed in floor plan view. In the **Layer Display Options** dialog, you can specify whether or not various types of walls display. By default, walls are placed on layers with “Walls” at the beginning of the layer name, such as “Walls, Normal”.

The display of the wall layers specified in the **Wall Type Definitions** dialog can be controlled. If you turn off the display of the layer called “Walls, Layers”, wall types

display with two lines representing the inside and outside surfaces.

In addition, you can turn off the display of non-structural layers and show only the walls' Main Layers by turning on the display of the "Walls, Main Layer Only" layer. This allows you to create both fully configured walls and framing layouts. The "Walls, Main Layer Only" layer affects the display of walls in floor plan view only. See "The Main Layer" on page 295.

The "Walls, Thru Wall Lines" layer controls the display of lines indicating which walls build through at wall intersections.

Note: In floor plan view, railings not specified as Solid display their Main Layer regardless of whether "Walls, Layers" or "Walls, Main Layer Only" is turned on. See "Wall Types and Railings" on page 262.

Either the upper or lower portion of a Pony Wall can display in floor plan view. Only the portion that displays can be snapped to or aligned with walls above or below. See "Pony Walls" on page 266.

Foundation Walls have footings that display in floor plan view as long as the "Footings" layer is turned on. See "Displaying Foundations" on page 444.

It is sometimes helpful to display the walls from a floor other than the current floor. To do this, select and display a reference floor. See "The Reference Floor" on page 434. You can also specify which layers are included in the Reference Display Layer Set in the **Layer Display Options** dialog.

Walls do not have labels; however, they do have Names Values that can be used to create custom text macros that you can insert into text objects in floor plan view. See "Working with Named Values" on page 1271.

In 3D Views

As in floor plan view, the display of walls can be controlled by layer in the **Layer Display Options** dialog.

Each layer of a wall is generated when you create a 3D view. You can see the different layers in 3D using the **Delete Surface** tool. See "Delete 3D Surface" on page 888.

A wall's framing layer displays as a solid layer rather than studs and plates until wall framing is built. See "Framing" on page 561. Wall framing is placed on the "Framing, Wall" layer by default.

While most architectural objects in the program can display in both floor plan and 3D views, a few cannot. Invisible walls and Wall Hatching are examples of objects that do not display in 3D, regardless of what layer they are placed on.

In Cross Sections

When the **Auto Detail** tool is used in a cross section view, the fill style of each wall layer as set in its Wall Type Definition is used. See "Auto Detail" on page 884.

Wall Materials

There are several ways that materials can be assigned to walls, depending on how the walls and the rooms they define have been defined. See "Rooms" on page 323.

When you draw a wall, it uses the materials specified in its wall type definition. See "Wall Type Definitions" on page 295.

You can change the surface material of an individual wall in the **Wall Specification** dialog. If you select "Use Default" as the material and the wall is used to define a room, the program refers to the material specified in the **Room Specification** dialog. See "Wall Specification Dialog" on page 301.

You can also change a room's wall material in the **Room Specification** dialog. See "Materials Panel" on page 831. To restore the default Wall Type material, select **Use Default** in the **Select Library Object** dialog. See "Select Library Object Dialog" on page 816.

Wall materials can also be changed using the **Material Painter**  tool, but bear in mind that the entire room will often be affected rather than the individual wall. See "Material Painter and Walls" on page 830.

When neither the wall nor the room has a material assigned to it, the program refers to the general material for walls in the **Material Defaults** dialog. See "Material Defaults" on page 852.

Note: Wall materials that are specified on the Materials panel of either the Wall or Room Specification dialog are not calculated in the Materials List.

In the Materials List

The materials that make up wall assemblies are listed under different Categories in the Materials List:

- **Siding** - Lists all materials located outside of each wall's Main Layer, such as siding, sheathing, and housewrap.
- **Framing** - Lists the Main Layer material for all walls as well as railings specified as Solid. Non-framed walls' Main Layer materials are also listed here when those walls are not specified as Foundation.

  Wall framing, including studs, plates, and headers, is only counted when a wall's Main Layer is a framing material and wall framing has been built. See "Framing" on page 561.
- **Insulation** - Insulation is calculated for all exterior walls that are not specified as Railing, regardless of the wall type definition.
- **Wallboard** - Lists all materials located inside of each wall's Main Layer, such as drywall. Includes all materials aside from framing, concrete,and rebar in walls that do not define rooms.

  Does not include Wall Coverings or materials specified in either the **Room** or **Wall Specification** dialog. See "Materials Panel" on page 315.
- **Interior Trim** - Lists base, crown and chair rail moldings, and Wall Covering materials specified in the **Wall** and **Room Specification** dialogs. See "Wall Covering Panel" on page 313.
- **Foundation** - Lists the concrete and rebar for all walls specified as Foundation as well as their footings. See "Foundation Walls" on page 264.

Slab Footings as well as the room areas that they define can be assigned **Pour Numbers** in their specification dialogs. Pour Numbers

are listed separately under the Foundation category of the Materials List. See “Foundation Panel” on page 310.

With the exception of wallboard, windows and doors are taken into account in the calculation of these totals.

Additional wall-related information is listed in the **General** category, including the total linear feet of each wall type per floor and the total heated wall area per floor.

A wall type’s Main Layer plays a central role in determining how - or whether - wall materials are calculated. For this and other reasons, correct Main Layer assignment is very important. See “The Main Layer” on page 295.

Measuring Walls

Accurate wall measurements are an essential aspect of any drawing, and can be achieved by following two basic rules:

- Be aware of what part of a wall assembly dimensions are locating;
- Position walls using dimensions rather than edit handles or edit tools.

These rules can easily be met when you keep the following recommendations in mind.

Use Dimension Defaults

Manually-drawn, automatic, and temporary dimensions can all be set to locate walls at their Main Layers or at surfaces. Before drawing dimensions - and particularly, before using them to move your walls into position - make sure that all of your Dimension Defaults are set up to meet your needs. See “Dimension Preferences and Defaults” on page 962.

If a wall is specified as Invisible, dimensions will locate it at its centerline regardless of its Wall Type Definition or your Dimension Defaults settings. If the Invisible wall divides rooms with different floor heights, dimensions will locate the edge of the wall facing the room where the floor is lower.

Be aware, too, that the wall length dimension that displays when a wall is selected as well as the **Length** specification in the **Wall Specification** dialog do not inherit their settings from the Dimension Defaults. Instead, they follow the **Resize About** line. See “Resize About” on page 285.

Edit Dimension Lines

Once a dimension line has been drawn, its extension lines can be edited to locate a number of locations on a wall assembly:

- The exterior surface
- The Wall Dimension Layer’s exterior
- The center line of the wall assembly
- The Main Layer’s center line
- The Main Layer’s interior
- The interior surface

See “Editing Extension Lines” on page 986.

Moving Walls Using Dimensions

By far, the most precise method of positioning walls is using dimension lines.

To produce accurate measurements, remember to:

- Be aware of what part of your walls is being located by each type of dimension.
- Avoid specifying dimension values with greater accuracy than your dimensions are set to display. See “Primary Format Panel” on page 965.

See “Using Dimensions” on page 279.

Remember that the temporary wall length dimension that displays when a wall is selected may be set to locate a different part of the wall assembly than other dimension lines. See “Wall Length” on page 281.

Use Object, Angle and Grid Snaps

Object Snaps, Angle Snaps, and Grid Snaps make it easier to align walls when they are being drawn as well as when they are edited. See “Snap Behaviors” on page 160.

Object Snaps help to ensure consistent wall connections and are particularly helpful when aligning collinear walls.

When **Grid Snaps** are enabled, walls are drawn on a regularly spaced grid, which helps avoid inaccurate wall placement. This can become particularly important if you forego positioning walls using dimensions in favor of using edit handles to move them.

Using Grid Snaps is recommended when you are laying out exterior shell walls, but may be inconvenient when positioning interior walls or other objects.

Angle Snaps make it easy to accurately draw walls at regular angles, ensuring walls that are truly parallel or perpendicular to one another and separated by consistent distances.

No Locate

If a wall is specified as **No Locate** in the **Wall Specification** dialog, it will be ignored by **Auto Exterior Dimensions** in floor plan view, as will any doors or windows placed in it. See “Dimensions” on page 961.

By default, **Railings**, **Deck Railings**, and **Room Dividers** are specified as No Locate. See “General Panel” on page 302.

If a wall is on its default layer and is specified as **No Locate**, it will be moved to the “Walls, No Locate” layer. If this box is later unchecked, the wall will return to its default layer. If a wall is on a non-default layer, it will remain there. See “Displaying Walls” on page 274.

Once a dimension line has been created, it can be edited so that it locates a No Locate wall or railing that is perpendicular to it. See Editing Dimension Lines.

Editing Walls

Walls can be selected individually and as a group in all views. When a wall is selected, it displays edit handles and an edit toolbar that can be used to edit it in various ways. When a wall is selected, temporary dimensions may also display. See “Temporary Dimensions” on page 980.

The ways in which a wall can be edited depends on the current view and which edge is selected. See “Selecting Objects” on page 180.

Selecting Walls

- When you try to select a wall in a cross section/elevation or 3D view, the interior or exterior room that it defines may be selected first. Click the **Select Next Object** edit button or press the Tab key on your keyboard to select the wall itself. See “Selecting Rooms” on page 325.

  You can specify that the wall be selected first instead of the room in the **Preferences** dialog. See “Appearance Panel” on page 90.
- In floor plan view, if wall hatching has been applied to a wall using the **Hatch Wall** tool, the hatching may be selected first. Click **Select Next Object** to select the wall itself. See “Hatch Wall” on page 269.
- The **Edit Area** tools allow you to select only part of a wall or walls. See “Edit Area Tools” on page 246.

Using the Edit Handles

A selected wall can be modified in a variety of ways using its edit handles in any view. The handles that are available will depend on the current view type. See “Edit Handles for Walls” on page 282.

In the Specification Dialog

The appearance and structure of walls can be customized in the **Wall Specification** dialog. See “Wall Specification Dialog” on page 301.

The characteristics of the roof directly above a selected wall can also be specified in the **Wall Specification** dialog. See “Roof Panel” on page 307.

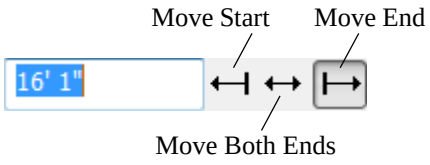
Using the Edit Tools

A selected wall or walls can be edited in a variety of ways using the buttons on the edit toolbar. See “The Edit Toolbar” on page 35.

Using Dimensions

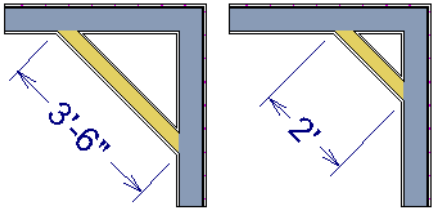
Automatic, manually-drawn, and temporary dimension lines can be used to both resize and move walls with accuracy. Select a wall, then click on a dimension line that locates it and type in the value that you need. See “Moving Objects Using Dimensions” on page 989.

When a wall is resized using dimensions, the inline text field used to edit the dimension will have three unique buttons: **Move Start**, **Move End**, and **Move Both Ends**. Choose the option that you want to use before pressing the Enter key.



If both ends of the selected wall intersect walls that are not parallel to one another, a fourth option will be available: **Move Along**

Rails . When this option is used, the selected wall both resizes and changes position so that it remains connected to the other walls when you press the Enter key.



Move Along Rails resizes and moves a selected wall.

Depending on your **Dimension Defaults** settings, manual, automatic, and/or temporary dimension lines may locate wall surfaces or wall dimension lines. See "Locate Objects Panel" on page 968.

Dimension lines do not locate foundation wall footings when they are first drawn. Their extension lines can be edited to do so, however. See "Editing Extension Lines" on page 986.

Unlike other types of walls, the thickness of a **Slab Footing** can be resized using dimensions. A new wall type may result. See "Editing Foundations" on page 445.

Bear in mind that temporary dimensions can be set up to locate different wall layers than automatic and manual dimensions. As a result, they may appear to give different measurements between the same walls. See "Temporary Dimension Defaults Dialog" on page 975.

Only the portions of pony walls that display are located by dimensions. The upper and lower parts of pony walls typically have different thicknesses, so which part you choose to display may affect your plan's dimensions. See "Pony Wall Defaults" on page 257.

Dimension Defaults and Temporary Dimension Preferences settings can have a significant effect on wall position. It is recommended that you review these settings and make sure that they meet your needs.

Wall Thickness

The initial thickness of a wall is determined by its wall type definition. You can change a wall's thickness by modifying the definition of it's wall type. If you do this, all instances of the wall type used in the plan will be affected - not just an individual object. See "Wall Type Definitions" on page 295.

You can also specify a selected wall's thickness in its **Wall Specification** dialog. See "General Panel" on page 302.

If a selected wall's thickness is changed:

- A copy of the wall's wall type is created with the same name but appended with a number equal to the thickness of the Main Layer, and that new type is assigned to the wall. See "The Main Layer" on page 295.
- The change in thickness will be applied to new wall type's Main Layer.
- The Main Layer must be at least 1/16" thick, and the wall's thickness cannot be less than the original wall type's total thickness minus the thickness of its Main Layer.

If a wall type's thickness is modified, the wall will resize about the **Resize About** line specified in the **General Wall Defaults** dialog. In some instances, the wall may

appear to move as a result of changes made to the thicknesses of its layers. See “General Wall Defaults” on page 254.

Wall Heights

The height of a wall is controlled by the ceiling height of the room(s) it defines. If the ceiling or floor height of a room is changed, the height of the walls that define it also change.

- The initial ceiling height for all rooms on a floor is set in the **Floor Defaults** dialog for that floor. See “Floor Defaults” on page 324. Whenever possible, it is best to set all ceiling heights using the default.
- The ceiling height of a single room can be set in its **Room Specification** dialog. See “General Panel” on page 347.
- The default Floor and Ceiling Heights for a given floor can be adjusted by editing the top and/or bottom edges of the Exterior Room in a 3D view. See “The Exterior Room” on page 326.
- If the wall height of the Exterior Room is adjusted in a 3D view, the default Floor or Ceiling Height of the entire floor is changed. See “The Exterior Room” on page 326.
- The top or bottom edge of any wall can be adjusted independent of floor or ceiling heights using the mouse in Cross Section/Elevation and 3D views. Top and bottom edges can also be stepped and raked. See “Stepped and Raked Walls” on page 291.
- The edge dividing an upper and lower pony wall can be edited in Cross Section/Elevation and 3D views. In addition, its height can be defined in the **Wall Specification** dialog. See “Wall Types Panel” on page 312.

Wall Length

Wall length can be modified in several different ways:

- Using dimensions. See “Measuring Walls” on page 277.
- In the **Wall Specification** dialog. See “General Panel” on page 302.
- By dragging the end edit handles. See “Editing Line Based Objects” on page 184 and “Editing Arc Based Objects” on page 188.

Bear in mind that if you try to resize a wall by a small amount using one of its edit handles and that wall is connected to another wall at that end, its length will not change because its end will snap back to the existing intersection. See “Connecting Walls” on page 273.

The most accurate way to specify wall length is using dimensions. By default, wall length is measured at the outside edge of the Main Layer. You can instead specify that manual, automatic, and/or temporary dimension lines locate surfaces in the **Dimension Defaults** dialogs. See “Dimension Preferences and Defaults” on page 962.

Be aware that the wall length dimension that displays when a wall is selected as well as the **Length** specification in the **Wall Specification** dialog do not inherit their settings from the Dimension Defaults. Instead, they follow the **Resize About** line. See “Resize About” on page 285.

Note: By default, dimensions and the Resize About line all use the exterior edge of the Main Layer. When Resize About is set to use a different location, dimension lines may not agree with a wall's length specification. See "Measuring Walls" on page 277.

Locked vs. Unlocked Centers

The default for curved walls is an unlocked center because it is easier to draw and edit when the center is unlocked.

Once walls are in place and curved walls are properly aligned with straight walls, it is a good idea to lock the curved walls' centers.

To lock the center of a curved wall, select it and click the **Lock Center** edit button. See "Using Lock Center" on page 193. The curved wall remains selected, but its edit handles change.

The locked status can also be changed in the General panel of the **Wall Specification** dialog. See "General Panel" on page 302.

Edit Handles for Walls

Walls can be edited extensively using their edit handles. Depending on the type of view, a wall displays a different set of edit handles when selected.

- In floor plan view, straight and curved walls and their footings can be edited like other line- and arc-based objects. See "Editing Line Based Objects" on page 184 and "Editing Arc Based Objects" on page 188.
- In floor plan view, a wall's edit handles display along its **Resize About** line. See "Resize About" on page 285.
- The **Edit Wall Layer Intersections** edit tool lets you control how a wall's layers build to another wall that it intersects.
- In a camera view or overview, click on the top surface of a wall to display the same edit handles as in floor plan view, allowing you to rotate, move, and extend or shorten the length of the wall.
- Moving a wall in any view will move any cabinets attached to that wall, as well.
- In a cross section/elevation view, the top and bottom edges of straight and curved walls can be edited like closed polylines. See "Editing Closed-Polyline Based Objects" on page 198. Only the top and bottom edges of walls can be broken, angled or curved: the side edges cannot.
- In a camera view or overview, click on an interior or exterior surface to display the same edit handles as in an elevation view: one at each corner and one on the top and bottom edges.
- When a wall is connected to other walls and **Edit Object Parts** is turned off, it can only be moved perpendicular to itself or, in the case of curved walls, perpendicular to its chord using the Move edit handle. Unconnected walls can be moved at Allowed Angles.
- The footings of Foundation Walls and Slab Footings can be selected in 3D views and edited using the edit handles. See "Footing Width and Height" on page 447.

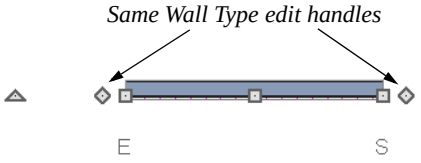
- The **Same Wall Type** edit handles can be enabled, allowing you to draw a new wall segment of the same type as the selected wall.

Same Wall Type Edit Handles

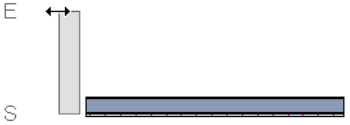
The **Same Wall Type** edit handles allow you to draw a new wall extending out from either end of a selected wall and with identical properties as that wall.

To temporarily enable the Same Wall Type edit handles, select a wall and click the **Same Wall Type** edit button. You can also enable these handles globally in the **Preferences** dialog. See “Architectural Panel” on page 107.

When the Same Wall Type edit handles are enabled, two edit handles display just beyond a selected wall’s Extend edit handles in floor plan view or when the top edge of the wall is selected in a 3D view.



Click and drag a Same Wall Type edit handle at any angle to draw a new wall segment of the same type as the selected wall.



Wall Layer Intersections Edit Handles

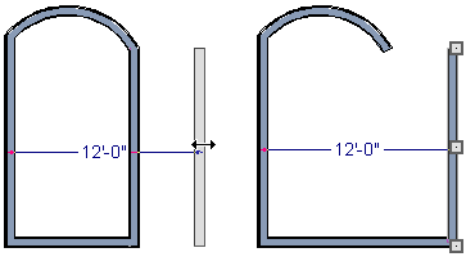
The **Edit Wall Layer Intersections** edit tool lets you control how a wall’s layers build into another intersecting wall. When you click this edit button, the selected wall’s standard set of edit handles are replaced by a set of Wall Layer Intersection handles which you can use to modify the length of each wall layer. See “Connecting Walls” on page 273.

To edit wall layer intersections

1. Select a wall and click the **Edit Wall Layer Intersections** edit button.
   - This edit button is not available if the wall is not connected to another wall at either end.
2. **Zoom** in on either end of the wall so its edit handles can be clearly seen.
   - A Wall Layer Intersection edit handle is located at the midpoint of each wall layer.
3. Click and drag a Wall Layer Intersection handle either towards or away from the opposite edge of the intersecting wall.
   - As you drag, the wall layer will snap to the wall layer lines of the intersecting wall.
4. When you are finished, click the **Main Edit Mode** edit button or press the Esc key.

Editing Straight/Curved Wall Combinations

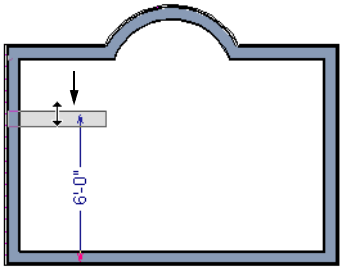
If you move a straight wall connected to a curved wall with a locked center and the connection cannot be maintained without changing the center of the arc, the walls lose their connection.



When an Extend edit handle of a curved wall with a locked center is dragged with the **Alternate** Alt Edit Behavior active, the locked center setting will be overridden. See “Edit Behaviors” on page 176.

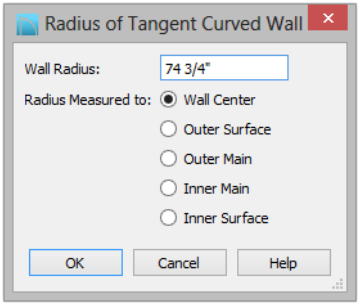
If you move a straight wall connected to a curved wall with a locked center, the curved wall extends along its curve and the straight wall will either lengthen or shorten as needed to stay connected to the curved wall.

If the connection between the straight and curved wall cannot be maintained because of the curved wall’s radius, it will be broken.



Make Arc Tangent

If both ends of a curved wall are attached to straight walls that are nearly tangent and the curved wall is selected, the **Make Arc Tangent** edit button displays. Click this button to open the **Radius of Tangent Curved Wall** dialog.



Here you can determine which wall layer the radius of the curved wall is measured to. Specify a layer and click OK. For more information about Wall Layers, see “Wall Type Definitions” on page 295.

Aligning Walls

Wall alignment refers to the way wall segments line up with one another, either on the same floor or on the floor above or below. Walls may need to be aligned in a variety of situations.

To make alignment easier when drawing or resizing walls, “sticky” points and extension lines identify points that are either collinear or orthogonal to the end points of other walls. See “Extension Snaps” on page 161.

Resize About

The **Resize About** line specified in the **General Wall Defaults** dialog controls two important aspects of wall alignment:

- What part of a wall retains its position when its wall type or wall type definition is changed. See “Wall Type Definitions” on page 295.
- Where walls snap together to form an intersection. See “Connecting Walls” on page 273.

See “General Wall Defaults” on page 254.

The **Resize About** line is the line along which a selected wall’s length is measured in the **Wall Specification** dialog. See “Wall Length” on page 281.

The **Resize About** line is also the line along which a selected wall’s edit handles display, and is the line along which any snap points will be located. See “Editing Walls” on page 278.

Aligning Collinear Walls

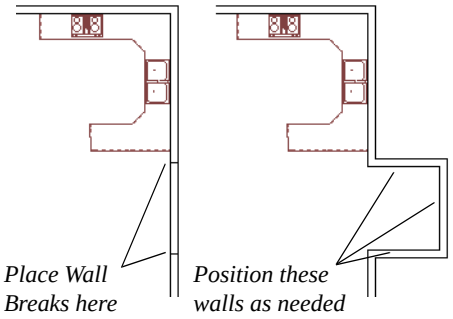
Collinear walls are parallel walls connected end to end and drawn on the same floor. When collinear walls join end-to-end, the walls snap together. If these walls have the same wall type and identical specifications, and if **Object Snaps** are enabled, they will merge to become a single wall segment.

Creating a Nook

Walls can be aligned across an opening such as a nook, so that they are collinear, using the **Break Wall** tool.

To align walls across a gap

1. Select a wall to build a nook into and click the **Break Wall** edit button.
2. Click at a point on the wall close to one side of the nook area. Do not worry about exact placement right now.
3. Click again near the other side of the nook. Two short lines at each location where you clicked indicate Wall Breaks.



4. Right-click the middle section of the wall to select the wall section.
5. Click the middle Move handle and drag the wall outward.
6. Draw side walls to connect the wall back to the rest of the house.
7. Move these short walls using dimensions to accurately size the nook.

Aligning Walls Between Floors

Walls can be aligned between floors by clicking the **Align With Wall Above** and **Align With Wall Below** edit buttons.

By default, walls on different floors are aligned by the outer edges of their Main Layers. See "The Main Layer" on page 295.

In order for these edit tools to be available, the areas of the walls in question must be partially aligned, or overlapping.

To align walls between floors

1. Select a wall that you want to align with another wall either above or below it.
2. If the wall is above or below the other wall along only part of its length, you must click on it along that part. Select **Tools> Reference Floors> Reference Display On** to help make sure you click on the correct part of the wall.
3. When you have selected the wall at the desired location, click either the **Align With Wall Above** or **Align With Wall Below** edit button.

Aligning Curved Walls Between Floors

Curved walls are aligned between floors using the same technique to align straight walls. If the centers and radii of the walls are within a few inches of each other, the **Align With Wall Above** and **Align With Wall Below** edit buttons are enabled for the selected wall. The selected curved wall will take on the radius and center of the referenced wall when the walls are aligned.

Aligning Pony Walls Between Floors

When aligning a pony wall with either the wall above or below:

- **Align With Wall Below** will always align the lower pony wall with the wall below, as specified in the lower pony wall's Wall Type Definition. See "Wall Type Definitions" on page 295.
- **Align With Wall Above** will always align the upper pony wall with the wall above, as specified in the upper pony wall's Wall Type Definition.

Aligning Foundation Walls

The **Foundation To This Line** setting in the **Wall Type Definitions** dialog controls how a wall of a given type aligns with foundation walls directly below on Floor 0.

By default, **Foundation To This Line** is specified for the Main Layer of most wall types. An exception to this are brick wall types, which have Foundation To This Line specified for the exterior siding layer. See “Brick Ledges” on page 265.

Aligning Curved Walls With Straight Walls

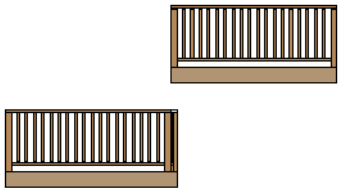
Curved walls can be drawn tangent to an existing straight wall using the **Start/Tangent/End Arc** Mode. See “Drawing Arcs - Arc Creation Modes” on page 1056.

If both ends of a selected curved wall are connected to other walls at angles of 45° or less, the **Make Arc Tangent** edit button is available. Click this button to move and resize the wall so that both ends are tangent to the connected walls. See “Editing Arc Based Objects” on page 188.

The wall’s radius is usually changed by this action and a locked center automatically becomes unlocked. Once the wall is tangent, select it and drag its move handle until it is in the appropriate position.

Aligning Railing on Different Platforms

Two collinear Railings or Deck Railings on the same floor can be aligned one above the other when they define rooms with different floor heights.



To align railing on different platforms

1. Click and drag to draw a Railing or Deck Railing that divides a room such as a deck in two.
2. Click the **Select Objects** button, then click in one of the room areas.
3. Click the **Open Object** edit button, and on the General panel of the **Room Specification** dialog:
   - Specify a **Floor Height** that differs from that of the other by at least the height of the railing, then click OK.
   - The default railing height is 36”, so for best results the Floor Height should be changed by at least this amount.
4. Click on the railing drawn in step 1, then click the **Open Object** edit button. On the Rail Style panel of the **Railing** or **Deck Railing Specification** dialog, check **Generate on Low Platform**. See “Rail Style Panel” on page 316.
5. Click and drag a second railing parallel to the one drawn in step 1.
6. Select this second railing and click the **Open Object** edit button. On the General panel of the **Railing** or **Deck Railing Specification** dialog, check the box beside **No Room Def** and click OK.

7. With the railing still selected, Ctrl + drag it into the same position as the first railing. See “To move an object freely” on page 218.

Roof Directives in Walls

To automatically generate a roof plane using values other than the defaults or to not generate a roof plane bearing on a particular wall (as for a gable or the sides of a shed roof), you can change the settings in the **Wall Specification** dialog. See “Roof Panel” on page 307.

Hip, Gable, and Shed Roofs

By default, the program will produce a roof plane over each exterior wall to create a hip roof. You can instead specify a gable or shed roof above the selected wall.

- Check **Full Gable Wall** to create a gable with a ridge centered above the selected wall(s).
- Check **High Shed/Gable Wall** for the side walls or the wall under the high side of a shed roof.
- You can also select a wall and click the **Change to Gable Wall(s)** edit button, or change it back by clicking the **Change to Hip Wall(s)** edit button.

Pitch

The default pitch for roof planes is set in the **Build Roof** dialog. However, any exterior wall can define the pitch of the roof plane built above it.

You can also specify a second, upper pitch above a given wall. Mansard, gambrel, gull wing and half-hip are examples of roof styles that use two pitches. See “Roof Tutorial” on page 57 of the User’s Guide.

Overhangs and Roof Returns

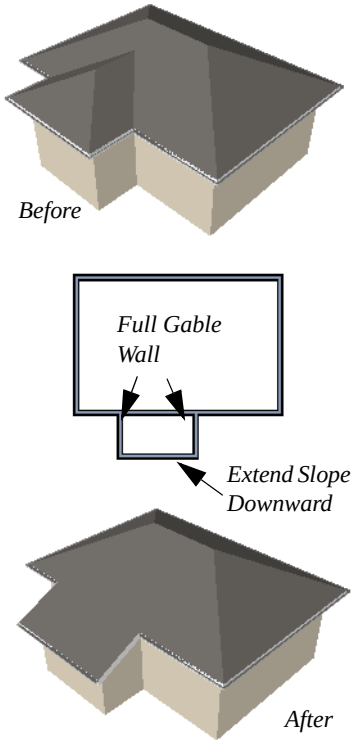
You can specify the overhang of the roof plane to be generated above the selected wall. This setting only takes effect when Same Height at Exterior Walls is unchecked in the the **Build Roof** dialog, which is also where the default Overhang value is set.

Check **Auto Roof Return** to generate roof returns on the selected wall. In most cases, roof returns only generate on Full Gable Walls. See “Roof Returns” on page 515.

Extend Slope Downward

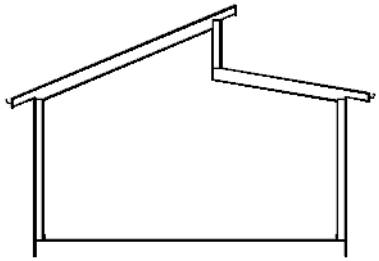
Check **Extend Slope Downward** to extend the roof plane downward over a bumpout, instead of creating additional roof planes. The two connecting walls that create the bumpout must be Full Gable walls.

In the following image, the bearing wall of the bumpout has **Extend Slope Downward** checked. The two short side walls are **Full Gable Walls**.



Clerestory and Dormer Walls

Occasionally, walls are built between two roof planes rather than between a roof plane and a floor platform. Common examples include clerestory walls and the side, or the cheek, walls of floating dormers.

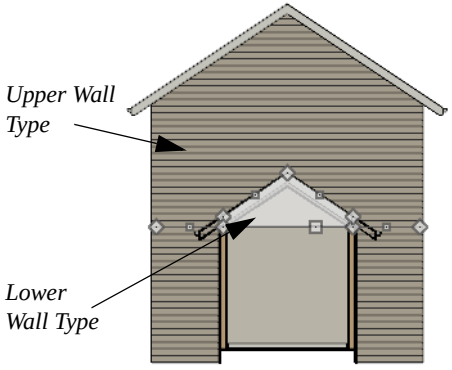


Clerestory wall built between two roof planes

Check **Roof Cuts Wall at Bottom** to have the bottom of the selected wall clipped by the roof plane below, as where a floating dormer wall meets the main roof plane.

Exterior/Interior Pony Walls

It's not uncommon for an individual wall to be an exterior wall near its top, and an interior wall near its bottom.



Lower Wall Type If Split By Butting Roof

Check **Lower Wall Type If Split By Butting Roof** to achieve this. When this option is checked, the selected wall is specified as a pony wall and a second, lower wall type can be specified. Unlike with other pony walls, the change in wall type occurs wherever a

roof plane builds to the exterior of the wall. See “Pony Walls” on page 266.

Attic Walls

In Chief Architect, walls are built between the floor and ceiling platforms of the current floor. See “Floor and Ceiling Heights” on page 335. When the program detects an open space between a wall and the roof plane above it, it automatically creates an Attic Wall on the floor above that wall to fill in the gap.

Attic Walls are typically found above Full Gable Walls, forming a gable or closing the top portion of a side wall of a shed roof. They are also generated above all exterior walls when the **Raise Off Plate** value in the **Build Roof** dialog is 3” (175 mm) or greater. See “Build Roof Dialog” on page 468.

Attic Walls are often found on the Attic floor, but can be generated on other floors, as well. See “The Attic Floor” on page 433.

Attic Walls are specified as such in the **Wall Specification** dialog; if automatically generated, that will be noted as well. If needed, you can specify a regular wall as an Attic Wall. If you specify a wall as an Attic Wall and it is currently on its default layer, it will be moved to the “Walls, Attic” layer, See “General Panel” on page 302.

When you **Rebuild Walls/Floors/Ceilings**, all automatically generated Attic Walls in the plan are deleted and rebuilt unless **Auto Rebuild Attic Walls** is also checked in the **General Wall Defaults** dialog. See “General Wall Defaults” on page 254.

Removing Attic Walls

Occasionally, the program will generate an Attic wall where one is not wanted. There are several ways to address this:

- Turn off the display of the layer that the Attic Wall is on.
- Specify the Attic Wall as **Invisible**. See “Room Dividers and Invisible Walls” on page 267.
- Select the Attic Wall and **Delete** it. When **Auto Rebuild Attic Walls** is on, the program will specify the wall as Invisible automatically. If you delete this Invisible wall, a new Attic Wall will be created.
- Turn off **Auto Rebuild Attic Walls** in the **General Wall Defaults** dialog and then **Delete** the wall.
- Combine the Attic Wall with the wall below. To do this, select **Combine with Above Wall** in the **Wall Specification** dialog for the wall below. See “Roof Panel” on page 307.

Knee Walls

Knee Walls are a bit like Attic Walls in that they are not meant to generate to full ceiling height. Instead, they build upward until they encounter a roof plane. Unlike Attic Walls, however, Knee Walls are used in the interior of a structure, typically to separate unused areas from rooms on the upper floor of a

story-and-a-half structure. See “Room Types” on page 329.

Chief Architect does not specify walls as Knee Walls automatically. If an interior wall is drawn in a location where the roof is lower than the ceiling height, you should specify it as a Knee Wall in the **Wall Specification** dialog. See “Roof Panel” on page 307.

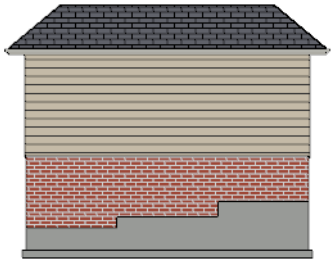
Stepped and Raked Walls

Stepped and raked walls can be created using the **Break Line** tool and the wall’s edit handles in any 3D or Cross Section/Elevation view. In many cases, working in a **Back-clipped Cross Section** is easiest and allows the greatest accuracy.

When you try to select a wall in a 3D view, the interior or exterior room that it defines may be selected first. Click the Select Next Object edit button to select the wall itself. See “Selecting Walls” on page 279.

Stepped Walls and Footings

A typical example of stepped walls is a stepped foundation with pony walls. In the illustration below, the lower part of the pony wall is the concrete wall with footing, and the upper part of the pony wall is a framed wall with brick siding built to the first floor platform. See “Pony Walls” on page 266.



To add a step to a wall

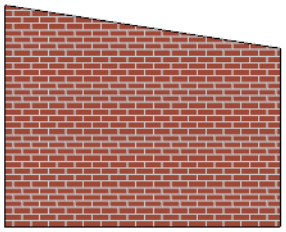
1. Select the wall in a **Backclipped Cross Section** view.
2. Click the **Break Line** tool, then click the top or bottom edge of the wall to place the break.
3. In addition to the corner handles, two handles display along the broken edge.
4. Select one of these two handles, and drag up or down.
5. A square step is created.

The vertical edges of a wall cannot be broken, although they can be raked as well as moved side to side.

By default, a stepped foundation wall displays an “S” symbol at the location of each step in floor plan view. The display of this “S” is controlled in the **Foundation Defaults** dialog. See “Foundation Panel” on page 439.

Raked Walls

A raked wall has an angled top or bottom edge.

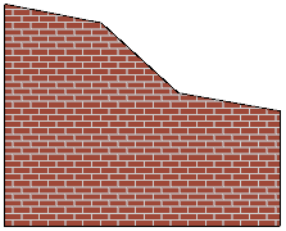


To create a simple raked wall

1. Select the wall in Cross Section/Elevation or 3D view.
2. Click one of the corner edit handles and drag that handle either up or down.
3. To rake a wall at a specific angle, you can:
   - Use Angle Snaps and Allowed Angles. See “Angle Snaps” on page 162.
   - ,Draw a CAD Line at the desired angle and use the **Make Parallel/ Perpendicular** edit tool. See “Using Make Parallel/Perpendicular” on page 224.

Compound Raked Walls

A compound raked wall is a wall that has a top or bottom edge with multiple angles.



To create a compound raked wall

1. Select the wall in Cross Section/Elevation or 3D view.
2. Use the **Break Line** tool to add breaks to the wall edge, as for a stepped wall.
3. Select a segment of the edge and adjust its angle, as for a raked wall.

Double Walls

In some situations, such as for sound insulation, furring, or where the walls of two modular home units meet, two walls are drawn side-by-side. In instances such as these, where walls are both parallel and touching, they are referred to as Double Walls.

There are three types of Double Walls in Chief Architect: Frame Through, Split Framing and Furred Wall.

Note: The Double Wall options are not enabled for curved walls.

Frame Through

Frame Through walls can be considered the basic Double Wall type. A Frame Through wall could be used as a double wall between hotel rooms for sound insulation.

By default, all walls are specified as **Frame Through** in the **Wall Specification** dialog. See “Structure Panel” on page 304.

Split Framing

Split Framing walls divide floor and ceiling platforms, as well as any walls they intersect. The split occurs at the boundary where the two double walls touch and is useful for separating modular home units.

Chief Architect frames walls and platforms separately on either side of the Split Framing wall boundary, with no framing members crossing it.

You can make floor platform rim joists touch each other at the boundary between Split Framing walls or provide spacing to carry sheathing over them by checking **Build platform to this layer** for the appropriate layer in the **Wall Type Definitions** dialog. For more information, see “Wall Type Definitions Dialog” on page 298.

To create a pair of Split Framing walls, specify both walls as such on the General panel of the **Wall Specification** dialog.

Furred Walls

Furred Walls are placed against the inside of a primary wall, typically an exterior wall. An example is a concrete wall furred out by a framed wall with an air gap or insulation between them. Another example is a thick wall with two framed layers.

Rooms are defined in the normal manner by the primary wall, but the layers of the Furred Wall are treated by the program as though they were added to the primary. An air gap between the primary and furred walls should be defined as a layer of one of the walls, usually the furred wall.

As with Frame Through walls, Furred Walls do not split platforms or connected walls. Unlike Frame Through walls, they do not connect or frame to non-parallel walls like normal walls. Instead, they connect to other Furred Walls.

To create a Furred Wall, specify the primary wall as a **Frame Through** wall and the furred wall as a **Furred Wall** on the General panel of the **Wall Specification** dialog.

Openings in Double Walls

Doors and windows placed in one Double Wall extend through both walls. You can specify how an opening builds through the Double Walls on the Casing panel of either the **Door** or **Window Specification** dialog. See “Door Specification Dialog” on page 368 or “Window Specification Dialog” on page 398.

CAD to Walls

The **CAD to Walls** tool can be used to convert CAD lines in floor plan view into architectural objects. Two or more parallel CAD lines can be converted to both straight or curved walls or rails. CAD lines representing windows and doors can also be converted.

All lines that you want to convert to walls must be located on one layer. The same is true for windows, doors, and rails. It may be

helpful to place like items on a single layer with unique layer attributes. See “Layer Display Options Dialog” on page 148.

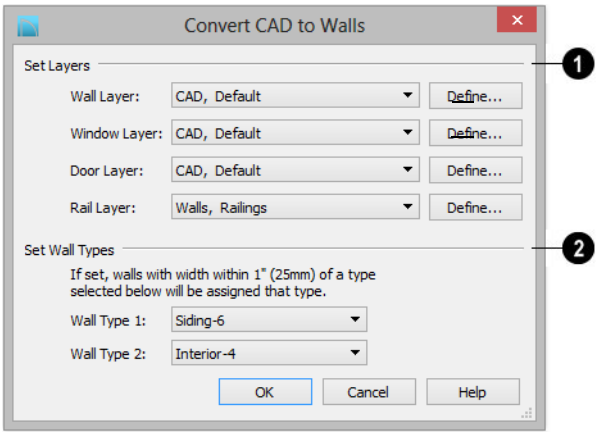
To convert the lines of an imported drawing using **CAD to Walls**, map its layers in the **Import Drawing Assistant**. Do not convert lines with shared endpoints to either Boxes or Polylines. See “Select File” on page 1137.

To convert to a specific wall type, the lines representing the wall’s surfaces must be within one inch or 25mm of that wall type’s width. If two wall types are specified, new walls are assigned the type having the closest width.

For best results, delete any wall lines or polylines located between interior and exterior wall surface lines before using Convert CAD to Walls.

When CAD objects are located properly, select **CAD> CAD to Walls** to display the **Convert CAD to Walls** dialog.

Convert CAD to Walls Dialog



1 **Set Layers** - From the drop-down lists, select the source layers of lines to be converted to walls, windows, doors, and rails.

- Click **Define** to open the **Layer Display Options** dialog.

Note; If the same layer is specified as the Wall Layer and Rail Layer, all eligible walls will be converted into railings.

2 **Set Wall Types** - Specify the wall types for the new walls.

If the distance between the surface lines is less than the total width of the specified wall type,a copy of that wall type will be created. The width of its Main Layer will adjust so that the overall width is equal to the specified wall’s Main Layer.

Click **OK** to complete the conversion.

Wall Type Definitions

Every wall drawn in a plan is assigned a wall type, and its Wall Type Definition determines its structure, its appearance in floor plan view, and its default materials.

A wall type is considered to be:

- "Framed" if its Main Layer material is the Framing type;
- "Concrete" if its Main Layer material is the Concrete type;
- "Masonry" if its Main Layer material is the Brick type.

See "Material Types" on page 837.

Walls can have up to ten layers defined, each representing a different material. All of these layers can be calculated in the Materials List. Materials that are applied to the outer layers of the wall type definition also determine the wall's appearance in 3D views. See "Materials Lists" on page 1247.

Wall types can be viewed, edited and created in the **Wall Type Definitions** dialog. See "Wall Type Definitions Dialog" on page 298.

You can specify the default wall types used when walls are first created, and can specify the wall type of any wall after it is drawn in the **Wall Specification** dialog. See "Wall, Railing, and Fencing Defaults" on page 254 and "Wall Types Panel" on page 312.

Wall types plan specific, which means that wall types available in one plan file may not be available in other plans. You can, however:

- Export and import wall types. See "Exporting and Importing Wall Types" on page 301.
- Add a wall to the library for use in other plans. See "Add to Library" on page 807.

The Main Layer

In most circumstances, the Main Layer should be specified as the structural layer of the wall, particularly when the wall is a framed type. The Main Layer determines many things, including:

- Floor and ceiling platforms and automatically built foundation walls normally build to the outer edge of the Main Layer.
- At intersections, walls join at the interior surfaces of their Main Layers. See "Connecting Walls" on page 273.
- Exterior walls on different floors are aligned by the exterior edges of their Main Layers.
- Roof baselines are placed at the outer edge of the Main Layer when roofs are automatically generated. See "The Baseline" on page 477.
- Roof base lines and gable/roof lines that are manually drawn snap to the edge of this layer.
- When wall framing is generated, stud depth is based on the thickness of each wall's Main Layer.
- By default, walls resize about the exterior surface of their Main Layer when their wall type or Wall Type Definition is changed. See "Resize About" on page 285.

- By default, Object Snaps locate the exterior surface of a wall's Main Layer. See "Object Snaps" on page 160.

Wall framing will only generate in a wall when a Framing material such as Fir Stud 16" OC or Metal Stud 24" OC is specified for its framing layer. See "Material Types" on page 837.

All of this information is reliant on the Main Layer, so creating your wall type definitions accurately beforehand and specifying the Main Layer correctly is very important.

Multiple Main Layers

In standard light frame construction, walls build to one another's framing layers, and floor and ceiling platforms are built to bear over the wall framing; however, some building techniques configure these components in other ways. You can control how walls of a given type are intersected, and also where platforms build to, by specifying multiple Main Layers.

By default, when multiple Main Layers are specified:

- Intersecting walls build to the interior surface of the innermost Main Layer.
- Floor platforms build to the exterior surface of the outermost Main Layer.
- Framing generates in the outermost Main Layer with a framing material.
- A selected wall's edit handles display along the exterior of the outermost Main Layer.
- The exterior surface of the outermost Main Layer is the Dimension Layer

If multiple framing layers are required, use Double Walls. See "Double Walls" on page 292.

See "Wall Type Definitions Dialog" on page 298.

The Dimension Layer

Dimension Defaults can be set to locate walls at their surfaces or at the exterior line of their Wall Dimension Layer. See "Locate Objects Panel" on page 968.

The Main Layer is the default Wall Dimension Layer for installed wall types; however, this can be changed if need be in the **Wall Type Definitions** dialog. In addition to the Wall Dimension Layer, the program will locate the inside surface of the Main Layer, as well.

Whether Surface or Wall Dimension Layer is selected on the Locate Objects panel of the **Dimension Defaults** dialog determines a number of aspects related to how dimensions locate walls:

- How Auto Exterior and Manual Dimensions measure the lengths of walls.
- Where both Manual and Automatic Reach are measured from.
- Where Extension line lengths and their Gap From Marked Object are measured from.
- Where First Line Offset for **Auto Exterior Dimensions** is measured from.
- How the minimum enclosed area required by **Auto Exterior Dimensions** is measured.

The settings on the Locate Objects panel control how dimensions initially locate walls. Once a dimension line has been created, you can move its extension lines or add new extensions to locate other points along a wall's assembly. See "Measuring Walls" on page 277.

Interior and Exterior Surfaces

Every wall has an interior and exterior surface - including walls in a plan that are recognized by the program as being interior walls. See "Exterior and Interior Walls" on page 263.

Having separate designations for a wall's two surfaces allows you to specify different materials for each in the **Wall Specification** dialog. See "Materials Panel" on page 315.

It also allows you to specify which direction Wall Detail views face. See "In Wall Detail Views" on page 589.

In the **Wall Type Definitions** dialog, the exterior surface is shown at the top of the wall assembly diagram. In floor plan view, you can identify a selected wall's exterior surface by the location of its edit handles, which display on the exterior of the Main Layer by default. See "Resize About" on page 285.

Legacy Wall Types

In Chief Architect version X2 and prior, generic, single-layer wall types were used as the default for railings, deck railings and fencing. In the earliest program versions, they were the defaults for walls, as well.

- In Chief Architect X1 and prior, there were two such wall types: "Default (wood frame 16"OC)" and "Default (concrete)".
- In Chief Architect X2, these two wall types were replaced by one named "Adjustable Thickness Wall".

When plans that include either of these wall types - in the drawing itself or set as a default - are opened in Chief Architect X6, the legacy wall type is replaced by a new wall type named "Wall-X", where X is the thickness of the wall's Main Layer, rounded up. There are a few exceptions:

- If legacy wall types with the same thickness but different materials are found, they use the same naming convention appended with and additional _X.
- If a wall using a legacy wall type is specified as a Foundation wall, the resulting wall type will be named "Foundation Wall-X".
- If a legacy wall type has the same attributes as a wall type installed with Chief Architect X6, such as 8" Concrete Stem Wall, it will be replaced by that wall type.

Unless a wall is specified as a Foundation wall, Deck Railing, or Fencing, it will be treated as a framed wall and its new wall type will acquire two additional 1/2" (13 mm) thick wall layers: an interior and an exterior layer. These new layers will use the interior and exterior materials of the original wall. The wall's original layer will maintain its original thickness, acquire a framing material, and will become the new wall type's Main Layer.

Foundation, Deck Railing, and Fencing wall types converted in this manner will continue to have only one layer.

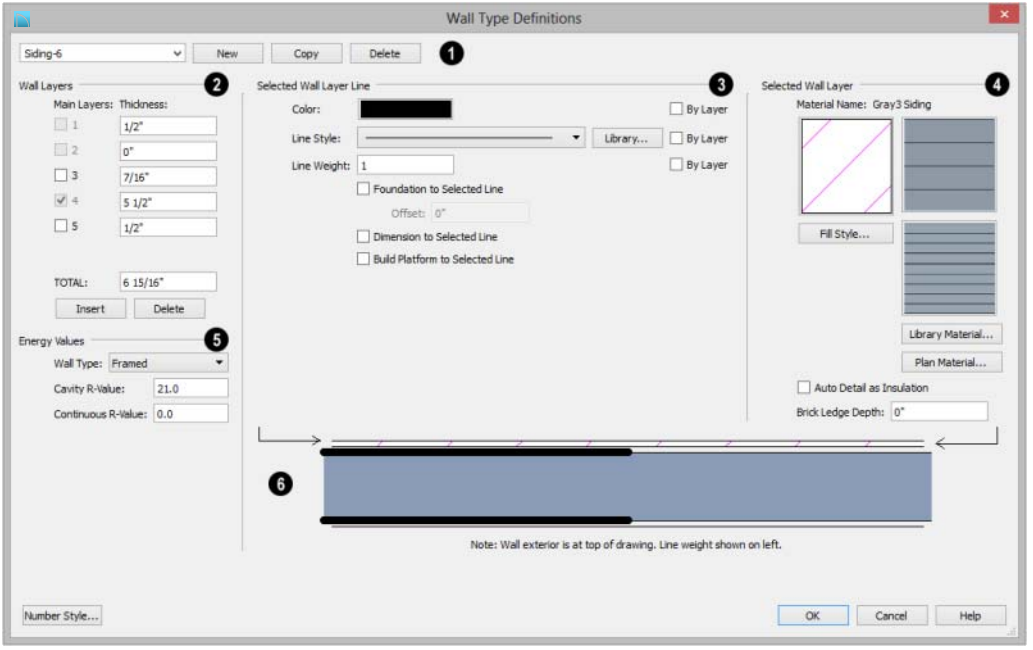
Wall Type Definitions Dialog

The **Wall Type Definitions** dialog is used to define new wall types and redefine existing wall types in the current plan file. Select **Build> Wall> Define Wall Types** to open this dialog.

You can also click the **Define** button on the Wall Types panel of the **Wall Specification** or in most **Wall Defaults** dialogs. See “Wall Types Panel” on page 312.

Changes made to an existing wall type definition affect all walls in the current plan using that wall type. Walls in other plan files are unaffected.

If changes to a wall type affect its thickness, the position of any walls in the plan using that wall type may be affected. See “General Wall Defaults” on page 254.



1 Manage the list of wall types available in the current plan.

- Click this drop-down list to display all available wall types in the current plan. Select a wall type from the list to display its definition. You can rename a wall type by typing in a new name.
- To create a new wall type, click **New** to define a new wall type from scratch or click **Copy** to copy the current wall type. A copied wall type can then be renamed and redefined.
- To remove a wall type, select it and click **Delete**. Wall types currently being used in

your plan or set as plan defaults cannot be deleted.

❷ The selected wall type's layers are listed here.

- Wall layers are numbered and are listed from exterior at the top to interior at the bottom.
- If the selected wall type has multiple wall layers, select a radio button to specify the **Main Layer**. Multiple Main Layers can be specified as long as they are adjacent to one another. See "The Main Layer" on page 295.
- Define the **Thickness** for each wall layer. Very thin layers can be created, but for best results, avoid using a thickness of 0. The number format can be changed by clicking the Num Style button.
- The **TOTAL** thickness of the wall type definition displays here. If you change this value, the thickness of the Main Layer automatically updates to account for the difference.
- Click the **Insert** button to create a new layer directly above the selected layer in the wall type definition.
- To insert a layer at the bottom, or interior, of the wall type definition, click on the bottom line in the wall assembly diagram and then click the **Insert** button.
- Click **Delete** to remove the selected layer from the wall type definition.

To select a layer for editing, click in its Layer Thickness text field. The arrow to the right of the wall assembly diagram points to the selected layer, while the arrow to the left of the diagram points to its exterior surface.

You can also select a wall layer by clicking on it in the wall assembly diagram at the bottom of the dialog.

❸ Specify the attributes of the selected **Wall Layer Line**. Wall Layer Lines define the extents of the layers in the wall assembly diagram at the bottom of the dialog. To select a Wall Layer Line for editing, click on it in the diagram. The arrow to the left of the diagram points to the selected line.

- Define the **Color**, **Style**, and **Weight** for the selected Wall Line.
- Check **By Layer** if you want the line to assume the attributes of the wall's layer as defined in the **Layer Display Options** dialog. See "Displaying Objects" on page 144.
- Click the **Library** button to select a **Line Style** from the Library. See "Line Styles" on page 1076.
- Check **Foundation to This Line** to align the Main Layer of a foundation wall or slab footing on the floor below to the selected Wall Line. By default, this option is checked for the outermost Main Layer. See "Aligning Foundation Walls" on page 448.
- Specify how far to **Offset** the Main Layer of a foundation wall on the floor below relative to the selected Wall Line. A positive value offsets toward the exterior; a negative value offsets toward the interior. Only available when Foundation to This Line is checked.
- Check **Build Platform to This Line** to build floor and ceiling platforms to the selected Wall Line. This option can only

be selected for one Wall Line at a time. By default, this option is checked for the exterior side of the outermost Main Layer.

Note: If Floor Platform to This Line is checked for the exterior surface line of the wall type, no siding material will generate to cover the floor platform.

- Check **Dimension to This Line** to have dimensions locate the selected Wall Line. This option can only be selected for a single wall layer, and can only be selected for the outermost Main Layer or a layer located between the Main Layer and the exterior surface. By default, this option is checked for the outermost Main Layer. Does not affect Interior Dimensions. See "The Dimension Layer" on page 296.

❹ Specify the attributes of the **Selected Wall Layer**.

- Click the **Library Material** button or either of the two material preview boxes to open the **Select Library Object** dialog and choose a material for the selected wall layer. See "Select Library Object Dialog" on page 816.
- Click **Plan Materials** to open the **Plan Materials** dialog and choose a material for the selected wall layer. See "Plan Materials Dialog" on page 840.
- Click the **Fill Style** button to open the **Layer Fill Style** dialog and specify a fill style for the selected wall layer. This dialog is similar to the Fill Style panel for CAD objects. See "Fill Style Panel" on page 1067.
- Wall layer fill styles are overridden if you use the **Hatch Wall** tool on a wall in floor plan view.
- Check **Auot Detail as Insulation** to have insulation details generated in cross section views when the **Auto Detail** tool is used. See "Auto Detail" on page 884.
- Specify the **Brick Ledge Depth**, which is the vertical depth of the brick ledge under walls of this type when a Brick material Type is specified for the exterior layer and a monolithic slab foundation is built. See "Brick Ledges" on page 265.
  By default, the **Brick Ledge Depth** is equal to the Height value of the Brick material. See "Material Types" on page 837.

❺ Specify the selected wall type definition's **Energy Values**. This information is used when exporting to REScheck. See "Export to REScheck" on page 1157.

- Select a **Wall Type** from the drop-down list. When "Framed" is selected, the on center spacing is derived from the material definition of the wall's framing layer. See "Material Types" on page 837.
- Specify a **Cavity R-Value** for the selected wall type definition.
- Specify a **Continuous R-Value**.for the selected wall type definition.

❻ An assembly diagram of the selected wall type definition displays here. On the left side, an approximation of the selected line thicknesses is shown. Any changes made in this dialog display in the diagram, which illustrates how the wall displays in floor plan view. See "Displaying Walls" on page 274.

- The arrow to the left of the diagram points to the selected Wall Line. Wall Lines define the extents of each wall layer. To select a Wall Line, simply click on it.
- The arrow to the right of the wall assembly diagram points to the selected layer. To select a layer, click on a layer in the diagram or click in its **Thickness** field.

Exporting and Importing Wall Types

Wall type definitions created in one plan can be exported as a **.dat** file and imported into other plans. This is a convenient alternative to re-creating one or more wall type definitions that already exist in another plan.

The wall type definitions available to export from the current plan are listed in the **Wall Type Definitions** dialog. See “Wall Type Definitions Dialog” on page 298.

Exporting Wall Types

To export wall type definitions from the current plan file, select **File> Export> Wall Definitions**.

The **Export Wall Definitions File** dialog is a typical Save As dialog. Exported wall types are saved using the **.dat** file extension. See “Exporting Files” on page 56.

Importing Wall Types

To import wall type definitions into the current plan or layout, select **File> Import> Wall Definitions**.

The **Import Wall Definitions File** dialog is a typical Open File dialog. See “Importing Files” on page 61.

When wall type definitions are imported, the names of the wall type definitions in the **.dat** file are compared with those already present in the current plan. If the program finds identical names, it will ask you if you want to replace existing wall definitions with the same name. Click Yes to replace existing files in the plan file, or No to keep the definitions already in the plan.

Wall type definitions that you use often should be saved in your default template plan. See “To create your own template plan” on page 83.

Wall Specification Dialog

To open the **Wall Specification** dialog, select a wall or group of walls and click the **Open Object** edit button.

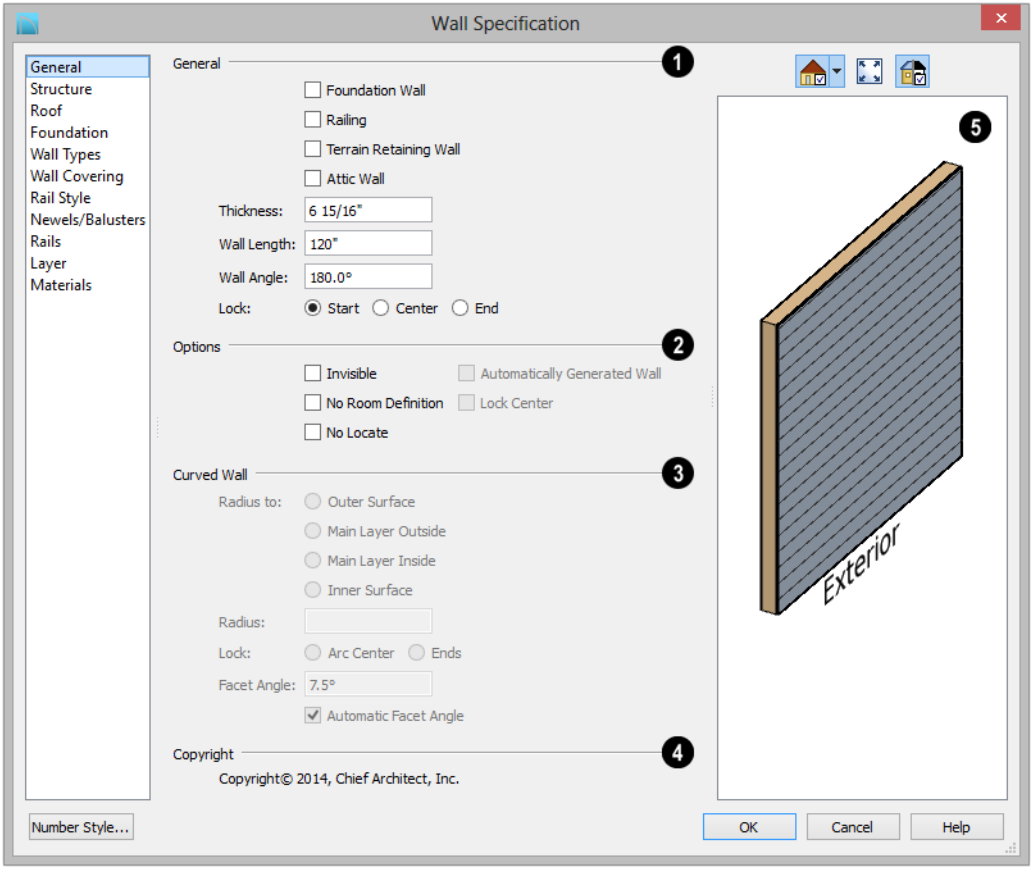
The panels of the **Wall Specification** dialog are also found in the **Footing, Railing**, **Deck Railing**, and **Fencing Specification** dialogs. See “Railing and Fencing Specification Dialogs” on page 315.

The settings in this dialog are also similar to those in the various Wall Defaults dialogs. The settings in these defaults dialogs determine the initial characteristics of railings, deck railings, foundation walls and

footing walls, and fencing when they are first drawn. See “Wall, Railing, and Fencing Defaults” on page 254.

General Panel

The settings on the General panel determine the basic use of the selected wall, as well as its length, angle, and other attributes.



1. Specify **General** properties of the selected wall(s) or railing(s).

- Check **Foundation Wall** to specify the selected wall as a foundation wall. More foundation wall settings are available on the Foundation panel. See “Foundation Walls” on page 259.

- Check **Railing** to specify the selected wall as a railing. More railing settings are found on the Railing and Newels/Balusters and Rails panels.
- Check **Terrain Retaining Wall** to treat the selected wall as a terrain retaining wall. See “Retaining Walls” on page 708.
- Check **Attic Wall** to prevent the selected wall from extending through the roof above. See “Attic Walls” on page 290.
- The **Thickness** of the selected wall displays and can be changed here. If the wall is a Post to Overhead Beam railing, this setting can also affect the width of the beam. See “Wall Thickness” on page 280.
- **Wall Angle** - The current absolute angle of the wall in a floor plan view is shown. If you type in a new angle, the wall rotates about its locked point and any walls attached to it will not move. If the selected wall is curved, this value describes the angle of the chord and cannot be modified. See “3D Drafting” on page 29.
- **Wall Length** - The current length, as measured along the **Resize About** line, is shown. If you type a new length, the wall will extend or contract according to how it is locked. Any walls attached to the selected wall will not move. If the selected wall is curved, this value cannot be modified. See “Resize About” on page 285.
- Select a radio button to **Lock** the selected straight wall at its Start, End or Center. When the **Wall Angle** or **Wall Length** of the selected wall is changed, this point along the wall does not move. Not available for curved walls.

❷ Check any of the **Options** to modify the selected wall accordingly. In most cases, multiple options can be selected.

- Check **Invisible** to specify the wall as invisible. Invisible walls can display in floor plan view but not in 3D views or the Materials List. **Room Dividers** are invisible by default. See “Room Dividers and Invisible Walls” on page 267.
- Check **No Room Def.** to display the wall in floor plan and/or 3D views but not create room definition. See “Room Definition” on page 325.
- Check **No Locate** to prevent **Auto Exterior Dimensions** from locating the wall in floor plan view. See “No Locate” on page 278.
- **Automatically Generated Wall** displays for reference and is checked whenever the selected wall was generated by the program. Typically, automatic walls are also Attic walls.
- Select **Lock Center** to prevent the arc center of a selected curved wall from moving when the wall is edited using its edit handles. Not available for straight walls.

❸ The **Curved Wall** settings control the definition of a selected curved wall’s radius and are only available when the selected wall is curved.

- Select **Outer Surface** to measure the selected wall’s radius from its center point to its outer surface.
- Select **Main Layer Outside** to measure the radius from the wall’s center point to the outside of its Main Layer. See “The Main Layer” on page 295.

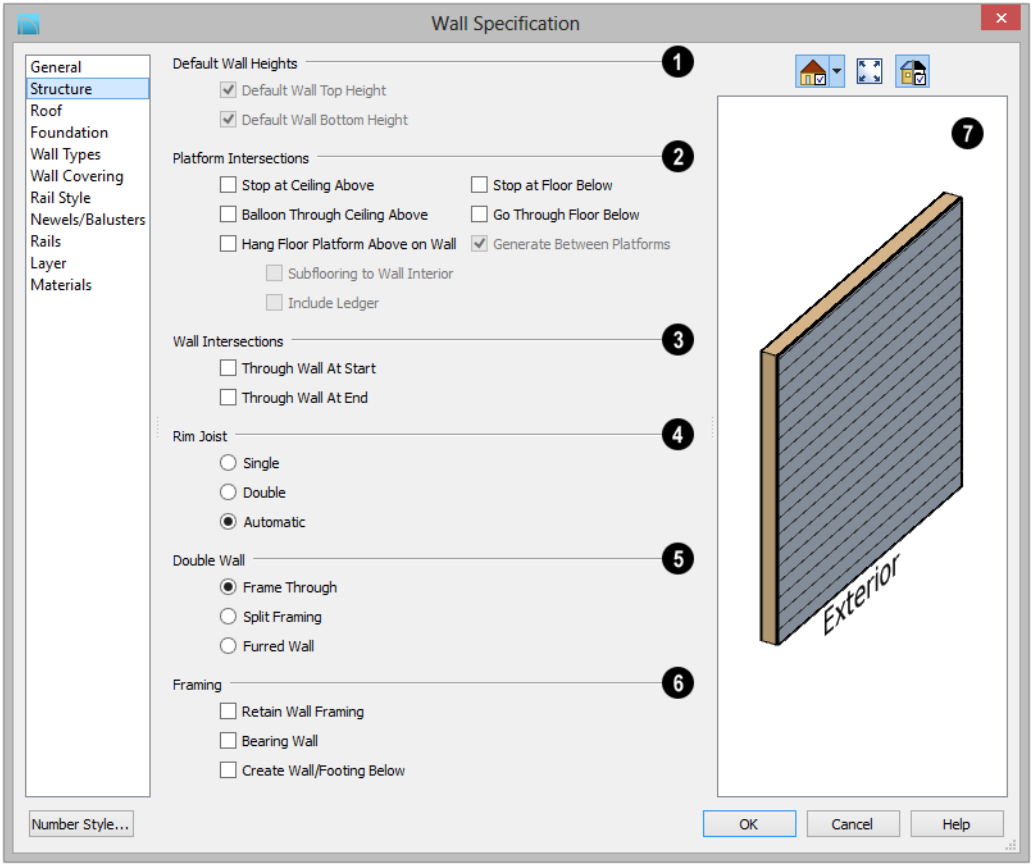
- Select **Main Layer Inside** to measure the radius from the wall's center point to the inside of its Main Layer.
- Select **Inner Surface** to measure the radius from the wall's center point to its inner surface.
- Specify the selected wall's **Radius**, as defined by the radio button selected above.
- Select **Lock Center** to move the selected wall's ends and prevent its center point from moving when its Radius is changed.
- Select **Lock Ends** to move the selected wall's center point and prevent its ends from moving when its Radius is changed.
- Uncheck **Automatic Facet Angle** to specify the **Facet Angle**, which is the angle at which the surfaces of the curved wall are broken in 3D views. The default value is 7.5°; a smaller value produces a smoother curve but may take longer to generate in 3D views.

❹ If the selected wall has any **Copyright** information associated with it, it will display here.

❺ A preview of the selected wall, including any doors, windows, and/or fireplaces inserted into it, displays on the right. If the selected wall is specified as Invisible, its plan view will display here by default. See "Dialog Preview Panes" on page 38.

Structure Panel

The settings on the Structure panel control the height and other structural attributes of the selected wall(s).



1 The **Default Wall Heights** settings allow you to reset a wall's default top and bottom heights if they have been manually edited. See "Wall Heights" on page 281.

- **Default Wall Top Height** and **Default Wall Bottom Height** are only enabled if the selected wall's top and/or bottom height has been edited. Check these boxes to restore the default heights.

2 The **Platform Intersection** settings control the relationship between the selected wall and the floor and ceiling platforms above and below it.

- Select **Stop at Ceiling Above** to have the top of the wall stop at the bottom of the ceiling platform above.
- Select **Balloon Through Ceiling Above** to have the top of the wall go past the ceiling platform. If there is a wall directly above, the framing will continue upward to its bottom plate. The two walls remain separate objects on different floors, how-

ever, unless the wall above is an Attic Wall. Does not affect interior walls.

- Select **Hang Floor Platform Above on Wall** to produce a platform that hangs on the inside of the selected wall rather than bearing on top of it. When checked, the two options that follow are available.
- Select **Subflooring to Interior Wall** to hang the platform on the inside surface of the wall. When unchecked, the platform builds to the inside surface of the wall's Main Layer. See "The Main Layer" on page 295.
- Select **Include Ledger** to hang the platform from a ledger board attached to the wall. When unchecked, no ledger is created when platform framing is generated. See "Floor and Ceiling Framing" on page 562.
- Select **Stop at Floor Below** to have the bottom of the wall stop at the top surface of a floor platform. This is the default for framed wall types.
- Select **Go Through Floor Below** to have the bottom of the wall go through the floor platform below. This is the default for concrete wall types. If the wall is framed and there is a framed wall directly below, the studs of the wall below will extend up produce balloon framing. Does not affect interior walls.

Note: Whether a wall is a framed or concrete type is determined by the material assigned to its Main Layer. See "Wall Type Definitions Dialog" on page 298.

- Select **Generate Between Platforms** to fill in the gap between floor and/or ceiling platforms when the selected railing or invisible wall separates rooms with different floor and/or ceiling heights. When unchecked, this gap is not closed. Only available for railings, Invisible railings, and Invisible walls, this setting has no effect when the selected wall type has only one layer. See "Floor and Ceiling Platforms" on page 337.

❸ The **Wall Intersection** settings control whether the selected wall builds through wall corners at its Start and End points. The display of **Start and End Indicators** can be turn on or off in the **Preferences** dialog. See "Edit Panel" on page 110.

- Select **Thru Wall at Start** to build the wall through the wall corner located at its start point.
- Select **Thru Wall at End** to build the wall through the wall corner located at its end point.
- When neither box is checked, the wall does not build through the corners at either of its endpoints.

❹ Specify the number of **Rim Joists** for the floor platform below the selected wall(s). See "Framing" on page 561.

- Select **Single** or **Double** to generate one or two rim joists, respectively.
- Select **Automatic** to generate two rim joists if there is no wall below the selected wall, and one rim joist when there is a wall below. Automatic produces a single rim joist for Deck Railing.

❺ The **Double Wall** options specify how a selected straight wall frames when it is parallel to and touching a second wall. See "Double Walls" on page 292.

These settings are only available for straight walls.

- Select **Frame Through** to create a basic double wall.
- Select **Split Framing** to create a double wall that splits platforms and connecting walls at its boundary.
- Select **Furred Wall** to treat the selected wall as additional layers added to another wall.

Note: The Double Wall options are not available for curved walls.

6 **Framing** -

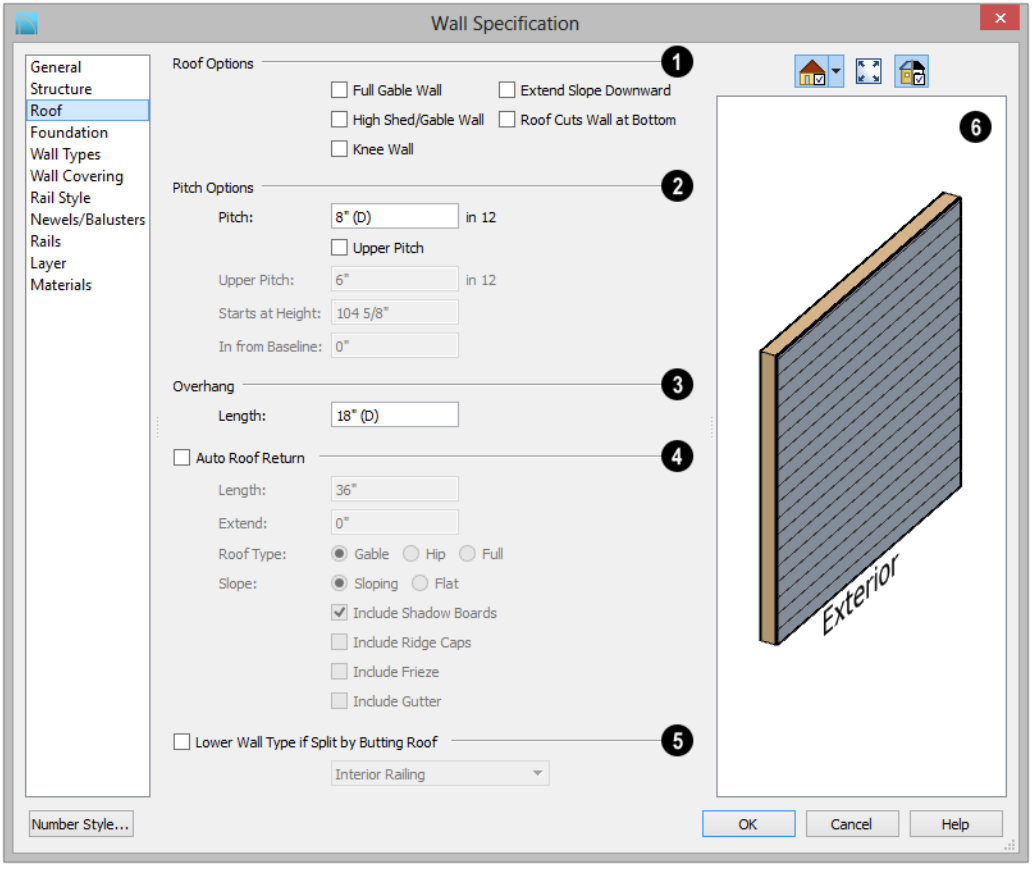
- Check **Retain Wall Framing** to preserve the framing of the selected wall when the wall framing is globally rebuilt. See "Keeping Framing Current" on page 592.
- Check **Bearing Wall** to produce joists that either butt or lap over the selected wall when floor or ceiling framing is generated. See "Floor and Ceiling Framing" on page 562.
- Check **Create Wall/Footing Below** to create a stem wall or slab footing below the selected wall on Floor 1 when an automatic foundation is built. Has no effect if the selected wall is on any floor other than Floor 1. See "Building a Foundation" on page 442.

If **Create Wall/Footing Below** is checked, **Specify Foundation** and **Slab Footing** will become unchecked on the Foundation Panel.

7 A preview of the selected wall, including any doors, windows, and/or fireplaces inserted into it, displays on the right. See "Dialog Preview Panes" on page 38.

Roof Panel

Any automatically generated roof style other than a hip requires roof information to be defined in the exterior walls. On the Roof panel, you can specify how the selected wall interacts with the roof plan, defining the portion of the roof plan that bears on it. See "Automatic vs. Manual Roofs" on page 462.



1 **Roof Options** - Specify the shape of the wall relative to the roof.

- Check **Full Gable Wall** to create a gable end over the selected wall.
- Check **High Shed/Gable Wall** to specify the selected wall as the high end of a shed roof.
- Check **Knee Wall** to define the selected interior wall as a knee wall. Only an interior wall can be defined as a knee wall. A knee wall's height is defined by the roof above, not the ceiling height. See "Knee Walls" on page 290.
- Check **Extend Slope Downward** to continue a roof down over a bumpout in an exterior wall. See "Extend Slope Downward" on page 288.
- Check **Roof Cuts Wall at Bottom** to prevent the portion of a selected wall located below an intersecting roof plane from building.
- **Combine with Above Wall** is only available when a selected wall has an Attic

wall above it. Check this box to balloon frame the two walls when automatic framing is built. The two walls remain separate objects. See “Attic Walls” on page 290.

❷ **Pitch Options** - Specify the pitch or pitches of the roof plane(s) above the selected wall.

- Enter a value to define the **Pitch** of the roof plane bearing on the selected wall.
- Check **Upper Pitch** to create a roof with two pitches or, if the selected wall is a Full Gable Wall, a half hip condition.
- Enter the **Pitch** of the second, upper roof.
- Specify the **Height** that the Upper Pitch **Starts at,** or define the distance **in from Baseline** that the second pitch begins. The two values are dynamic. Press the Tab key to update the relative numbers.

❸ Specify the **Overhang Length**, which is the horizontal distance from the baseline to the eave. See “The Baseline” on page 477.

❹ Check **Auto Roof Return** to generate roof returns on the selected wall. In most cases, roof returns only work for Full Gable Walls. See “Roof Returns” on page 515.

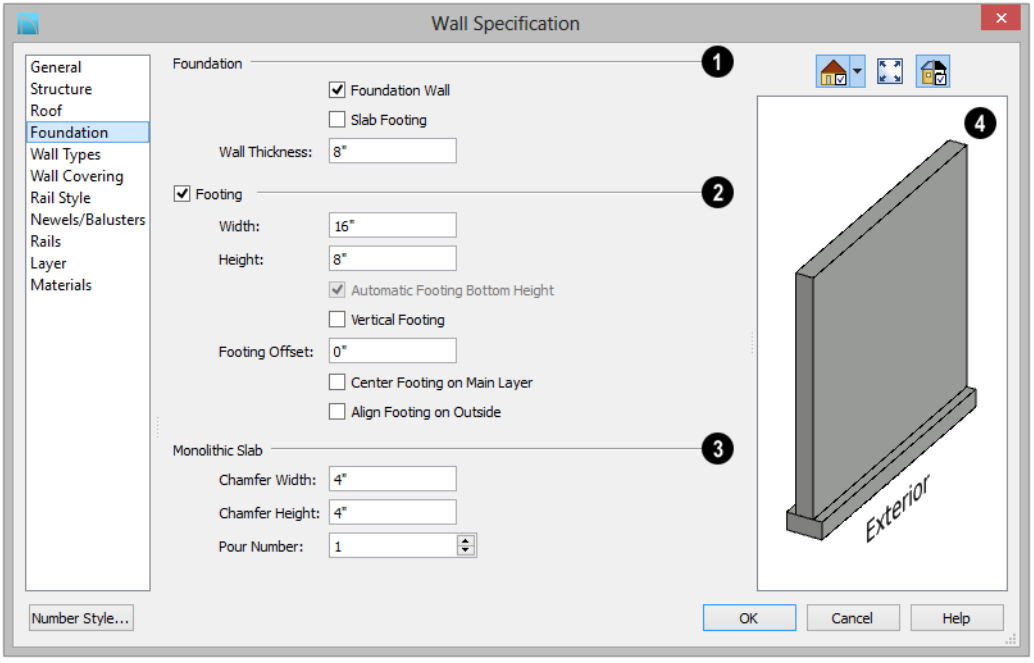
- Specify the horizontal **Length** of the roof return in inches (mm).
- Enter a value in inches (mm) to **Extend** the roof returns past the overhang.
- Specify a **Gable**, **Hip**, or **Full** roof return.
- Specify a **Sloping** or **Flat** roof return. See “Roof Tutorial” on page 57 of the User’s Guide.
- Check the boxes to **Include Shadow Boards**, **Ridge Caps**, **Frieze** molding, and/or **Gutters** on the roof returns.

❺ Check **Lower Wall Type if Split by Butting Roof** to specify the wall type for any portion of the selected wall located beneath an adjacent, abutting roof plane, should one be present. A wall affected by this setting is specified as a Pony Wall and the upper wall is defined on the Wall Types panel. See “Pony Walls” on page 266.

❻ A preview of the selected wall, including any doors, windows, and/or fireplaces inserted into it, displays on the right. See “Dialog Preview Panes” on page 38.

Additional information about using the settings on this panel can be found in the “Roof Tutorial” on page 57 of the Reference Manual.

Foundation Panel



1 Specify the **Foundation** properties of the selected wall(s).

- Check **Foundation Wall** to specify the selected wall as a foundation wall and enable additional settings on this panel. This box is checked by default for automatically generated foundation walls as well as walls drawn with the **Foundation Wall** and **Slab Footing** tools.
- Check **Slab Footing** to specify the selected wall as a slab footing. See "Foundation Walls" on page 264. When this is checked, **Foundation Wall** will also be checked.

Note: Rooms defined by walls drawn using the Slab Footing tool will have a Ceiling Height of 0 and a Monolithic Slab Foundation. Rooms defined by walls that are later specified as Slab Footings will not unless the room is on Floor 0 and the plan has a Monolithic Slab foundation specified.

- The **Thickness** of the selected wall displays and can be changed here.
- If Slab Footing is checked, the **Curb Width** can be specified instead.

2 Check **Footing** to assign a concrete footing to the selected wall(s) and enable the settings below. Only available when Foundatoin Wall is checked, above.

- Specify the **Width** and **Height** of the footing below the selected foundation wall(s). The **Height** value will be unavailable if the bottom height of the footing has been edited. See “Stepped Foundations” on page 451.
- Check **Automatic Footing Bottom Height** to restore the default height of the selected wall’s footing. Only available when the footing bottom height has been edited.
- Check **Vertical Footing** to generate footings that run up and down along any steps in the foundation wall’s bottom height.

Offset - Specify how the footing is centered under the selected wall.

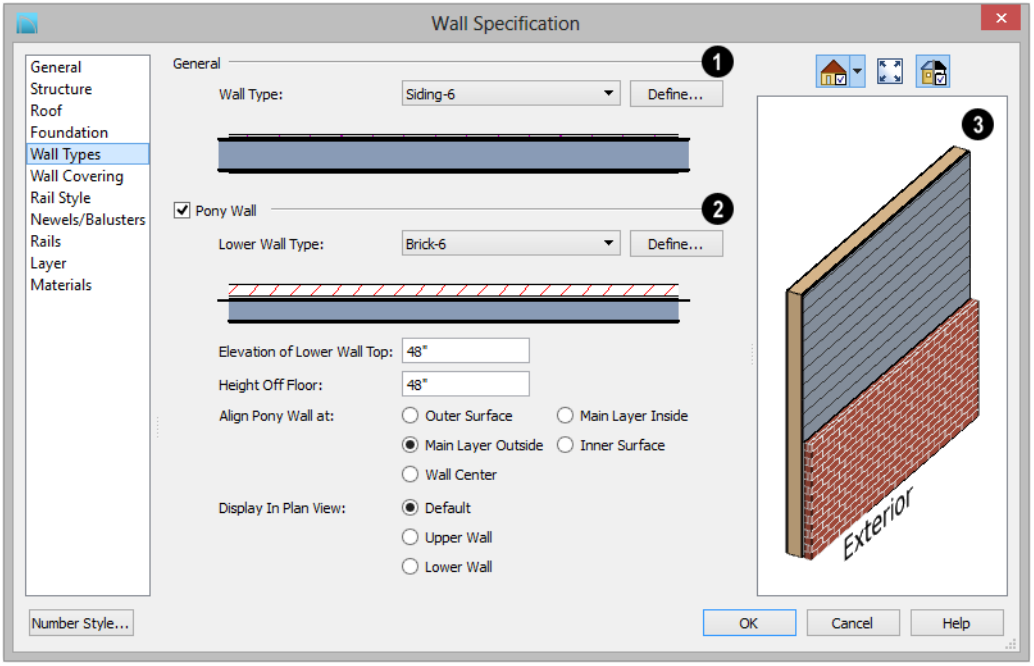
- Check **Center Footing on Main Layer** to center the footing on the wall’s Main Layer. See “The Main Layer” on page 295.
- Check **Align Footing on Outside** to align the footing along the wall’s exterior surface. See “Wall Type Definitions” on page 295.
- Specify the **Footing Offset**, which is the distance between the center of the footing and the center of the wall. A value of 0 centers the footing under the wall. A positive value offsets the footing towards the wall’s interior surface. A negative value offsets it towards the wall’s exterior. Not available if either Center Footing on Main Layer or Align Footing on Outside are checked.

❸ Specify how **Monolithic Slab** footings generate.

- Specify the **Chamfer Width** and **Height**, which define the angled corners where the footing meets the underside of the slab.
- Specify the **Pour Number** of the selected Slab Footing. Pour Numbers are listed separately in the Materials List. See “In the Materials List” on page 445.

❹ A preview of the selected wall, including any doors, windows, and/or fireplaces inserted into it, displays on the right. See “Dialog Preview Panes” on page 38.

Wall Types Panel



1 Choose the selected wall's **Wall Type** from the drop-down list of all currently available types. A preview of the selected wall type displays below the drop-down list.

- Click the **Define** button to open the **Wall Type Definitions** dialog to create or modify existing wall types. See "Wall Type Definitions Dialog" on page 298.

2 Check **Pony Wall** to specify the selected wall as a pony wall having different wall types on its upper and lower portions. See "Pony Walls" on page 266.

If the selected wall is a Foundation Wall, its initial wall type will become the Lower Wall Type. For all other walls, the initial wall type will be the upper Wall Type.

- Select the **Lower Wall Type**, the wall type of the lower portion of the pony wall, from the drop-down list. A preview of the selected wall type displays directly below.
- Click the **Define** button to open the **Wall Type Definitions** dialog.

Specify the height of the division between the upper and lower walls. These two settings are dynamic: if one is changed, the other will update accordingly.

- Specify the **Elevation of Lower Wall Top**, which is the division between the upper and lower walls. If the top of the lower pony wall is stepped or raked, this value will be "No Change". This is an absolute value: regardless of the wall's

location, it is always measured from 0" (mm) - the default floor height for Floor 1. See "Floor Defaults Dialog" on page 426.

- Specify the **Height Off Floor** of the division between the upper and lower walls. This value is measured from the floor height of the room(s) defined by the selected wall. If the wall defines rooms with different floor heights, "No change" will display.

Align Pony Walls - Specify how the layers of the selected wall's Upper and Lower portions align.

- Select **Outer Surface** to align wall types at their outer surfaces.
- Select **Main Layer Outside** to align wall types at the exterior edge of their main layers.
- Select **Wall Center** to align the centers of the main layers of both wall types.
- Select **Main Layer Inside** to align the wall types at the interior side of their main layers.
- Select **Inner Surface** to align wall types at their interior surfaces.
- **No Change** is used by default when multiple pony walls with different alignment settings are selected. Choose this to leave the alignment as it was when the dialog was opened.

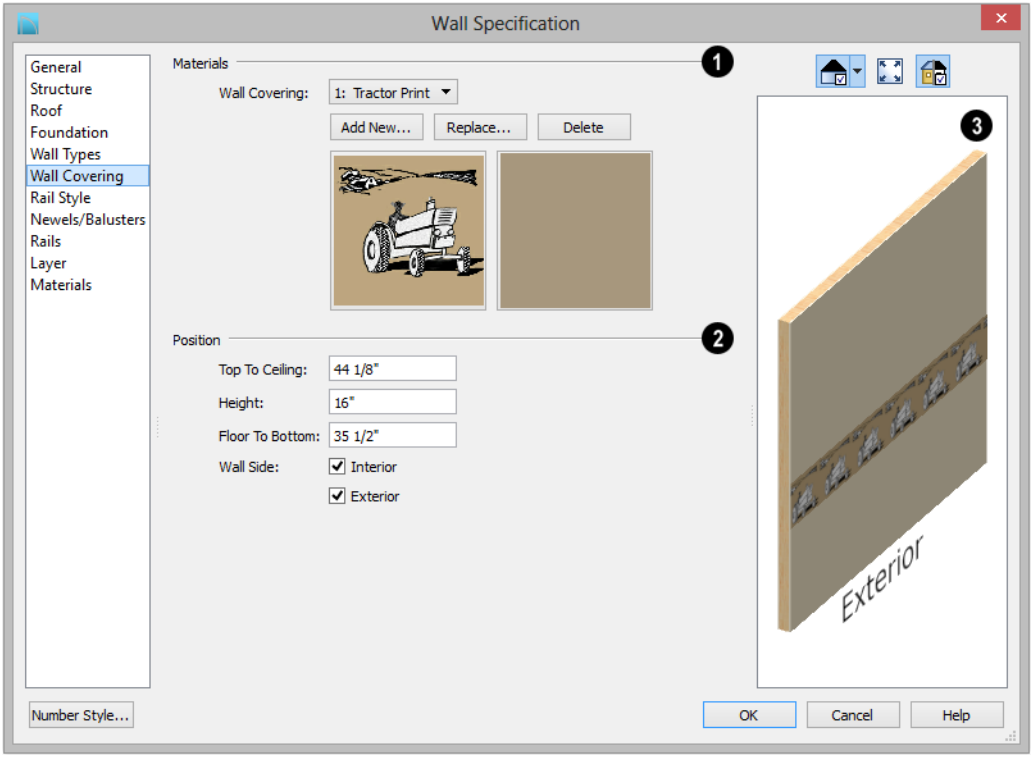
Specify which part of the pony wall you would like to **Display in Plan View**. See "Displaying Pony Walls" on page 266.

- Select **Default** to display the portion of the pony wall specified in the **Pony Wall Defaults** dialog.
- Select **Upper Wall** to display the upper portion of this pony wall in floor plan view regardless of the default setting.
- Select **Lower Wall** to display the lower portion of this pony wall in floor plan view regardless of the default setting.
- When walls are group-selected, choose **No Change** to allow each wall in the selection set to maintain its own setting.

❸ A preview of the selected wall, including any doors, windows, and/or fireplaces inserted into it, displays on the right. See "Dialog Preview Panes" on page 38.

Wall Covering Panel

The Wall Covering Panel is also available in the **Room Specification** dialog. See Room Specification Dialog.



1 All wall covering materials applied to the selected wall are listed here. Select one from the drop-down list to edit its position or remove it from the wall.

- Click **Add New** to apply a new wall covering to the selected wall. See “Select Library Object Dialog” on page 816.
- Click **Replace** to replace the current wall covering with a new one from the library.
- Click **Delete** to remove the current wall covering from the selected wall.

Preview panes showing the current wall covering display the row of buttons.

2 Specify the **Position** of the selected wall covering.

- Enter the heights of the current wall covering’s **Top To Ceiling** and **Floor To Bottom**. The wall covering’s **Height** from it’s top edge to its bottom edge can also be specified.
- Check **Interior** and/or **Exterior** to apply the wall covering to the inside and/or outside of the selected wall. Interior is checked by default. Not available for rooms. See “Wall Type Definitions” on page 295.

3 Most wall coverings are best previewed using the Standard Rendering

Technique. See “Dialog Preview Panes” on page 38.

Rail Style Panel

The settings on the Rail Style panel are only available for Railings, Half Walls. See “Rail Style Panel” on page 316.

Newels/Balusters Panel

The settings on the Newels/Balusters panel are only available for Railings, Half Walls. See “Newels/Balusters Panel” on page 318.

Rails Panel

The settings on the Rails panel are only available for Railings, Deck Railings, and Fencing. See “Rails Panel” on page 319.

Layer Panel

For information about the settings on this panel, see “Layer Panel” on page 152.

Materials Panel

All walls - including interior walls, railings and fencing - have an “Exterior Wall Surface” and an “Interior Wall Surface”. See “Interior and Exterior Surfaces” on page 297.

The materials specified on the Materials panel affect the appearance of walls and Solid Railings in 3D views but are not calculated in the Materials List. See “Materials Lists” on page 1247.

For most railing types, the “Exterior Wall Surface” component only affects the appearance of the floor platform under the railing. and “Interior Wall Surface” component is not used. For fencing, neither material component is used.

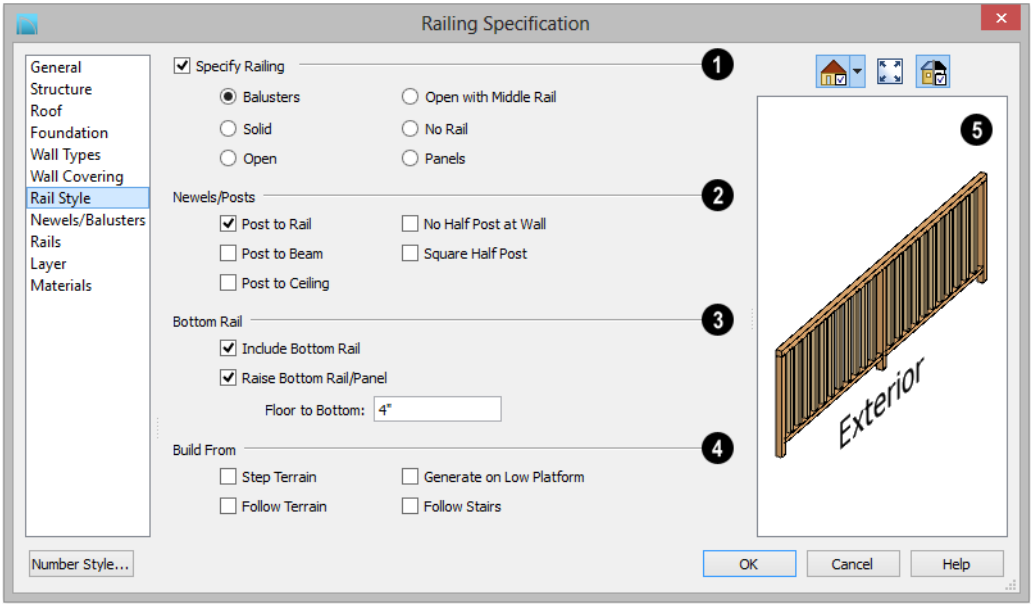
Railing and Fencing Specification Dialogs

To open the **Railing** or **Fencing Specification** dialog, select a railing or fencing, or a group of railings or fencing, and click the **Open Object** edit button.

The **Railing** and **Fencing Specification** dialogs are the same as the **Wall Specification** dialog, but have three panels that apply only to Railings, Half Walls, Deck Railings, and Fencing. See “Wall Specification Dialog” on page 301.

The Rails panel is similar to the Handrail panel found in the **Staircase** and **Ramp Specification** dialogs. See “Stairs, Ramps, and Landings” on page 521.

Rail Style Panel



1 Check **Specify Railing** to specify the selected wall as a railing and enable the other options on this panel. Railings can be also drawn directly using the **Railing** or **Deck Railing** tools.

Railing Type - Select the radio button for the desired railing type. A preview of the selected type displays to the left.

- Check **Balusters** to create regularly spaced balusters between larger newel posts.
- Check **Solid** to create a solid railing or Half Wall.
- Check **Open** to create a railing with only newel posts and top and bottom rails.
- Check **Middle Rail** to create a railing with newel posts and top, bottom, and middle rails.
- Check **No Rail** to eliminate rails, leaving only newels or posts and an overhead beam, if selected.
- Check **Panels** to create a railing composed of panels. You can specify the panel style on the Newels/Balusters panel..

2 Specify the properties of the selected railing's **Newels/Posts**.

- Check **Post to Rail** to create newel posts from the floor to the top rail. This option is selected by default.
- Check **Post to Overhead Beam** to create newel posts from floor to an overhead beam placed just under the ceiling height.

The beam's width is based on the Thickness of the selected railing wall.

- Check **Post to Ceiling** to extend the newel posts to the ceiling.
- When none of the above Post options is selected, newel posts will build to the top of the railing.
- Check **No Half Post at Wall** to prevent a half-width post from being placed when a railing intersects a wall.
- Check **Square Half Post** to use a square halfpost where a railing intersect with a wall. Not available if No Half Post at Wall is checked.

❸ The **Bottom Rail** options control the placement of the bottom rail, or shoe. If neither box is checked, the bottom rail is placed at floor platform level. Not available for railings specified as Solid or No Rail.

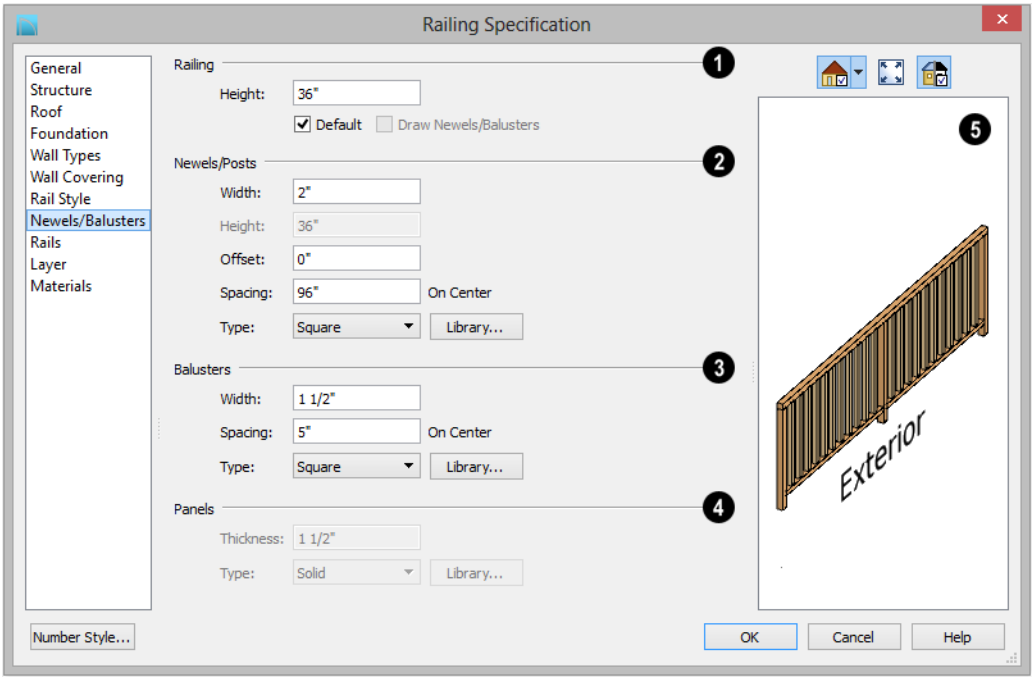
- Uncheck **Include Bottom Rail** to eliminate the bottom rail and extend the balusters to the floor. Also not available for Panel railings.
- Check **Raise Bottom Rail/Panel**, then specify the **Floor to Bottom** distance, measured up from the floor platform to the bottom rail or panel.

❹ Specify where the selected railing or fencing should **Build From**.

- Check **Step Terrain** to have the railing or fencing follow the terrain in horizontal steps between each newel post.
- Check **Follow Terrain** to have the railing or fencing follow the terrain smoothly.
- Check **Generate on Low Platform** to build the selected railing on the lower floor platform when the railing defines two room areas with different floor heights. See "Aligning Railing on Different Platforms" on page 287.
- Check **Follow Stairs** to have the railing or fencing follow the rise of stairs drawn in the same location. See "Railing Panels" on page 543.

❺ A preview of the selected railing or fence, including any doorways or gates inserted into it, displays on the right. See "Dialog Preview Panes" on page 38.

Newels/Balusters Panel



1 Specify the height of the **Railing**, as well as its appearance in plan view.

- Specify the **Railing Height**. For interior railings, this is measured from the height of the floor finish. See “Floor and Ceiling Platform Definitions” on page 337.
- Check **Default** to use the Draw Newels/Balusters setting in the **Railing Defaults** dialog. Check **Draw Newels/Balusters** to draw newels and balusters in floor plan view.

2 Specify the characteristics of the selected railing’s **Newels/Posts**.

- Specify the **Width** of each newel at its widest point.
- Specify the **Height**, which is the height from the floor or ground to the top of the newel. Not available if Post to Rail, Post to Overhead Beam or Post to Ceiling is selected on the Rail Style panel.
- Specify the **Offset**, which is the amount each newel is offset from the center of the railing. Use this to create a fence with the newels on one side of the fence boards.
- Specify the on-center **Spacing** of the newel posts.
- **Type** - Select Square, Round, or Library newels.

Note: Selecting Library from the drop-down list is the same as clicking the Library button to the immediate right and allows you to select a symbol from the library. See “Select Library Object Dialog” on page 816.

❸ Specify the characteristics of the selected railing’s **Balusters**. These settings are only available when the railing type is “Balusters”.

- Specify the **Width** or diameter of each baluster at its widest point.
- Specify the on-center **Spacing** of the balusters.
- **Type** - Select Square, Round, or Library balusters .

❹ Specify the characteristics of the selected railing’s **Panels**. These settings are only available when the railing type is “Panels”.

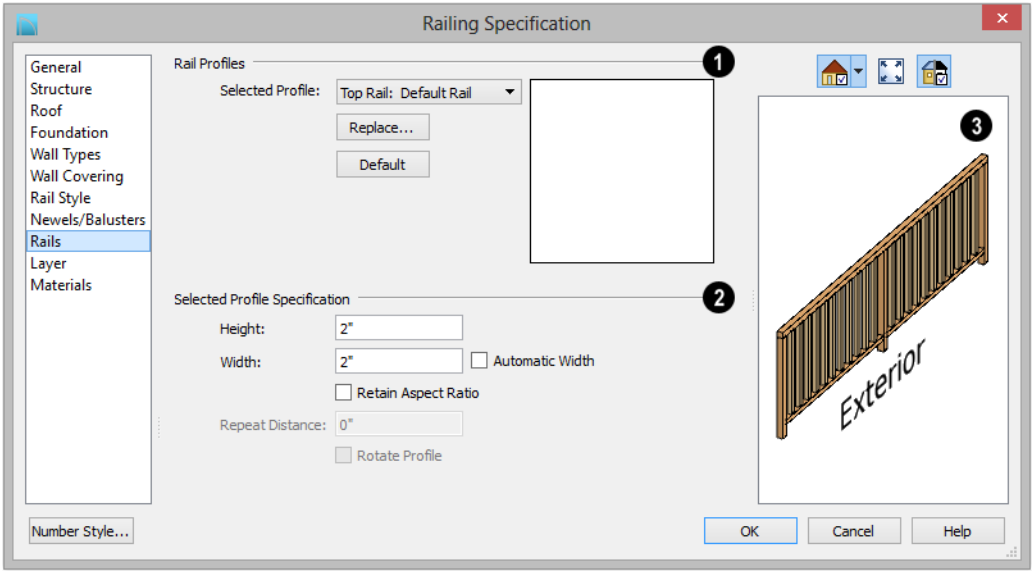
- Specify the panel’s **Thickness**.
- **Panel Type** is only available when the railing type has been specified as Panels on the Rail Style panel. Select “Solid (No Rails)”, “Solid (With Rails)”, or “Library” to select a symbol to be used as a railing panel.

❺ A preview of the selected railing or fence, including any doorways or gates inserted into it, displays on the right. See “Dialog Preview Panes” on page 38.

Rails Panel

The settings on the Rails panel are used to specify the style and size of the horizonal components of a selected Railing, Deck Railing, or Fence. See “Railing and Deck Tools” on page 261.

A similar panel, the Handrail panel, is also found in the **Staircase** and **Ramp Specification** dialogs. See “Stairs, Ramps, and Landings” on page 521.



1 Rail Specification -

- Choose the **Selected Profile** from the drop-down list, then modify it using the settings below. Staircases and ramps can only be assigned a handrail, so they do not have a drop-down list. For railing and fencing, four profiles can be specified:
- **Top Rail** - Creates a handrail or solid railing cap. A top rail is not created when No Rail is selected on the Rail Style panel.
- **Middle Rail** - Is only created when Open with Middle Rail is selected on the Rail Style panel.
- **Bottom Rail** - Is only created when Balusters, Open, or Open with Middle Rail is checked on the Rail Style panel.
- **Beam** - Is only created when Post to Beam is checked on the Rail Style panel.

The name of the rail profile assigned to each component displays in the drop-down list. If no handrail profile is selected, "Default Handrail" is used and a 2" (5 mm) square profile is used.

- Click the **Replace** button to select a profile from the library for the selected rail. See "Select Library Object Dialog" on page 816.
- Click the **Default** button to remove a custom rail that has been specified and use the "Default Rail".
- Check **Rotate Profile** to rotate the selected railing profile 90° counterclockwise, or to the left.

2 Selected Profile Size -

- Specify the **Height** and **Width** of the rail molding. Width is not available if Automatic is checked.

- Check **Automatic Width** to make the rail Width equal to the Thickness of the selected railing wall. Not available for stairs or ramps.
- Check **Retain Aspect Ratio** to retain the original ratio between the profile's Height and Width values. When one value is changed, the other updates in response. Not available when Automatic Width is checked.
- Specify the **Repeat Distance** of a selected symbol molding. Not available when a molding profile is selected. See "Symbol Moldings" on page 647.

❸ A preview of the selected railing or fence, including any doorways or gates inserted into it, displays on the right. See "Dialog Preview Panes" on page 38.

Wall Hatch Specification Dialog

To open the **Wall Hatch Specification** dialog, select a Wall Hatch and click the **Open Object** edit button. See "Hatch Wall" on page 269.

Layer Panel

Specify the layer that the selected Wall Hatch is placed on. See "Layer Panel" on page 152.

Fill Style Panel

The Fill Style panel is found in the specification dialogs for many different objects. See "Fill Style Panel" on page 1067.

Chapter 9:

Rooms

When walls or railings create an enclosed area, a “room” is created. You can select rooms defined in this manner like other objects in Chief Architect.

Rooms are assigned a Room Type. Each Room Type has predefined characteristics. For example, a room defined as Porch is assigned certain attributes that are different than a Kitchen.

Floor and ceiling heights, baseboard, chair-rail, and crown moldings and materials can be defined room-by-room or for the entire floor.

Chapter Contents

Floor and Room Defaults

Select **Edit> Default Settings** to open the **Default Settings** dialog where you can access several defaults dialogs which directly affect rooms.

Floor Defaults

Default values for rooms are specified in the **Floor Defaults** dialog for the current floor. This dialog also controls important information that the program uses to create 3D models - particularly floor and ceiling heights and materials. Moldings can also be specified in the **Floor Defaults** dialog.

The default **Floor** and **Ceiling Structure** and **Finish** definitions in the **Floor Defaults** dialog are drawn from the **Normal Room Defaults**. See “Floor and Ceiling Platforms” on page 337.

Only the defaults for the first floor of a building can be set ahead of time. The program uses the setting from the first floor to create subsequent floors. Once a new floor is built, its floor defaults can be changed. See “Floor Defaults Dialog” on page 426.

Room Defaults

Additional structural and material defaults for several categories of Room Types can also be specified:

- Normal Rooms
- Kitchens/Baths/Utility Rooms
- Decks
- Garage/Porches/Slabs

These Room Defaults dialogs are accessed by expanding the “Rooms” category in the **Default Settings** dialog. Select a room type and click the **Edit** button to open the defaults dialog for that room type. See “Room Types” on page 329.

These dialogs allow you to specify the floor and ceiling structures and finishes for different Room Types. See “Structure Panel” on page 348.

Room Label Defaults

The **Room Label Defaults** dialog allows you to specify the initial appearance of room labels. This dialog is also accessed by expanding the “Rooms” category in the **Default Settings** dialog. See “Room Labels” on page 331.

The options on most panels of the **Room Label Defaults** dialog are similar to those in the **Text Specification** dialog. See “Text Specification Dialog” on page 1011.

The options on the Dimension Format panel are similar to those in the **Displayed Line Length** dialog. See “Displayed Line Length Dialog” on page 1042.

Any text added to the **Room Label Defaults** dialog displays in all subsequently created room labels, after the Room Name. Changes made to default settings do not alter existing room labels. To update existing labels so that they reflect changes made to the defaults, delete and replace them. See “Editing Room Labels” on page 332.

Room Definition

A room is a totally enclosed area defined by any combination of joined walls or railings, visible or invisible. To be recognized as a room by Chief Architect, a room must have an unbroken perimeter.

Unless otherwise specified, rooms generate floor and ceiling platforms automatically. Most rooms are also automatically covered by the roof when one is built. There are exceptions to this, such as rooms defined as Decks. See “Room Types” on page 329.

If a room is drawn within a larger structure and none of its walls connect to the exterior walls, either directly or indirectly by connecting to walls that do, it is referred to as an “island” room. The program will connect such a room to the larger structure with an Invisible Wall. See “Room Dividers and Invisible Walls” on page 267.

Room definition disappears if part or all of a surrounding wall is deleted. It is a good idea to finalize the position of walls before defining rooms with names and attributes such as floor height and ceiling height.

Subdividing Rooms

When a room area is first defined, it inherits its characteristics from the **Floor Defaults** dialog for that floor. If the room is then specified as a particular type, it may inherit properties from the **Room Defaults** dialog associated with its type.

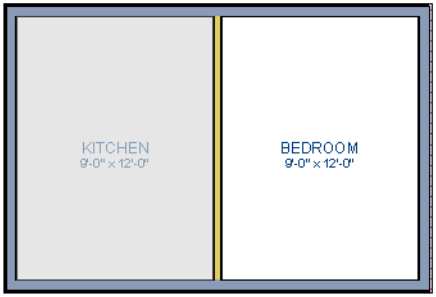
If a new room is created by subdividing a larger room, it inherits its characteristics from that larger room - including any non-default settings.

If two rooms are separated by an Invisible wall, their interior areas will be measured from the wall’s centerline and characteristics like the floor finish materials and moldings will break along that line.

- If the two rooms have different floor heights, the break will occur at the wall edge that faces the room where the floor is lower.
- If the two rooms have different ceiling heights, the break will occur at the wall edge that faces the room where the ceiling is higher.

Selecting Rooms

Room definition is established when a room is completely enclosed by walls. You can confirm that a room has room definition by using the **Select Objects** tool to select it. When a fully-enclosed room is selected, the room highlights.



The room at left is selected

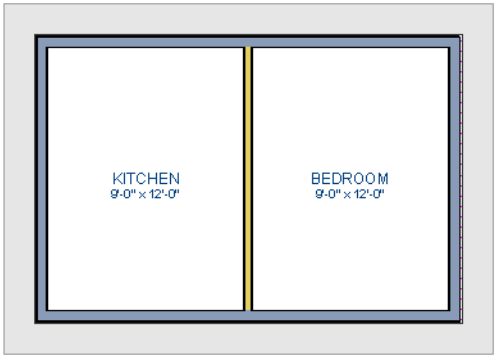
Note: The selection color can be specified in the Preferences dialog. See "Colors Panel" on page 92.

As with many other objects in the program, rooms can be group-selected, as well. Not all attributes of multiple selected rooms can be edited; however, many - such as moldings, materials, and fill style - can be.

The Exterior Room

You can also select the exterior of a model. This allows you to control the building's exterior wall coverings and materials using the **Room Specification** dialog.

Click just outside an exterior wall using the **Select Objects** tool to select the Exterior Room. When it is selected, a highlighted band around the plan's exterior displays. This band represents the selection area for the Exterior Room.



The Exterior Room is selected

In camera views and overviews, the Exterior Room can be selected by clicking on the exterior surface of an exterior wall using the **Select Objects** tool, provided that **Select Room Before Wall** in 3D is selected in the **Preferences** dialog. See "Architectural Panel" on page 107.

In 3D Views

Click on the floor of a room or on a wall surface inside the room in a 3D view using the **Select Objects** tool. If you select another object instead of the room, click **Select Next Object** edit button or press the Tab key until the room is selected. The Status Bar indicates which object is currently selected.

The Exterior Room can also be in 3D views selected by clicking once on the exterior surface of an exterior wall using the **Select Objects** tool, provided that **Select Room Before Wall** in 3D is selected in the **Preferences** dialog. See "Architectural Panel" on page 107.

Note: If the wall height of the Exterior Room is adjusted in a 3D view, the default Floor or Ceiling Height of the entire floor is changed. See “Floor and Room Defaults” on page 324.

Using Select Same Type

Click a room to select it, then click the **Select Same Type** edit button and use it to group-select rooms with shared attributes. See “Select Same / Load Same” on page 245.

Displaying Rooms

Unlike most things in Chief Architect, a room is not an individual object. Rather, a room is defined by the walls that enclose it.

You can see the primary and secondary layers associated with a room by selecting it and clicking the **Object Layer Properties** edit button. See “Object Layer Properties” on page 152.

In Floor Plan View

Rooms typically display a transparent fill in floor plan view. You can, however, specify a solid color or fill pattern for all the rooms on an entire floor in the **Floor Defaults** dialog, or for individual rooms in the **Room Specification** dialog. See “Fill Style Panel” on page 354.

In order for room fill styles to display, the “Rooms” layer must be turned on. See “Displaying Objects” on page 144.

Room labels that include the room’s name as well as its size and other information can be set to display in floor plan view. See “Room Labels” on page 331.

In 3D Views

Rooms can be viewed in 3D views created by any of the 3D view tools. The Floor Overview tools can be used to see all rooms on the current floor without their ceilings. See “Creating Overviews” on page 879.

In the Materials List

The contents of a room, including furnishings and floor and ceiling materials can be calculated using the **Calculate From Room** tool. See “Calculate From Room” on page 1248.

Editing Rooms

Once a room is defined by walls or railings, its structure and appearance can be edited using the edit buttons or the **Room Specification** dialog.

In 3D Views

The floor and ceiling heights for floors, rooms, and individual walls can be edited using edit handles in 3D views. Lowered

ceilings cannot be edited in 3D. See “3D Views” on page 867.

The default floor and ceiling heights for an entire model can be edited by selecting the Exterior Room. See “The Exterior Room” on page 326.

To change default ceiling heights in 3D

1. Create a 3D or Cross Section/Elevation view of the exterior of your plan.
2. Click on the exterior surface of a wall to select the Exterior Room. The Status Bar indicates when the exterior room is selected. See “The Exterior Room” on page 326.
3. Click and drag the edit handle on the top wall edge to adjust the default ceiling height, or the edit handle on the bottom edge to adjust the default floor height. Temporary dimensions display.

Note: Any rooms that do not update when the default floor or ceiling height is changed are not using the default values. To use the default values for a specific room, check Default for any of the room height values in its specification dialog. See “General Panel” on page 347.

To adjust room heights in 3D

1. Create a 3D or Cross Section/Elevation view of your plan.
2. Click on the surface of a wall that faces the room to select it. When the room is selected in 3D:
   - The room highlights.
   - The Status Bar says “Room”. See “The Status Bar” on page 39.
   - Two edit handles display on the top and bottom edges of the highlighted wall.
3. Click and drag the edit handle on the top wall edge to adjust the room ceiling height, or the handle on the bottom edge to adjust its floor height. Temporary dimensions display.
4. As you drag a handle, notice that all walls defining that room are affected.

To adjust the height of a wall in 3D

1. Create a 3D or Cross Section/Elevation view of your plan.
2. Click on a surface of the wall. By default, the room will be selected. You can change this behavior in the **Preferences** dialog. See “Architectural Panel” on page 107.
3. Click the **Select Next Object** edit button to select the wall. The Status Bar says “Wall.” See “The Status Bar” on page 39.
4. Click and drag the edit handles. Temporary dimensions display in elevation views. See “Editing Closed-Polyline Based Objects” on page 198.

Room materials such as floor, ceiling, and wall materials can be changed in 3D views using the **Material Painter** . See “The Material Painter” on page 828.

If you use the Material Painter to change a room’s floor or ceiling finish material, it will add that material to the room’s Floor or Ceiling Finish Definition. Changes to a Deck room’s planking or framing will affect its floor structure definition.

In the Specification Dialog

Floor and ceiling heights, floor platform structure, moldings, wall coverings, and materials can all be specified in the **Room Specification** dialog. See “Room Specification Dialog” on page 346.

When multiple rooms are selected, the options available in the **Room Specification** dialog will be limited. You can, however, apply attributes to multiple rooms using the **Select Same Type** and **Load Values to Make Same** edit tools. See “Select Same / Load Same” on page 245.

Using the Edit Tools

A selected room can be edited in a variety of ways using the buttons on the edit toolbar. See “The Edit Toolbar” on page 35.

- Click the **Make Room Polyline** edit button to create a polyline that follows the surfaces of the selected room. See “Room Polylines” on page 345.
- Click the **Make Room Molding Polyline** edit button to create a room molding polyline. See “Room Molding Polylines” on page 345.
- Click the **Expand Room Polyline** edit button to create a temporarily enlarged room definition that ignores invisible walls and railings. See “Expand Room Polyline” on page 346.
- Click the **Calculate Materials for Room** edit button to create a materials list of the contents of the selected room, not including walls. See “Calculate From Room” on page 1248.
- Click the **Create Room Elevation Views** edit button to create an interior elevation view of each wall defining the selected room. See “Cross Section/Elevation Views” on page 881.

Room Types

When a room is first created by enclosing an area with walls, it is assigned a generic room type of “Unspecified.”

Once your floor plan is laid out, each room should be assigned a **Room Type** in the **Room Specification** dialog. See “General Panel” on page 347. The Room Type applies appropriate structural and display properties to the room.

When you assign a Room Type, a label showing the room’s Type displays in floor plan view.

You can edit the text of a room label in floor plan view, but the type of room originally assigned remains until it is changed in the **Room Specification** dialog. See “Editing Room Labels” on page 332.

Available Room Types

There are three categories of room types: Interior, Exterior and Hybrid.

Interior - Living, Dining, Family, Kitchen, Nook, Bath, Master Bath, Master Bedrm, Bedroom, Study, Office, Entry, Hall, Closet,

Dressing, Storage, Laundry, Utility and Unspecified.

Exterior - Court, Deck, Balcony.

Hybrid - Open Below, Garage, Slab, Porch, Attic.

Effects of Room Types

The program applies specific structural and display properties to rooms depending on the assigned Room Type.

Living and Conditioned Areas

- All interior type rooms are included in Living Area calculations by default; exterior and hybrid type rooms are not.
- With the exception of Unspecified rooms, all interior type rooms are included in Conditioned Area calculations by default. Open Below rooms are also included; however, exterior and other hybrid type rooms are not. See “Conditioned Area Totals” on page 1262.

Ceilings and Roofs

- Interior rooms have a ceiling and roof above them unless specified otherwise.
- Exterior rooms are assumed to be open to the outside and do not generate a roof above them, or room moldings.
- Attic rooms are ignored by the program’s automatic roof generator.
- Garage, Slabs, and Porches are treated like exterior rooms in all cases except that they generate a ceiling and a roof above them.
- A room’s default ceiling structure and finish definitions are determined by its Room Type. See “Room Defaults” on page 324.

Floors and Foundations

- Open Below is a unique type of interior room. It has no floor platform and can be used for defining stairwell openings.
- Exterior walls of rooms default to create the foundation type specified in the **Foundation Defaults** dialog.
- Walls that define the garage have a foundation under them defined by the **Foundation Defaults** dialog with a concrete slab at the top of stem wall or grade beam.
- The floor in Garage and Slab rooms display in 3D on Floor 0, not the first floor. See “Garages” on page 449.
- A room’s default floor structure and finish definitions are determined by its Room Type. See “Room Defaults” on page 324.
- Defining a room as Slab causes the floor platform thickness to equal the slab thickness value in the **Foundation Defaults** dialog.
- Courts, decks and balconies do not generate foundations.

Doors and Windows

- A window placed in a wall between an exterior room and an interior room always faces out toward the exterior.
- Windows placed between interior rooms generate a warning message.
- Door placed between interior and exterior type rooms display threshold lines.
- Interior doors do not display thresholds.
- Open Below rooms are treated as interior rooms for window and door placement.

Electrical

- The **Auto Place Outlets** tool adds outlets automatically to all interior rooms except bathrooms. Only one outlet over each sink is added for a bathroom.
- The **Auto Place Outlets** tool places fewer outlets in hybrid rooms.
- The **Auto Place Outlets** tool does not place outlets in exterior type rooms, Porches or Open Below rooms.
- Any outlet manually placed in an exterior room automatically becomes a waterproof outlet designed for exterior use.

Trim and Molding

- Moldings are not automatically drawn in exterior or hybrid rooms.
- Baseboards and chair rails are not initially drawn in Open Below rooms, but crown molding, if present, is.

Dimensions

- **Auto Interior** and **Auto NKBA®** Dimensions will only generate in rooms specified as Kitchens or Baths. See “The Automatic Dimension Tools” on page 980.

Plan Check

- **Plan Check** uses the room type and its characteristics for basic plan checking. For example, a closet does not need a smoke detector but a bedroom does. See “Plan Check” on page 1097.

Room Labels

A label can display in floor plan view for any area defined as a room. There are two parts to each room label:

- The Room Name, which is similar to a **Text** object and can be selected and edited. See “The Text Tools” on page 1001.
- The room area, which is not a standard text entry and cannot be directly edited.

You can assign a custom Room Name, move a room label or even delete it without affecting the Room Type. See “Room Types” on page 329.

> Room labels can move or even disappear when room entries are revalidated.

Room Label Defaults

The initial settings that control the size, font, color and other aspects of room label appearance are controlled in the **Room Label Defaults** dialog. See “Room Label Defaults” on page 324.

Custom Room Labels

The Room Names that display in room labels are often based on the Room Types assigned in the **Room Specification** dialog. You can, however create a custom name for a selected room, also in the **Room Specification** dialog. See “General Panel” on page 347.

Before creating a custom Room Name, assign the Room Type most similar to the room’s actual use. For example, if you wish

to name a room “Guest Room”, begin by specifying it as a “Bedroom” since these rooms have similar uses.

When a Room Name is based on its Room Type, the name in the label will be in all capital letters. When a custom Room Name is used, capitalization is user-defined.

If you wish to further customize a room’s label by adding text or a text macro, uncheck **Show Room Label** in the **Room Specification** dialog and create your own label using a Text object. See “The Text Tools” on page 1001.

Displaying Room Labels

The display of room labels is controlled in the **Layer Display Options** dialog. By default, room labels are placed on the “Rooms, Labels” layer and use the Text Style assigned to that layer. See “Layer Display Options Dialog” on page 148.

You can specify how the area of rooms is calculated by the program by turning on the display of one or more of these layers:

- **Rooms, Standard Area** is measured from the center of interior walls to either the outside surface of exterior walls or exterior wall framing, depending on the **Living Area to** setting in the **General Plan Defaults** dialog. It is rounded to the nearest square foot or mm and does not include the area within bay, box and bow windows. See “General Plan Defaults Dialog” on page 86.
- **Rooms, Interior Area** is measured from the inner surfaces of all the room's walls. Its format is set on the Dimension Format panel of the **Room Label Defaults** dialog for the current floor. See “Room Label Defaults” on page 324.
- **Rooms, Interior Dimensions** is also measured from the inner surfaces of the room walls. Its format is set in the **Floor Defaults** dialog for the current floor.

The display of room labels can also be controlled on a room by room basis in the **Room Specification** dialog. See “General Panel” on page 347.

You can customize room labels using a variety of text macros. See “Text Macros” on page 1033.

Editing Room Labels

Room labels are similar to simple **Text**  objects and can be changed, moved and resized much like any other text object. You can also modify a room label’s Text Style and other attributes in the **Room Label Specification** dialog. See “Text Specification Dialog” on page 1011.

The text of a room label cannot be modified in its specification dialog, however: it must be specified in the **Room Specification** dialog. See “General Panel” on page 347.

If you delete a room label, the Room Type and Room Name remain unchanged in the **Room Specification** dialog. To restore the label, check the **Show Room Label** checkbox on the General panel of that dialog.

Note: If you use the Convert to Rich Text edit tool to convert a Room Label to a Text object, it will no longer be display room size information or update if the room type is changed. See “Convert to Rich Text” on page 1017.

Room Area

Unlike the rest of a room label, the room area and dimensions are not standard text entries and cannot be edited or changed. The room area moves, resizes and rotates with the rest of the room label, but you can turn the area and dimensions on or off separately in the **Layer Display Options** dialog. See “Displaying Rooms” on page 327.

The **Interior Area** room area calculation includes the areas within bay, box or bow windows, while the Standard Area and Interior Dimensions calculations do not.

You can also insert room areas as well as other information into text objects using Text Macros. See “Text Macros” on page 1033.

Living Area

The Living Area label is an automatically generated label that reports the area of the current floor specified as an Interior Room. See “Available Room Types” on page 329.

A Living Area label is created as soon as a room area is defined by walls and/or railings and is recalculated every time you add, remove, resize, or redefine a room or when you **Rebuild Walls/Floors/Ceilings**  . If multiple buildings are created, each will have its own Living Area label.

To turn off the display of all Living Area labels in a plan, uncheck **Show Living Area Label** in the **General Plan Defaults** dialog or turn off the “Room Labels” layer in the **Layer Display Options** dialog. See “General Plan Defaults Dialog” on page 86.

The Living Area label can be moved or deleted. To restore a deleted Living Area label, select **Tools> Checks> Plan Check**  . You can click the **Done** button immediately, without actually completing Plan Check. See “Plan Check” on page 1097.

Living Area vs. Footprint

The Living Area should not be mistaken for the footprint of a house. Only true livable areas are included in the Living Area calculation. By default, exterior and hybrid room types such as Garage, Deck, and Porch are not included. Neither is any room labeled Open Below or Attic. See “Available Room Types” on page 329.

Regardless of its room type, you can specify whether a room is included in the Living Area calculation in the **RoomSpecification** dialog. See “General Panel” on page 347.


You can quickly see which rooms are included in the Living Area using the Select Same Type edit tool. See “Select Same Type” on page 184.

Living Area is measured from either the outside surface or the outer surface of the Main Layer of exterior walls. When walls separate the living area from exterior or hybrid room types, it is measured to the wall center line. See “Wall Type Definitions” on page 295.

To find the footprint of a floor

1. Click outside a plan, near an exterior wall. This selects the exterior “room” surrounding the plan.
2. Click the **Make Room Polyline**  edit button. This creates a polyline surround-

ing the plan from the exterior wall surface.

3. You can edit the polyline shape if you want to measure portions of a home.
4. Select the Polyline and click the **Open Object** edit button. A **Polyline Area** displays in the **Polyline Specification** dialog. If no area is shown, the polyline is not closed.

Decks

A Deck room is an exterior-type room that uses deck planking and framing to create a floor platform rather than using a floor finish that spans the entire room area. See “Floor and Ceiling Platform Definitions” on page 337.

The default settings for deck planking and framing are set in the **Deck Room Defaults** dialog. The defaults for deck post footings are set in the **Framing Defaults** dialog. See “Room Defaults” on page 324 and “Posts Panel” on page 578.

To draw a deck, select **Build> Deck> Deck Railing**, then click and drag to draw a railing.

- To create a deck without a railing, use one of the **Deck Edge** tools. See “Fencing Tools” on page 263.
- You can also create a regular, polygon-shaped deck using the **Polygon Shaped Deck** tool. See “Polygon Shaped Deck” on page 262.

A room does not have to be defined by Deck Railing to be specified as a “Deck.” See “Room Types” on page 329. You can also define a room as a “Deck” in the **Room Specification** dialog. See “General Panel” on page 347.

By default, decks do not have roofs. If you want a roof over a deck, check **Roof Over This Room** in the **Room Specification** dialog. See “Structure Panel” on page 348.

To give the roof a visible means of support, you can select the **Post to Beam** option in the **Wall Specification** dialog. See “Rail Style Panel” on page 316.

Openings in deck railings can be created using **Doorways**. See “Openings in Railings” on page 366.

Deck Framing and Planking

When a Deck room is created, the floor platform is modeled using joists, beams, posts, and planking as specified in the **Deck Room Defaults** dialog. See “Structure Panel” on page 348 and “Deck Panel” on page 351.

- If a floor is present below the one that the Deck room is created on, the framing will be created there. If needed, beams may be generated with posts beneath them, if specified. When terrain is present, the posts will have footings, again, if specified.
- If a floor is not present below the Deck, framing will be generated on the same floor as the room. Beams may be created but posts will not.

- Deck framing and planking are placed on the “Framing, Deck Framing” and “Framing, Deck Planking” layers, which are often turned off in floor plan view. See “Layer Display Options Dialog” on page 148.

If standard floor framing is present when a room is specified as a Deck, that framing is deleted and replaced with deck framing.

If changes are later made to the settings on the Deck panel of the **Room Specification** dialog, the deck framing and planking will be automatically rebuilt in response. To prevent this from happening, uncheck **Automatic Deck Framing**.

Once created, the individual planking and framing objects generated for a Deck room can be selected and edited like other framing objects, provided that **Automatic Deck Framing** is turned off. See “Editing Framing” on page 591.

To rebuild a deck’s framing and remove any changes you may have made to individual deck framing or planks, select the Deck room and click the **Build Deck Framing** edit button.

If you delete a Deck room, its deck framing and planking will be automatically deleted, as well. To prevent this from happening, check **Keep Deck Framing After Deck Room is Deleted**. See “Deck Panel” on page 351.

Floor and Ceiling Heights

Default floor and ceiling heights are defined in the **Floor Defaults** dialog for each floor, including the foundation. Use the **Floor Defaults** dialog to change these values on a floor-by-floor basis. See “Floor and Room Defaults” on page 324.

Use the **Room Specification** dialog to set floor heights on a room-by-room basis. See “Room Specification Dialog” on page 346.

Different rooms on the same floor can have unique floor and ceiling heights, allowing you to create:

- Split levels and bi-levels
- Sunken living rooms and garages
- Cathedral, vaulted, and coffered ceilings.

In 3D views, you can adjust the default floor and ceiling height for the entire floor, the floor and ceiling height for an individual room, or the top and bottom heights of an individual wall. See “In 3D Views” on page 327.

In order to raise or lower an area’s floor or ceiling height, you must give it a room

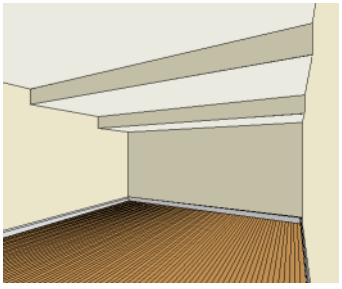
definition. To create room definition without enclosing an area with solid walls, use **Railings** .

Invisible walls and railings will fill in the vertical space between floor platforms of different heights as long as **Generate Between Platforms** is checked in their specification dialog. See “General Panel” on page 302.

Ceiling and floor heights are interrelated. Changing the floor height in one room can affect ceiling heights of the rooms below.

- If a room’s floor is lowered, its ceiling height is increased while the ceiling below that room drops.
- If the floor is raised, the ceiling height decreases while the ceiling below that room is raised.

If the rooms above a particular room have more than one floor height, the room’s ceiling is stepped.



In a situation like this, a Lowered Ceiling can be used to cover “steps” made by different floor heights on the floor above. See “General Panel” on page 347.

Dropped Ceilings and Raised Floors

The structure of a dropped, or suspended, ceiling can be specified in the **Ceiling Finish Definition** dialog either for a room or the defaults for a floor. See “Floor and Ceiling Platform Definitions” on page 337.

To create a framed dropped ceiling

1. Select a room and click the **Open Object** edit button.
2. On the Structure panel of the **Room Specification** dialog, click the **Ceiling Finish** button. See “Structure Panel” on page 348.
3. In the **Ceiling Finish Definition** dialog:
   - Specify Layer 1 as the plenum space.
   - Specify Layer 2 as the horizontal framing. Framing member spacing and width are set in the material definition. See “Define Material Dialog” on page 841.
   - Specify Layer 3 as the drywall.
   - Specify Layer 4 as the paint color.

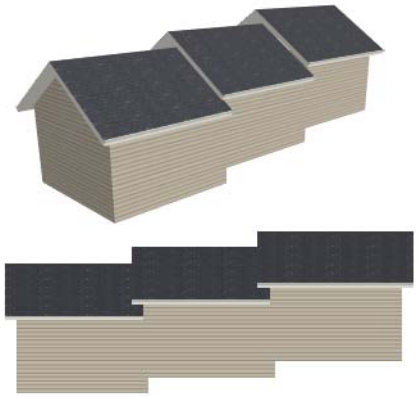
A dropped ceiling composed of a metal grid requires only two layers: one for the plenum and one for the tiles.

You can create a raised floor, such as for a shower pan, in a similar manner by specifying it in the **Floor Finish Definition** dialog.

Split Levels

A split level can be created by raising or lowering the floor and ceiling heights of various areas of the plan.

In the following example, the lowest floor height is 0, the next is 24, and the next is 48 inches. The ceiling height in each room is set at 109 inches. See “Split Levels” on page 432.



Floor and Ceiling Platforms

In many ways, rooms in Chief Architect are defined by the floor platforms below them and the floor and/or ceiling platforms above.

All floor and ceiling platform and finish materials are used for the calculation of the materials list. See “Materials Lists” on page 1247.

Floor vs Ceiling Platforms

Floor and ceiling platforms are not the same thing in Chief Architect. Floor platforms have living space above them and are designed to be weight-bearing. Ceiling platforms, on the other hand, have living space below them but not above them. They are not designed to bear weight and are typically less strong - and less thick - than floor platforms.

Floor and Ceiling Platform Definitions

Floor and ceiling platforms are made up of layers of different materials such as framing, subflooring, drywall, and finish materials. So, typically, are Floor Material Regions. See “Floor and Wall Material Regions” on page 779.

You can specify the composition of floor and/or ceiling platforms on a floor-by-floor and also a room-by-room basis in the **Floor** and **Ceiling Structure Definition** dialogs. See “Floor/Ceiling Structure Definition Dialogs” on page 339.

- To specify the composition of the floor and ceiling platforms for an entire floor: open the associated Floor panel in the **Framing Defaults** dialog and click the **Floor Structure** or **Ceiling Structure** button. See “Floor Panels” on page 570.
- To specify the floor and/or ceiling structure for an individual room, open the

Structure tab of its **Room Specification** dialog and click the **Floor Structure** or **Ceiling Structure** button. See “Structure Panel” on page 348.

Floor and ceiling platform definitions play a role in determining floor and ceiling heights. Floor and ceiling finishes can be used to create raised floors as well as dropped ceilings. See “Floor and Ceiling Heights” on page 335.

In addition to the structural layers of a platform, floors and ceilings typically have one or more finish layers. You can specify floor and ceiling finish materials for an entire floor or individual room much the way you can structural layers: by clicking the **Floor Finish** and/or **Ceiling Finish** button on the Structure tab of either the **Floor Defaults** or **Room Specification** dialog to open the **Floor** or **Ceiling Finish Definition** dialog.

If you use the Material Painter to change a room’s floor or ceiling finish material, it will add that material to the room’s Floor or Ceiling Finish Definition. Changes to a Deck room’s planking or framing will affect its floor structure definition. See “The Material Painter” on page 828.

Floor Material Regions

Floor Material Regions allow you to create areas within a floor that use different layers of materials than the parent object. See “Floor and Wall Material Regions” on page 779.

Stepped Floor and Ceiling Platforms

Each floor has default floor and ceiling heights. You can, however, use the **Room Specification** dialog to specify floor and ceiling heights on a room by room basis to create stepped floors and ceilings. See “Structure Panel” on page 348.

If you require a single floor platform with a uniform height and thickness but different ceiling heights for the rooms below, specify a lowered ceiling using the **Ceiling Finish Specification** dialog. See “Lowered Ceilings” on page 342.

By default, the gap between floor and ceiling platforms that step at a railing or invisible wall is closed off by a short section of solid wall. If you require a gap between the platforms, either select a single-layer wall type or uncheck **Generate Between Platforms** in the **Wall** or **Railing Specification** dialog. See “General Panel” on page 302.

Cantilever Undersides

If a room cantilevers out past an exterior wall, the cantilever will use the floor platform of the room above it. You can specify the surface material of the underside of a cantilever on the Materials tab of the **Room Specification** dialog. For no material, select “No Material” from the **Plan Materials** dialog. See “Room Specification Dialog” on page 346.

Platform Edges

Typically, floor and ceiling platforms are built so that they bear on top of walls. The

edges of the platform structures extend through exterior walls to the layer of the wall type definition with the **Build Platform to This Line** setting. See “Wall Type Definitions” on page 295.

- For framed walls, the **Build Platform to This Line** layer is set as the outside of the wall’s Main Layer,
- For concrete walls, it’s the inside of the wall’s Main Layer.
- The platforms of rooms with raised floors and/or lowered ceilings build in the same manner: to the **Build Platform to This Line** layer of the wall type assigned to the railing or invisible wall defining the room. See “Floor and Ceiling Heights” on page 335.

For a given wall type, you can specify a different **Build Platform to This Line** wall layer surface provided that it is on the exterior side of the Main Layer.

In addition, you can specify that individual walls build through floor and ceiling platforms in the **Wall Specification** dialog. See “General Panel” on page 302.

Platform Holes

Select **Build> Floor> Hole in Floor Platform** or **Hole in Ceiling Platform**, then click and drag a rectangular polyline that forms a hole in the designated platform.

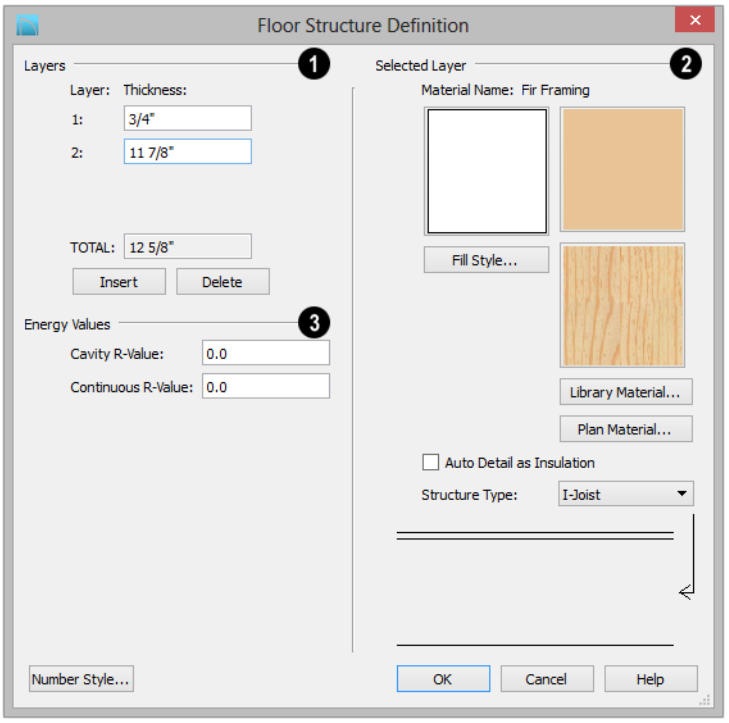
You can also create a hole in a floor or ceiling platform by drawing a closed CAD polyline and then using the **Convert Polyline**  edit button to convert it into a platform hole. See “Convert Polyline” on page 235.

Platform hole edges derive their material from the ceiling finish of the room directly below the hole.

Floor/Ceiling Structure Definition Dialogs

The settings in the **Floor** and **Ceiling Structure Definition** dialogs are similar to one another. They are also found in the **Floor** and **Ceiling Finish Definition** dialogs.

The settings in these dialogs are also found in the **Material Layers Definition** dialog for Floor and Wall Material Regions and in the **Backsplash Layers Definition** dialog for Custom Backsplashes. See “Floor and Wall Material Regions” on page 779.



1 The layers of the floor or ceiling platform structure definition are listed here. Layers are numbered and listed from the top of the structure to its bottom.

To select a layer for editing, click on it in the structure diagram at the bottom right of the dialog: the arrow to the right of the diagram points to the selected layer.


You can also select a layer by clicking in its Thickness text field.

- Specify the **Thickness** for each structural layer by typing in the text field. The layer thickness format can be changed by clicking the Number Style button.
- The **Total** thickness of the structure definition displays here as a reference.
- Click the **Insert** button to create a new layer directly above the currently selected layer in the structure definition.
- To insert a layer at the bottom of the structure definition, click on the bottom line in the structure diagram.
- Click **Delete** to remove the currently active layer. The arrow to the right of the structure diagram points to the active layer.

2 Specify the characteristics of the **Selected Layer**.

- A preview of the selected layer's fill style displays above the **Fill Style** button. Click

on either the button or the preview to open the **Layer Fill Style** dialog and specify the fill style created when the **Auto Detail** tool is used in a cross section view. This dialog is similar to the Fill Style tab for CAD objects. See “Fill Style Panel” on page 1067.

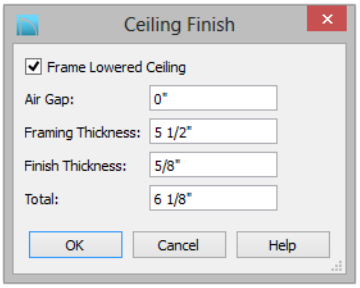
- Previews of the selected layer’s material display above the **Library Material** button. Click on either preview or this button to open the **Select Library Object** dialog and select a material from the library. See “Select Library Object Dialog” on page 816.
- Click the **Plan Materials** button to select a material from the **Plan Materials** dialog. See “Plan Materials Dialog” on page 840 .
- Click the **Structure Type** drop-down and select the type of framing member used for the platform structure. Only available when the selected material is a Framing type. See “Framing Member Types” on page 593.
- Check **Auto Detail as Insulation** to display insulation in the selected layer when the **Auto Detail** tool is used in a cross section view. Not available in the **Backsplash Layers Definition** dialog. See “Auto Detail” on page 884.
- A diagram of the floor or ceiling structure assembly displays below the Selected Layer settings. To select a layer, click on a layer in the diagram or click in its **Thickness** field. The arrow to the right of the diagram points to the Selected Layer.

❸ Specify the **Energy Values** of the selected floor or ceiling structure. Not available for Material Regions.

- Specify the structure’s **Cavity R-Value**, which is the R-value of its cavity insulator: most commonly, the insulation between wood or metal joists.
- Specify the **Continuous R-Value**, which is the R-value of continuous insulators such as rigid foam sheets.

Ceiling Finish Dialog

The **Ceiling Finish** dialog is only available in Chief Architect Lite.



- Check **Frame Lowered Ceiling** to enable the two settings that follow.
- Specify the **Air Gap**, which is the vertical distance between the lowered ceiling framing and the framing of the platform above it.
- Specify the **Framing Thickness**, which is the vertical depth of the framing of the lowered ceiling.
- Specify the **Finish Thickness**, which is the vertical depth of the ceiling finish material.
- The **Total** thickness of the Ceiling Finish Definition displays for reference.

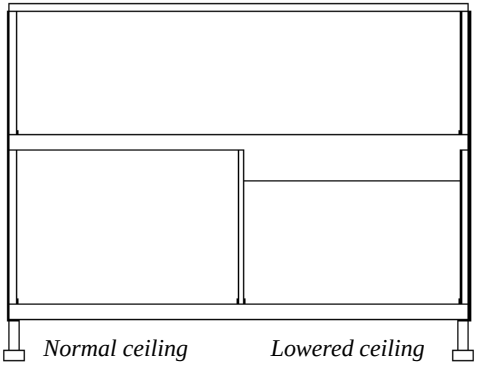
Special Ceilings

By default, the program builds a flat ceiling platform on top the wall plates of a room. More varied and complex ceilings are made using settings in the **Room Specification** dialog and the **Ceiling Plane** tool. Ceiling planes are drawn and can be edited much like roof planes. See “Ceiling Planes” on page 498.

Lowered Ceilings

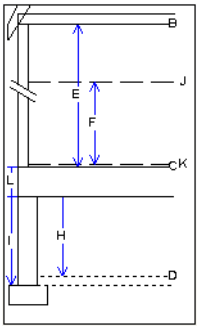
You can define a lowered or dropped ceiling in a room without affecting the top plate height of the walls by specifying the lowered ceiling framing as a layer in the ceiling finish.

In the following illustration, the default ceiling height for the entire first floor is 120", and the room on the right has a ceiling finish lowered to 96".



To create a lowered ceiling

1. Select the room in which you would like to specify a lowered ceiling.
2. Click the **Open Object** edit button to open the **Room Specification** dialog.
3. On the Structure panel, click the **Ceiling Finish** button to open the **Ceiling Finish Definition** dialog. See “Floor/Ceiling Structure Definition Dialogs” on page 339.
   - Select Layer 1 of the ceiling finish definition, then click the **Insert** button to create a new layer above the current Layer 1.
   - Specify the desired **Thickness** of the new layer, which will form the lowered ceiling framing.
   - Click either the **Library** or **Plan Material** button and specify the new layer’s material as a Framing material.
   - Specify the **Structural Type**, the type of framing member you want to use to frame the lowered ceiling.
4. Repeat step 3 if you require additional layers, such as an air gap, above the lowered framing.
5. When you are finished, click OK to close the **Ceiling Finish Definition** dialog.
6. On the Structure panel, notice that the preview diagram represents the Finished Ceiling height (F).



Vaulted and Cathedral Ceilings

A cathedral ceiling has the same pitch as the roof and is created using the underside of the roof above the room. A vaulted ceiling typically has a different pitch from that of the roof and is often framed using scissor trusses. See “Scissors Trusses” on page 617.

By default, cathedrals ceiling use the ceiling material set in the **Room Specification** dialog. If you require a different material on a given roof plane, uncheck **Use Room Ceiling Finish** in the **Roof Plane Specification** dialog. See “Options Panel” on page 489.

To create a cathedral ceiling

1. Build a roof for your plan. See “Roofs” on page 461.
2. Select the room and open the **Room Specification** dialog. See “Room Specification Dialog” on page 346.
3. On the Structure panel, clear the checkbox for **Ceiling Over This Room**.

To create a vaulted ceiling

1. To create a ceiling pitch different from the roof’s, select **Build> Roof> Ceiling Plane** and draw ceiling planes. See “Ceiling Planes” on page 498.
2. Select each ceiling plane and specify its pitch. See “Ceiling Plane Specification Dialog” on page 500.

Tray Ceilings

A tray ceiling is flat in the center and sloped around the perimeter, and is easily created using the underside of roof planes above.

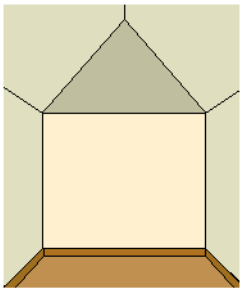
To create an automatic tray ceiling

1. In the **Room Specification** dialog, make sure that **Ceiling Over this Room** is checked, then specify the desired height of the walls as the **Ceiling Height**. See “Structure Panel” on page 348.
2. Make sure that **Auto Rebuild Roofs** is unchecked, then build the roof. See “Build Roof Dialog” on page 468.
3. Change the **Ceiling Height** of the room to the desired height of the flat ceiling surface in its center.

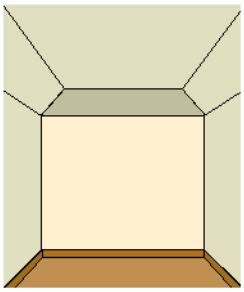
In floor plan view, dashed lines indicate where the ceiling changes from sloped to flat. These lines are located on the "Ceiling Break Lines" layer in the **Layer Display Options** dialog. See "Layer Display Options Dialog" on page 148. You can specify whether ceiling break lines indicate the break at the ceiling finish layer or the framing layer in the **Build Roof** dialog. See "Options Panel" on page 473.

If the roof is rebuilt after the ceiling height is adjusted upward, the new roof will be raised to match the new ceiling height and a tray ceiling will not be created.

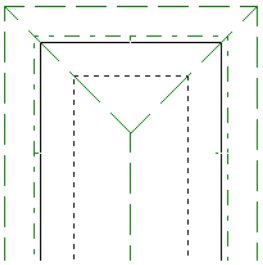
In the following example, a hip roof is built on 8' (2400 mm) ceilings. After the roof is built, the Ceiling Height is raised to 10' (3000 mm). The resulting ceiling follows the roof pitch for 2' (600 mm), then becomes a flat ceiling.



Hip roof with cathedral ceiling over.



Hip roof, ceiling over, ceiling height raised.



Ceiling Break lines in floor plan view.

Cantilever Undersides

Occasionally, a room will cantilever out past an exterior wall. You can specify the surface material of the underside of a cantilever on the Materials panel of the **Room Specification** dialog. For no material, select "No Material" from the **Plan Materials** dialog. See "Room Specification Dialog" on page 346.

Other Special Ceilings

Soffits can be used in various ways to enhance the 3D model. Soffits' ability to follow the slope of the roof offers unlimited possibilities, such as exposed beams or trusses and coffered ceilings. See "Special Applications for Soffits" on page 774.

Polyline solids, framing members and locked roof trusses can also be used for similar purposes.

Room Polylines

Click the **Make Room Polyline** edit button to create a standard polyline on the Current CAD Layer that follows the surfaces of the selected room. See “Current CAD Layer” on page 1044.

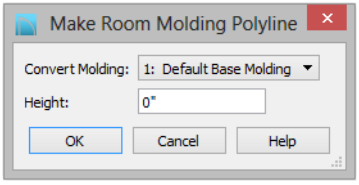
Room polylines and room molding polylines are not affected when the room is altered.

Room Molding Polylines

To create a molding polyline that follows the interior surfaces of a room, select the room and click the **Make Room Molding Polyline** button on the edit toolbar.

Room molding polylines can be edited just like other molding polylines. Their shape and height can be altered and the molding profile can be changed. Additional molding profiles can also be assigned. See “Molding Polylines” on page 648.

Make Room Molding Polyline Dialog



Select the **Molding** type to assign to the room molding polyline from the drop-down list. The options available will be the moldings already assigned to the selected room.When you convert a molding type to a molding polyline, the room molding turns off. See “Moldings Panel” on page 353.

- **Base Molding** - Select to convert the room’s base molding into a molding polyline.
- **Chair Rail Molding** - Select to convert the room’s chair rail molding into a molding polyline.

- **Crown Molding** - Select to convert the room's crown molding into a molding polyline.
- **Blank Molding** - Select to generate a blank molding polyline. The polyline follows the room perimeter and has blank sections where the polyline crosses windows and doors if these objects are at the polyline height.

Specify the **Height** of the selected molding polyline, as measured from the selected room's floor.

Expand Room Polyline

The **Expand Room Polyline** edit button is available when you select a room separated from other rooms by invisible walls or railings. Select this edit tool to create and select a temporarily enlarged room definition that ignores those invisible walls and railings.

To use the Expand Room Polyline tool

1. Click in a room defined by at least one invisible wall or railing.
2. Click the **Expand Room Polyline** edit button.
3. Click the **Make Room Polyline** or **Make Room Molding Polyline** edit button to create a polyline that follows the interior surfaces of walls, ignoring invisible walls and railings.

Expand Room Polyline does not create a new room and cannot be used in combination with the **Auto Interior Dimensions** or **Auto NKBA®** **Dimensions** edit tools: it only allows you to generate a larger room polyline or room molding polyline.

Room Specification Dialog

The **Room Specification** dialog controls the structural characteristics and appearance of a selected room. To open the **Room Specification** dialog, select one or more rooms and click the **Open Object** edit button. See "Selecting Rooms" on page 325.

Several of the panels in the **Room Specification** dialog are also found in the **Floor** and **Room Defaults** dialogs. See "Floor and Room Defaults" on page 324.

Some values in this dialog are dynamic. A value with Default checked is referenced from the **Floor Defaults** dialog. To return a value to the default, replace the check mark. See "Dynamic Defaults" on page 74.

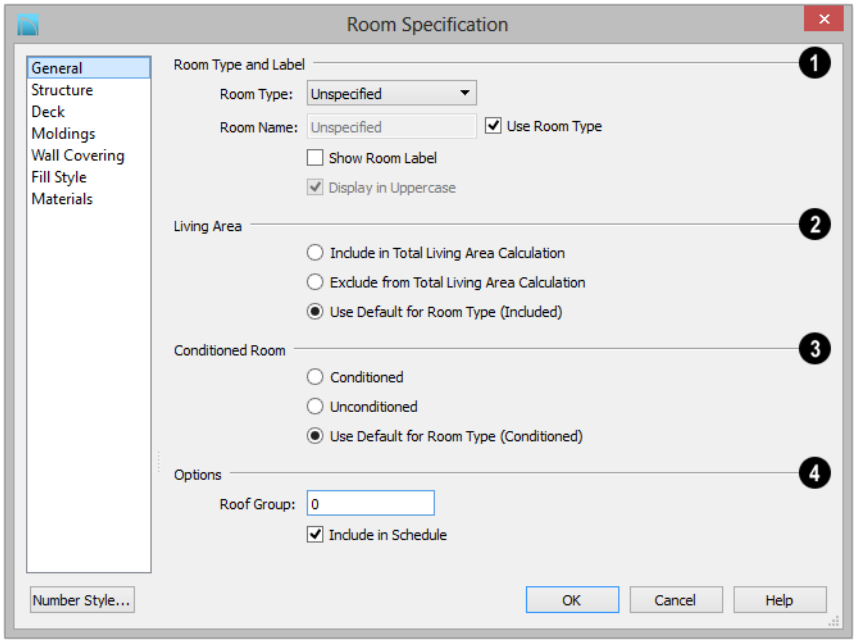
The settings in this dialog are similar to those in the **Floor Defaults** dialog, but affect only the selected room See "Floor Defaults Dialog" on page 426.

If multiple rooms are selected, not all of the settings in this dialog will be available. See "Selecting Objects" on page 180.

Many of the settings in this dialog can be included in a Room Finish Schedule. See "Schedules and Object Labels" on page 1231.

General Panel

The General panel is not available in the **Room Defaults** dialog, and only two of the settings here are active in the **Floor Defaults** dialog. See “Floor and Room Defaults” on page 324.



1 The settings here control the Room Type, the appearance of the Room Label, and how the room appears in the Room Finish Schedule.

- Select the **Room Type**. This affects some of the room’s characteristics. Not available when multiple rooms are selected. See “Room Types” on page 329.
- If you wish to use a custom name in the room label and schedule, uncheck **Use Room Type**, then specify the desired **Room Name** in the text field.
- Check **Show Room Label** to display the room label in floor plan view. This option is unchecked automatically if you select “Unspecified” as the room type. See “Room Labels” on page 331.
- Uncheck **Display in Uppercase** to use the same capitalization as the selected Room Type or Room Name in the room label. When this is checked, all letters in the label are capitalized.

2 Specify whether the selected room is included in the **Living Area** calculation. See “Living Area” on page 333.

- Select **Include in Total Living Area Calculation** to include the room in the Living Area regardless of its Room Type.

- Select **Exclude from Total Living Area Calculation** exclude the room from the Living Area regardless of its Room Type.
- Select **Use Default for Room Type (Included/Excluded)** to base the selected room's inclusion in the Living Area on its Room Type. The default for the selected Room Type is stated in parentheses.

❸ Specify whether the selected room is a **Conditioned Room** or not. See "Conditioned Area" on page 1262.

- Select **Conditioned** to include the room in the Conditioned Area of the structure, regardless of its Room Type.
- Select **Unconditioned** exclude the room from the Conditioned Area, regardless of its Room Type.
- Select **Use Default for Room Type (Conditioned/Unconditioned)** to base the selected room's inclusion in the Living Area on its Room Type. The default for the selected Room Type is stated in parentheses.

❹ **Options** -

- Specify the **Roof Group** of the selected room. Change this value to control how the program combines the selected room's roof system with that of the rest of the building when automatic roofs are built. This value is nearly always left at zero. See "Roof Groups" on page 465.
- Uncheck **Include in Schedule** to prevent the selected room(s) from being included in the Room Finish Schedule. See "Schedules and Object Labels" on page 1231.

Structure Panel

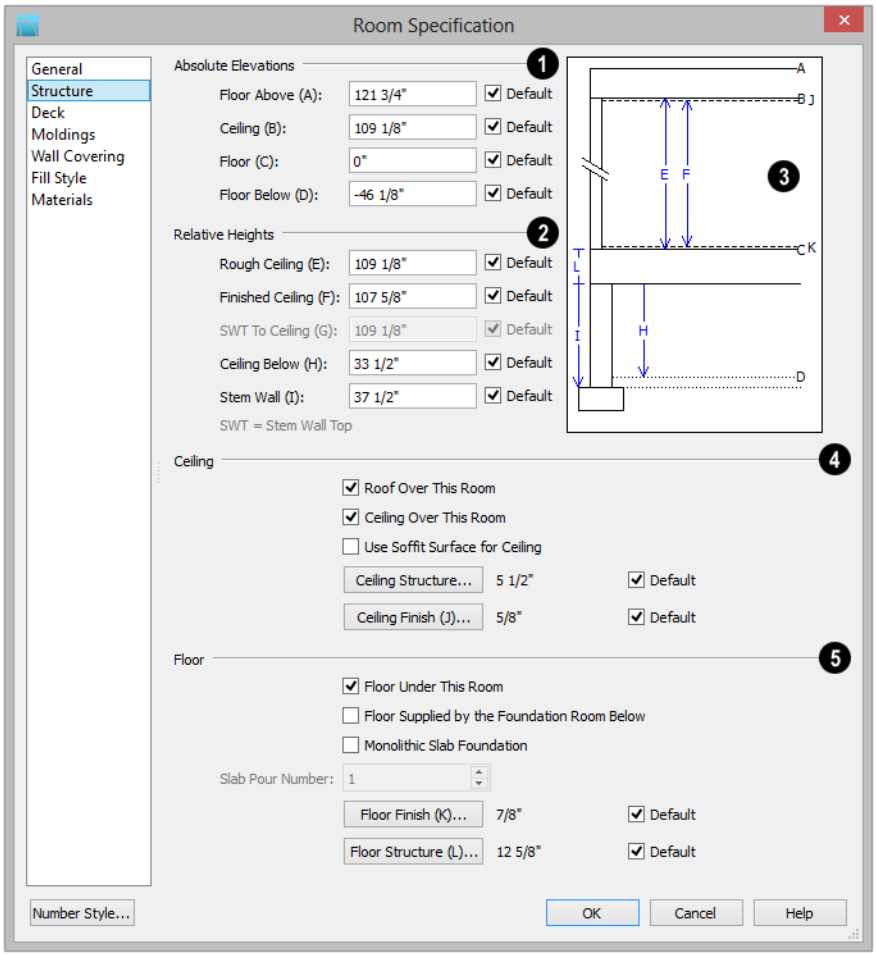
The Structure panel is also found in the **Floor** and **Room Defaults** dialogs and features a cross section diagram that shows the relationships between its various heights and platform thicknesses. It is meant to represent the relationships between heights and thicknesses rather than provide a scaled drawing of the model.

Two floors can be included in the diagram: the floor that the selected room is located on, and the floor below it, if one exists.

What appears in both the diagram and in the settings to its left may be affected by the location where you clicked to select the room. For example:

- If the selected room is located above two rooms with different structural settings, the position of the pointer relative to these two lower rooms determines which of them displays as the floor below.
- If the selected room is located below two rooms with different floor heights, its absolute and relative ceiling height settings will be disabled.

When multiple rooms are selected, only the Floor and Ceiling Structure and Finish can be specified. In some **Room Defaults** dialogs, only the **Floor Structure** and/or **Finish** can be modified. See "Floor and Room Defaults" on page 324.



Check the **Default** box beside any height value to restore the default setting. In the **Floor Defaults** dialog, the Floor and Ceiling Structure and Finish defaults are drawn from the **Normal Room Defaults** dialog. See “Dynamic Defaults” on page 74.

❶ **Absolute Elevations** - These height values are measured from the default first floor height of zero. See “Floor and Ceiling Heights” on page 335.

- Specify the **Floor Above** height, which is the floor height of the room or rooms on the floor above the selected room. If multiple floor heights are specified directly above the selected room, this setting will be inactive and “No Change” will display.
- Specify the **Ceiling** height of the selected room. Not available in the **Room** or **Floor Defaults** dialog or if multiple floor

heights are specified above the selected room.

- Specify the **Floor** height.

> Note: The default floor height for Floor 1 is 0. It can be modified in the Room Specification dialog, but not in the Floor 1 Defaults dialog. See “Floor and Room Defaults” on page 324.

If a room is defined directly beneath the selected room on the floor below, additional settings may be available.

- Specify the **Floor Below** height, which is the floor height of the room directly below where you clicked to select the currently selected room.
- If the selected room is directly above a Garage and there is a foundation present, you can specify the **SWT Below** height, which is the top height of the concrete stem walls around the perimeter of the garage.

❷ **Relative Heights** - These height values are measured from surfaces within the selected room or the room below.

- Specify the **Rough Ceiling** height, as measured from the subfloor surface to the bottom of the ceiling framing. Not available if multiple floor heights are specified directly above the selected room.
- Specify the **Finished Ceiling** height, as measured from the finished floor surface to the finished ceiling surface. Not available if multiple floor heights are specified directly above the selected room.
- Specify the distance from the **Stem Wall Top to Ceiling**. Only available when **Floor for this Room is Supplied by the Foundation ‘Room’ from the Floor Below** has been checked.
- Specify the **Ceiling Below** height, which is the height of the ceiling of the room below, as measured from that room’s subfloor to rough ceiling surfaces. Not available when Auto Rebuild Foundation is enabled or if there is no room below the selected room. See “Rebuilding Foundations” on page 445.
- Specify the **Stem Wall** height, which is measured from the bottom of the room’s floor framing to the top of the foundation wall footing and including a treated sill plate, if one is specified. Only available if the selected room or the room below it is defined by foundation walls.

❸ A cross section diagram showing the relationship between the various height settings displays here for reference.

❹ Specify the characteristics of the room’s **Ceiling**.

- If **Roof Over This Room** is checked, a roof automatically generates over the room. If unchecked, no roof generates.

  If this option is unchecked and a roof plane is manually drawn over this room, its structure will be that of an eave rather than a regular roof. See “Roof Panel” on page 579.
- If **Ceiling Over This Room** is checked, the room has a flat ceiling. If unchecked, the ceiling follows the underside of the roof or manually drawn ceiling planes.
- Check **Use Soffit Surface for Ceiling** to frame the roof over the selected room using the framing defaults for fascia rather than for rafters.

- Click the **Ceiling Structure** button to open the **Ceiling Structure Definition** dialog and define the layers of materials that form the ceiling platform. Not available for rooms on Floor 0. See “Floor/Ceiling Structure Definition Dialogs” on page 339.
- Click the **Ceiling Finish** button to open the **Ceiling Finish Definition** dialog an ddefine the layers of materials that form the finished ceiling surface. See “Floor/Ceiling Structure Definition Dialogs” on page 339.
- Check the **Default** box to the right of either button to restore the default structure and/or finish.

5 Specify the characteristics of the room’s **Floor**.

- When **Floor Under This Room** is checked, the room has a floor platform as specified below.
- If **Floor Supplied by the Foundation Room Below** is checked, the floor for this room is a slab located on the floor below.
- If **Monolithic Slab Foundation** is checked, the current Floor Structure will be replaced by a single 4” (100 mm) layer of concrete with footings that can be seen in camera views only. When a stem wall or grade beam foundation is generated, a slab will be created beneath the selected room.

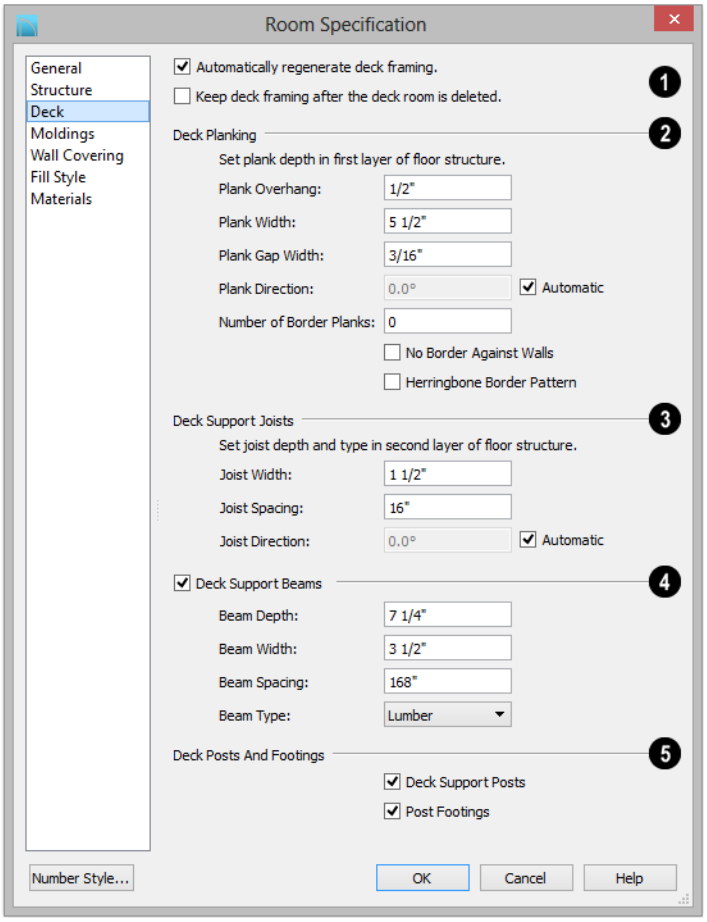
If the selected room has a living space located anywhere beneath it, avoid checking Monolithic Slab Foundation.

- When Monolithic Slab Foundation is checked, specify the **Pour Number** of the selected room’s slab floor. Pour Numbers are listed separately in the Materials List. See “In the Materials List” on page 445.
- Click the **Floor Finish** button to open the **Floor Finish Definition** dialog and define the layers of materials that form the finished floor surface. See “Floor/Ceiling Structure Definition Dialogs” on page 339.
- Click the **Floor Structure** button to open the **Floor Structure Definition** dialog and define the layers of materials that form the floor platform. See “Floor/Ceiling Structure Definition Dialogs” on page 339.
- If the selected room is a Deck, the Floor Structure button will be labeled **Planks, Joists** instead. See “Decks” on page 334.
- Check the **Default** box to the right of either button to restore the default structure and/or finish.

Deck Panel

The options on the Deck panel are only available for rooms designated as Decks, and control how deck framing and planking are generated. See “Deck Framing and Planking” on page 334.

The settings on this panel are also found in the **Deck Room Defaults** dialog, but affect the selected Deck room(s) only rather than Decks as they are initially created. See “Room Defaults” on page 324.



1 Check **Automatic Deck Framing** to generate planking and support framing for the deck that updates as changes are made to the deck. See “Decks” on page 334.

- Check **Keep Deck Framing After Deck Room is Deleted** to retain the automatically generated framing and planking when the selected deck room is deleted. When this box is unchecked, the framing is automatically removed if the room is deleted.

2 Specify the appearance of the **Deck Planking**.

- Specify how far the deck planking **Overhangs** the rim joists.
- Specify the **Plank Width** of the deck planking.
- Specify the **Plank Gap Width**, which is the distance between individual planks.

- If you want to enter a **Plank Direction**, remove the checkmark from **Automatic**. Enter the direction as degrees.
- Specify the **Number of Border Planks**. These are planks that follow the outside edge of the deck and may not be parallel with the rest of the planking. Border planks generate as long as the length of an inside edge is greater than 0". They do not generate on curved deck edges.

Note: Planking thickness and joist depth are specified in the Floor Structure Definition dialog. See "Floor and Ceiling Platform Definitions" on page 337.

- Check **No Border Against Walls** to prevent border planking from being generated along any walls defining the deck.
- Check **Herringbone** to produce a herringbone pattern where the border planks meet.

❸ Specify the configuration of the **Deck Support Joists**.

- Enter the **Width** of the joists that support the deck.
- Specify the **Spacing** between joists, as measured from joist center to joist center.
- If you want to specify joist **Direction**, uncheck **Automatic** and enter the direction as degrees. When checked, joists are run in the direction that results in the shortest spans.

❹ Specify the configuration of the **Deck Support Beams**.

- Enter the **Depth** and **Width** of the beams that support the deck. The **Width** value also controls the size of automatically generated deck posts.
- Specify the **Spacing** between beams, as measured from beam center to center.
- Select the **Type** of deck joists from the drop-down list. See "Framing Member Types" on page 593.

❺ Specify whether **Deck Posts And Footings** are generated beneath the selected deck.

The default deck post size is based on the width of the deck beam directly above it and the default footing size is set in the **Framing Defaults** dialog. See "Posts Panel" on page 578.

Moldings Panel

Chair rail, crown and base moldings can be assigned to one or more rooms on the Moldings panel. Moldings are placed around the wall surfaces of a room and continue around the surface of any soffit that is attached to the wall at the molding height.

The settings on the Moldings panel are similar to those found in other specification dialogs throughout the program. See "Moldings Panel" on page 643.

The settings on this panel are also similar to those found in the **Floor Defaults** dialog, but affect only the selected room instead of all rooms on the current floor.

Wall Covering Panel

The settings on the Wall Covering panel of the **Room Specification** dialog are the same as those on the same panel of the **Wall Specification** dialog. When a wall covering is assigned in the **Room Specification** dialog, it is applied to all walls in the selected

room only. See “Wall Covering Panel” on page 313.

Wall coverings can be applied to exterior rooms as well by selecting the exterior room and opening it for specification. See “Selecting Rooms” on page 325 for information about selecting exterior rooms.

Fill Style Panel

The settings on this panel affect the appearance of the room in floor plan view. This panel is also found in the **Floor Defaults** dialog. For more information, see “Fill Style Panel” on page 1067.

Materials Panel

The settings on this panel affect the appearance of a selected room’s walls, floor, ceiling and moldings in 3D views. See “Materials Panel” on page 831.

Default molding and ceiling and floor covering materials can be set in the **Floor Defaults** dialogs.

Room Finish Schedules

The **Room Finish Schedule** tool allows you to produce customizable room finish schedules with information about room size, structure, materials and molding. See “The Schedule Tools” on page 1232.

Chapter 10:

Doors

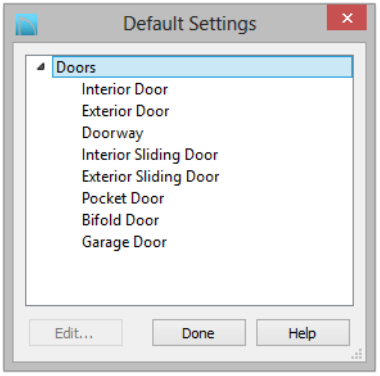
Chief Architect comes with tools for creating a wide variety of interior and exterior doors. In addition, the library offers a large selection of specialty doors and doorways including hinged, sliding, pocket, bifold, and garage doors. Additional name-brand door catalogs are also available for download from our web site, chiefarchitect.com.

Chapter Contents

Door Defaults

Default Settings are accessed by selecting **Edit> Default Settings**. Click the "+" next to **Doors** to show the door sub-headings. Select a subheading and click the **Edit** button to open the defaults dialog associated with your selection:

Door Defaults can also be accessed by double-clicking the **Door Tools** parent button or the **Hinged Door** or **Sliding Door** child button. Double-clicking the other Door Tools child buttons will open the defaults dialog for that particular door type.



The values in the **Door Defaults** dialog are initial values for interior or exterior doors. Individual doors can be edited after they are created.

The **Door Defaults** dialogs look nearly the same as the **Door Specification** dialog. See "Door Specification Dialog" on page 368. There are only a couple of differences:

- Since default settings are specified here, "Use Default" is not an option for some settings as it is in the **Door Specification** dialog.
- The **Door Type** cannot be changed in the Defaults dialogs.

Dynamic Door Defaults

A variety of door default values are dynamic, including the **Add fr Rough Opening** values, **Casing** and **Lintel Specifications**, and **Hardware**. When a dynamic default is changed, existing doors using the default value are affected. See "Dynamic Defaults" on page 74.

All **Materials** listed under "Doorway" on the Materials panel are also dynamic. Materials assigned to doors and hardware items from the library are listed separately and are dynamically linked to the "Interior Door", "Exterior Door" and "Fixture Trim" and "Hardware" materials set in the **Material Defaults** dialog rather than the **Door Defaults** dialogs. See "Material Defaults Dialog" on page 852.

Door Framing

The default Rough Opening for doors can be defined in the **Door Defaults** dialogs. You can also specify an additional amount to cutout for door openings in concrete garage curbs and foundation walls. See "General Panel" on page 368.

The defaults for trimmers and headers can be specified in the **Build Framing** dialog. See "Framing Defaults" on page 562.

The Door Tools

To place a door, select the type you want from the **Build> Door** submenu.

With a Door Tool active, move your mouse pointer over a wall section. If there is room enough along the wall to fit a 12" (300 mm) wide door, a preview of the door will display. When a preview can be seen, click on a wall to place a door in the wall at that location.

Doors cannot be placed in a wall specified as Invisible or if the wall in question is on a locked layer. See "Locking Layers" on page 145.

Hinged and Sliding Doors have both Interior and Exterior Door Defaults. If the wall is an exterior wall or one that separates an interior from an exterior room, the program places an exterior door based on the default settings for exterior doors. If the wall is an interior wall, the program places an interior door based on the default settings for interior doors. This rule applies to doors copied and pasted from one location to another just as it does to newly placed doors. See "Door Defaults" on page 355.

Doors can also be placed in curved walls. See “Options Panel” on page 370.

Once placed, any door may be changed into any other type of door using the **Door Specification** dialog. See “Door Specification Dialog” on page 368.

Hinged Doors

Select **Build> Door> Hinged Door** and click a wall where you want to place a hinged door. Hinged doors can be placed on interior or exterior walls, and can be set up so that different door styles are placed in each. A hinged door becomes a double door when its width is four feet or greater.

The initial swing direction of a hinged door depends on the location of the mouse pointer relative to the wall when you click. The door will swing towards the side of the wall that you click nearest.

The initial hinge side of a hinged door can be set by clicking to place the door and then holding the mouse button down rather than releasing it. Move the mouse toward the end of the door that you would like the hinges to be on: as the mouse pointer nears either end, the door preview’s hinge side will move to that end. You can also adjust the door’s swing direction in this manner. When the swing direction and hinge side are correct, release the mouse button.

Doorways

Choose **Build> Door> Doorway** and click a wall to place a doorway (an opening without a door). Doorways can be placed on interior or exterior walls, or in railings and fences to provide an opening.

You can assign a door from the library to a doorway.

Sliding Doors

Select **Build> Door> Sliding Door** and click a wall where you want to place a sliding door. Sliding doors can be placed on interior or exterior walls and can be set up so that different door styles are placed in each. If placed in an exterior wall, the door is glass; if placed in an interior wall, it is a solid slab.

The initial opening side of a sliding door can be specified by moving the mouse pointer along the wall while the mouse button is still pressed.

The default sliding door dimensions are 5’-0” x 6’-8” with a 12” bottom frame and a 6” frame on the sides and top.

Pocket Doors

Select **Build> Door> Pocket Door** and click a wall where you want to place a pocket door.

As with sliding doors, the initial opening side of a pocket door can be specified by moving the mouse pointer along the wall while the mouse button is still pressed.

The default pocket door dimensions are 2’-6” x 6’-8” high. A pocket door becomes a double pocket door if its width is four feet or greater.

Bifold Doors

Choose **Build> Door> Bifold Door** and click a wall where you want to place a bifold door.

Like a hinged door, the initial opening side of a bifold door depends on the location of the mouse pointer relative to the wall when you click. The door will open towards the side of the wall that you click nearest.

Similarly, the initial hinge side of a sliding door can be specified by moving the mouse pointer along the wall while the mouse button is still pressed.

The default interior single bifold door is 2'-6" x 6'-8". A bifold door becomes a double bifold if its width is greater than three feet.

Bifold doors always display closed in all 3D views.

Garage Doors

Choose **Build> Door> Garage Door** and click a wall to place a garage door.

The default garage door is 8'-0" x 7'-0" high. A garage door must be at least two feet wide.

In floor plan view, dashed lines show the size and location of the garage door when open.

Garage doors will build into a garage stem wall provided the room is designated as a garage before the door is inserted. See "Room Types" on page 329.

The Doors & Doorways Library Catalog

The Doors & Doorways library catalog can be accessed by selecting **View> Library Browser** and browsing to Chief Architect Core Catalogs> Architectural. This catalog contains a variety of interior and exterior doors, as well as special entryways and wrapped openings.

Entryways and wrapped openings are examples of Doorways, which are wall openings that do not have doors within them.

To add a door to the Doorway, select a **Door Type** other than "Doorway" from the drop-down list in the **Door Specification** dialog. See "General Panel" on page 368.

You can also select a custom door from the library and place it into a doorway in floor plan view or any 3D view.

To place a library door in a doorway

1. Go to floor plan view or any 3D view.
2. Open the Library Browser.
3. Browse or search to find a custom door style that suits your needs.
4. Select the door in the Library Browser, then click on the doorway to place the selected door within it. If a door already exists, it is replaced.
5. Continue clicking other doorways as needed.

Creating Your Own Doors

You can create custom doors and doorways and save them in your own library for use in future plans. See "Custom Symbols" on page 1159.

Displaying Doors

The display of doors, door labels, opening indicators, headers, and casing is controlled in the **Layer Display Options** dialog. See “Layer Display Options Dialog” on page 148.

Doors can only be placed in walls, so if a wall’s layer is turned off, any doors placed in that wall will not display, either. See “Displaying Walls” on page 274.

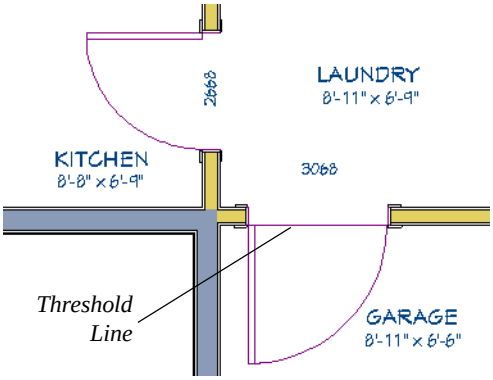
If the “Doors” layer is turned off, doors and their casing do not display but openings in the walls where they are located are visible.

In Floor Plan View

A door’s jamb, casing, and swing are all represented in floor plan view. If a door is recessed, the affected wall layers will adjust to accommodate the casing.

Doors in exterior walls and doors that open to exterior type rooms such as a Garage, Porch, or Deck have a threshold line across the opening in floor plan view. See “Room Types” on page 329.

You can specify whether an exterior door has a threshold in the **Door Specification** dialog. See “Casing Panel” on page 372.



If an exterior door to a Garage room on Floor 1 extends into a Garage stem wall or curb on Floor 0, its location will be indicated on Floor 0. You can control the display of this concrete cutout in the **Door Specification** dialog. See “Garages” on page 449.

When the “Doors, Headers” layer is turned on in floor plan view, door headers are represented by dashed lines within each door’s opening. These lines do not correspond to actual framing objects and cannot be selected. See “Wall Framing” on page 562.

The vertical casing on the sides of doors will display in floor plan view when the “Casings, Exterior” and “Casings, Interior” layers are turned on. See “Casing Panel” on page 372.

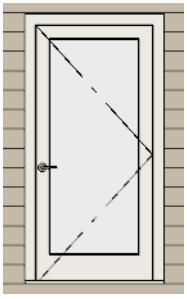
In 3D Views

You can specify whether a selected door is shown open or closed in 3D views by clicking the **Show Door Open in 3D** and **Show Door Closed in 3D** edit buttons as

well as in the **Door Specification** dialog. See “Options Panel” on page 370.

If a door is set to display open in 3D, the angle of the open door can be changed using the edit handles in floor plan view. See “Using the Mouse” on page 361.

To display opening indicator arrows in Vector Views, turn on the “Opening Indicators” layer in the **Layer Display Options** dialog. See “Vector View” on page 928.



Door with opening indicator

Reverse door opening indicators on the Architectural panel of the **Preferences** dialog. See “Architectural Panel” on page 107.

You can also specify whether door and window glass is opaque or transparent in Vector Views in the **3D View Defaults** dialog. See “Options Panel” on page 873.

Door Labels

Door labels display in floor plan and cross section/elevation views, centered on the doors they represent, when the “Doors, Labels” layer is turned on and use the Text Style assigned to their layer. See “Object Labels” on page 1241.

Automatic door labels indicate Width and Height. For example:

- In Imperial plans, the automatic label for a 3’-0” wide, 6’-8” high double hung window will read 3068.
- In metric plans, the automatic label for a 900 mm wide, 2100 mm high double hung window will read 900x2100.

If you prefer, you can use one of two other formats: Height/Width and Width Only. Label formats are specified in the **Door Specification** dialog or in the **Door Defaults** dialog if no schedule is present. See “Label Panel” on page 1239.

Customized labels using text and Object Specific Text Macros as well as label position and orientation can also be specified in the **Door Specification** dialog. See “Text Macros” on page 1033.

Editing Doors

Before a door can be edited, it must be selected. To select a door, click it when the **Select Objects** tool or any of the **Door Tools** are active. Doors and/or windows can also be group selected and edited. See “Selecting Objects” on page 180.

Blocked units are made up of individual doors and windows that have been grouped together to act as one object. You can create a blocked door unit or by creating an

Architectural Block composed of doors and/or windows. See “Make Mulled Unit” on page 389.

Select a blocked unit by clicking on it in any view. To select a door that is a component of a blocked unit, click at the location of the component in question, then click the **Select Next Object** edit button. See “Selecting Objects” on page 180.

In the Specification Dialog

The most precise method of editing a door or group of doors is to use the **Door Specification** dialog. Door type, size, casing, materials, shape, and more can all be specified in this dialog. See “Door Specification Dialog” on page 368.

Using the Mouse

In floor plan view, click either of the two end handles and drag along the wall to change the width. The label showing the size updates as the handles are dragged. Click and drag the Move handle at the center to move the door along the wall it is placed in. Use the triangular Rotate handle to adjust the door’s swing. If the door’s label displays, an additional handle is available to move the label.

In 3D views, a selected door has five edit handles: the Move handle at the center and a Resize handle on each edge. Click and drag an edge handle to resize the door.

Using the edit handles, a door resizes according to the currently active **Edit Behavior**. See “Edit Behaviors” on page 176.

A door or window moved against an intersecting wall temporarily stops when the casing meets the intersecting wall. You can continue to drag and it resumes movement past the intersecting wall.

Using Dimensions

Like various other objects, doors can be moved using dimensions. See “Moving Objects Using Dimensions” on page 989.

You can specify how doors and windows are located by dimensions in the **Dimension Defaults** dialog. See “Locate Objects Panel” on page 968.

Dimensions can be set to locate the centers, sides, casing, or rough opening of wall openings, or you can choose to not locate openings at all. If you wish, you can move a dimension’s extension lines to locate non-default locations on a door after the dimension is drawn. See “Editing Extension Lines” on page 986.

Using the Edit Tools

A selected door or doors can be edited in a variety of ways using the buttons on the edit toolbar. See “The Edit Toolbar” on page 35.

- Click the **Change Opening/Hinge Side** edit button to change the side of the door that its hinges are on. See “Changing Door Swings” on page 363.
- Click the **Change Swing Side** edit button to change which direction the selected door swings.
- Click the **Show Door Open in 3D** or **Show Door Closed in 3D** edit button

to control the selected door's appearance in 3D views. See "In 3D Views" on page 359.

- Click the **Gable Over Door/Window** to create a gable over the selected door(s) the next time the roof is rebuilt. See "Gable/Roof Lines" on page 503.
- Click the **Components** edit button to modify or add information related to the selected door in the Materials List and schedules. See "Components Dialog" on page 1265.

Centering Doors

The **Center Object** edit button allows you to center a selected door along a wall within a room or relative to a cabinet or window. See "Using Center Object" on page 224.

To center a door along a wall

1. Select a door or combination of windows and doors in floor plan view.
2. Click the **Center Object** edit button then choose from one of the following options:
   - Click near a wall inside a room to center the door along that wall in that room.
   - Click outside the house (on the exterior room) near an exterior wall to center the door along an exterior wall.

Door Sides

Like walls, all doors have two sides: an interior side and an exterior side. This is the case even for doors placed in interior walls. See "Exterior and Interior Walls" on page 263.

By default, the interior side of the door will face the direction that the door swings to open. If you prefer, you can specify that the interior side face the opposite direction in the **Door Specification** dialog. See "General Panel" on page 368.

You can specify the materials for the two sides separately in the **Door Specification** dialog. See "Materials Panel" on page 382.

You can also specify different casing for the interior and exterior sides of exterior doors - that is, doors placed in exterior walls or walls defining a Garage or other exterior room type. See "Room Types" on page 329.

Door Casing

Doors typically feature casing, or trim, on both sides of the wall opening.

- By default, interior doors use the same casing profile on both sides. You can specify that both sides be edited separately in the **Door Specification** dialog. See "General Panel" on page 368.
- Exterior doors can have different casing profiles on their interior and exterior sides.

The default casing for interior and exterior doors is a basic rectangular stock profile. You can specify a door's casing profiles in the **Door Specification** dialog, or you can choose to suppress casing altogether. See "Casing Panel" on page 372.

A separate molding profile can be specified for the lintel, or top horizontal molding. See "Lintel Panel" on page 374.

Interior and exterior door casing will display in all views when the “Casings, Exterior” and “Casings, Interior” layers are turned on.

In floor plan view, only the vertical side casing will be shown.

Changing Door Swings

Door swing direction and hinge side can be changed using the **Change Opening/Hinge Side** and **Change Swing Side** edit buttons.

> Note: If the door is set to draw closed, the swing as it appears in floor plan view has no affect on the 3D view. See “Options Panel” on page 370.

The **Change Opening/Hinge Side**  edit button is available for all doors except double doors and garage doors.

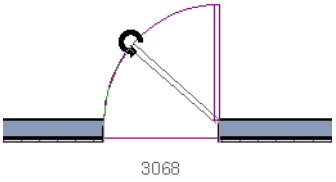
The **Change Swing Side**  edit button is available for all doors except pocket doors.

Hinged Doors

In addition to using the edit buttons, hinged doors’ hinge side and swing direction can be changed using the triangular Rotate edit handle.

To adjust the angle of swing:

1. In floor plan view, select the door and grab the triangular handle.
2. Drag to change the amount of swing.

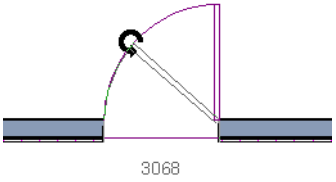


3. Release the mouse.

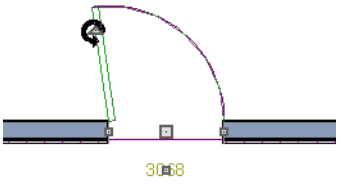
If you drag near the closed position, the door snaps to a closed position.

To change the swing using edit handles:

1. In floor plan view, select the door and grab the triangular edit handle.



2. Drag the pointer along the path of the new arc to change the hinge side and/or swing direction.

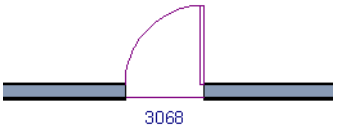


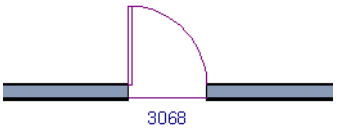
3. Release the mouse.

You can specify a Double Hinged Door to swing from its center in the Door Specification dialog. See "Options Panel" on page 370.

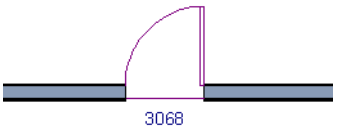
To change the swing using edit buttons:

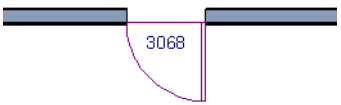
1. In floor plan view, select the door.
2. To change the hinge side, click the **Change Opening/Hinge Side** edit button.





3. To change the swing direction, click the **Change Swing Side** edit button.





You can also specify a Hinged Door to swing in both directions in the Door Specification dialog. See "Options Panel" on page 370.

Sliding Doors

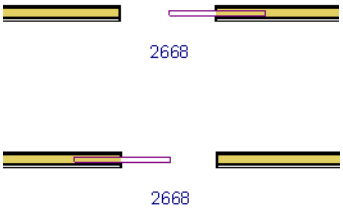
To change the side of a sliding door that is fixed, select the sliding door then click the **Change Opening/Hinge Side** edit button.

To flip the fixed and moving sides of the door, click the **Change Swing Side** edit button.

As with hinged doors, you can also change the Opening/Hinge and Swing sides of a sliding door by clicking and dragging the triangular edit handle.

Pocket Doors

To change the direction of a pocket door, select it and click the **Change Opening/ Hinge Side** edit button.

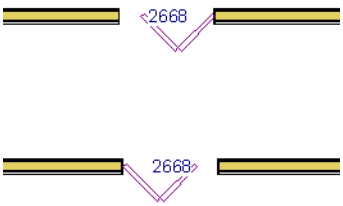


Note: There must be enough room for the entire door to fit in the opposite wall or the door does not change.

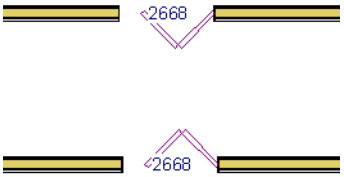
As with hinged doors, you can also change the Opening/Hinge side of a pocket door by clicking and dragging the triangular edit handle.

Bifold Doors

To change the side of a bifold door that is fixed, select it then click the **Change Opening/Hinge Side** edit button.



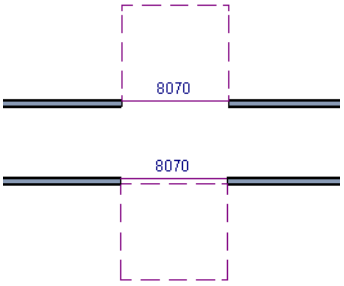
To change the hinged side of the door, click the **Change Swing Side** edit button.



As with hinged doors, you can also change the Opening/Hinge and Swing sides of a bifold door by clicking and dragging the triangular edit handle.

Garage Doors

To change the side of a garage door that it faces, select it and click the **Change Swing Side** edit button.



As with other door types, you can also change the Swing side of a bifold door by clicking and dragging the triangular edit handle.

In Door Schedules

Both Hinge Side and Swing can be included in Door Schedules. See “Columns and Objects to Include” on page 1234.

Special Doors

A variety of special doors and doorways can be created in Chief Architect.

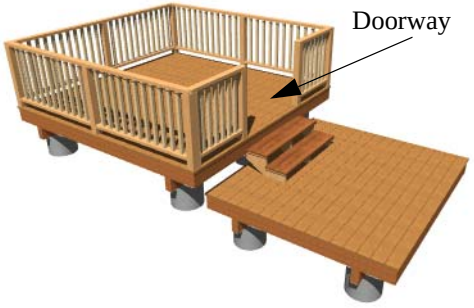
Wrapped Openings

Wrapped openings of various shapes are available in the **Doors & Doorways Library**.

You can also create a wrapped opening by unchecking **Use Interior Casing** and/or **Use Exterior Casing** in a Doorway's **Door Specification** dialog. See "Casing Panel" on page 372. If base molding is present, it will wrap around the opening.

Openings in Railings

Use the **Doorway** tool to open a railing for a stairway or other access.



To open a railing across an entire section, resize the doorway's **Width** so that it is greater than the length of the railing in the **Door Specification** dialog. The opening resizes to the maximum width possible for that space. See "General Panel" on page 368.

To add a gate, specify the doorway's **Door Type** as a Door, then choose an appropriate gate as the **Door Style**. A selection of gates is available in the Fences & Railings library folder. See "Placing Library Objects" on page 814.

Transoms Above Doors

Transom windows above doors are created the same as other stacked windows. See "Grouped Windows" on page 388.

Recessed Doors

A door placed in a brick or stone wall is often recessed into the wall's exterior. In the illustration below, the door to the right is recessed, so the brick wraps the opening. The door on the left is not recessed, so the casing is outside the brick.

You can specify a door as recessed in the **Door Specification** dialog. See "Options Panel" on page 370.

Blocked Doors and Windows

Combinations of doors and windows can be blocked. Blocked units are mulled together and can be copied together as a unit. Blocked units containing doors can be treated as either windows or doors for materials list and

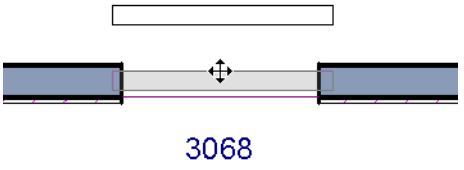
schedule generation. See “Make Mulled Unit” on page 389.

Creating a Doorway with a Railing

When a railing is specified as **No Room Def**, it can be positioned within a **Doorway** .

To create a doorway with railing

1. Place a **Doorway** at the desired location in your plan.
2. Select **Build> Wall> Straight Railing** , then click and drag to draw a railing parallel to the wall with the doorway.
3. Select the railing, then use the Resize edit handles to adjust the length of the railing as needed. See “Using the Edit Handles” on page 185.
4. With the railing selected, click the **Open Object** edit button.
5. On the General panel of the **Railing Specification** dialog, check **No Room Def** and click OK. See “General Panel” on page 302.
6. With the railing still selected, Ctrl + drag it into position within the doorway. See “To move an object freely” on page 218.



Positioning a railing in a doorway

Placing a Gable Over a Door

Click the **Gable Over Door/Window** edit button to produce a gable roof over the selected door(s) the next time automatic roofs are built. See “Gable/Roof Lines” on page 503.

You can manually edit or delete this gable line at any time. Your changes take effect when the automatic roofs are rebuilt. This can also be used with group selected doors.

Importing Doors

You can import custom door symbols and save them in your library for use in future plans. See “Custom Symbols” on page 1159.

Custom Muntins

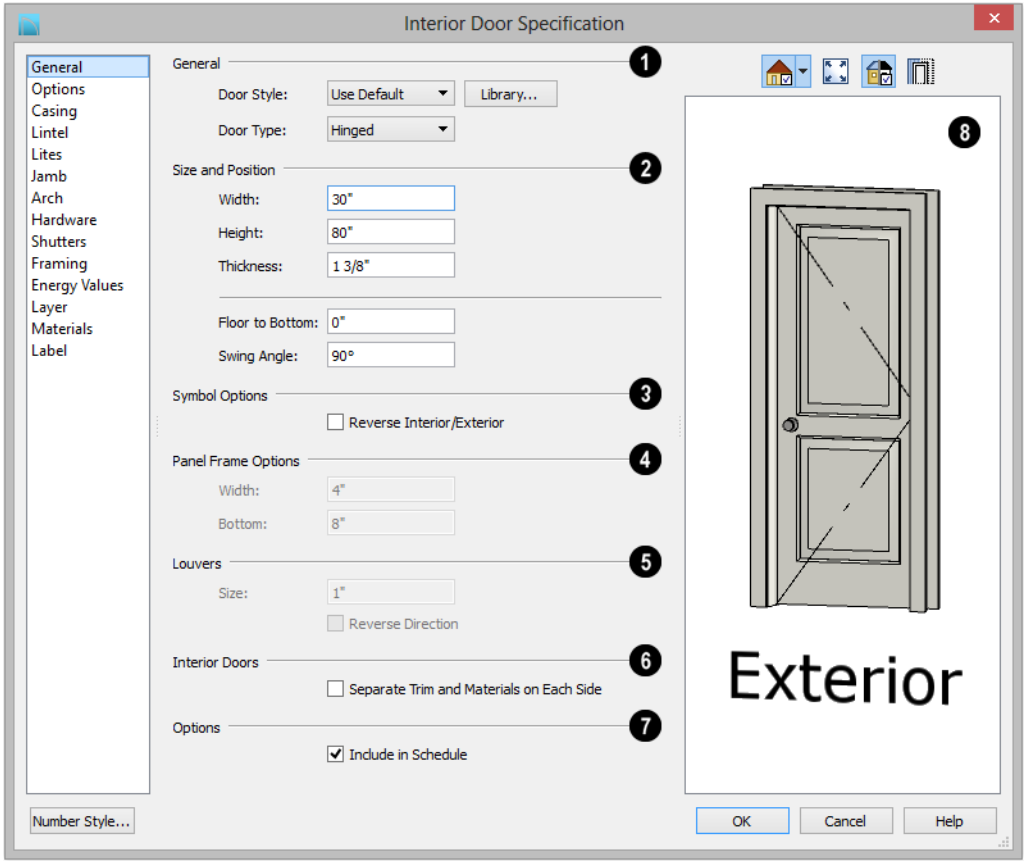
Like windows, doors that are specified as “Glass” can have custom muntins. Custom muntins are created from CAD lines. See “Custom Muntins” on page 396.

Door Specification Dialog

To open the **Interior** or **Exterior Door Specification** dialog, select a door or group of doors and click the **Open Object** edit button or double-click on a door using the **Select Objects** or any **Door** tool.

The Lintel, Framing, and Energy Values panels are also found in the Window Specification dialog. In addition, the Frame panel for windows is similar to the Jamb panel for doors. See “Window Specification Dialog” on page 398.

General Panel



1 General

- **Door Style** - Select Slab, Glass, Panel, or Louvered from the drop-down list; select

a style from the Library; or choose Use Default to use the default door style set in the **Door Defaults** dialog. See “Door Defaults” on page 355.

- Select “Library” from the drop-down list or click the **Library** button to choose a door symbol from the library. Once a library door is selected, its name is added to the Door Style list. See “Select Library Object Dialog” on page 816.
- Specify the **Door Type** as Doorway, Hinged, Slider, Pocket, Bifold, or Garage. In the Door Defaults dialogs, the Door Type cannot be changed.

❷ Specify the **Size and Position** of the selected door.

- Specify the **Width**, **Height**, and **Thickness** of the door.
- **Floor to Bottom** - Specify the height of the bottom of the door frame as measured from the subfloor.
- Specify the **Swing Angle** of the selected door in floor plan view, between 0° and 180°. An angle of 0° displays the door as closed and an angle of 180° displays it as wide open. The Swing Angle for Bifold doors and double doors that swing from the center can be no more than 90°.

  The Swing Angle also affects the door’s appearance in 3D views if **Draw Closed** is unchecked on the Options panel.

❸ **Panel Frame Options** - Specify the dimensions of the selected door’s rails and stiles. Only available for Glass, Panel, and Louvered doors.

- Specify the **Width** of the stiles and top rail.
- Specify the height of the **Bottom** rail.

❹ **Symbol Options** - Check **Reverse Interior/Exterior** to reverse the two sides of the selected door so that they face the opposite direction. Only available when a door symbol from the Library is specified as the Door Style. See “Door Sides” on page 362.

❺ **Louvers** -

- Specify the **Size**, or vertical height, of the selected door’s louvers. Only available for Louvered and Glass Louvered doors.
- By default, louvers face the direction that the door swings. Check **Reverse Direction** to reverse the direction that they face.

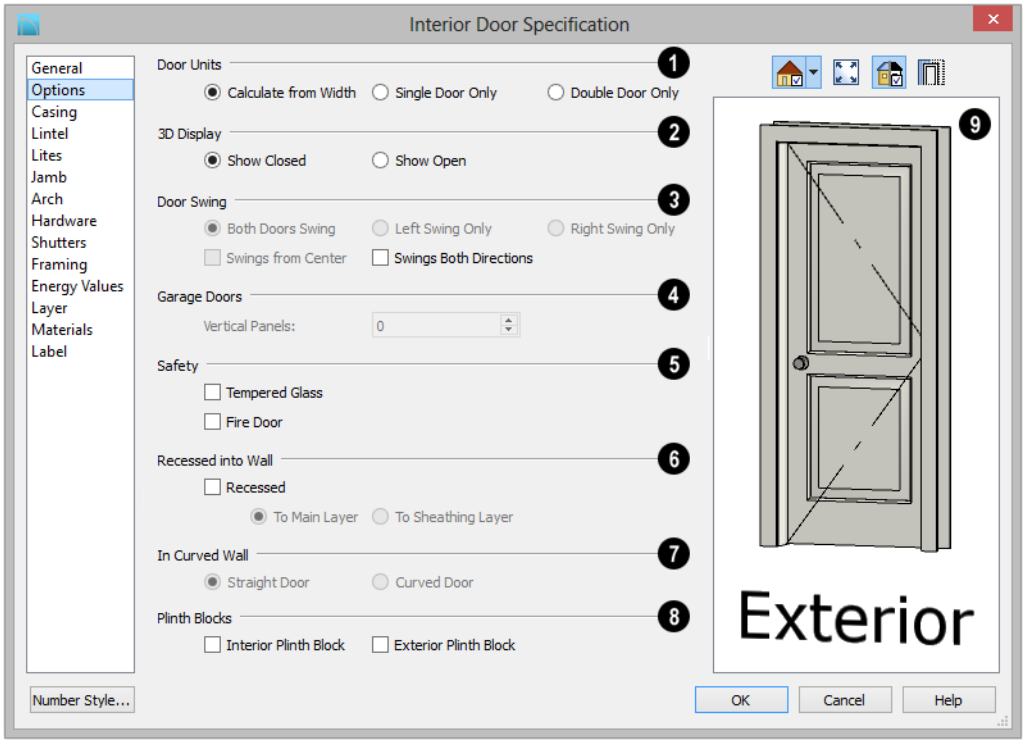
❻ The **Interior Doors** settings are only available when the selected door is placed in an interior wall. See “Exterior and Interior Walls” on page 263.

- Check **Separate Trim and Materials for Each Side** to specify the casing, lintels, and all materials for each side of the selected door independently. When unchecked, the two sides of the door use the same trim and materials.

❼ Check **Include in Schedule** to include the selected door(s) in Door Schedules. See “The Schedule Tools” on page 1232.

❽ A preview of the door displays on the right side of the dialog box. See “Dialog Preview Panes” on page 38.

Options Panel



1 Specify the number of **Door Units** or panels that the selected door has. Not available for garage doors.

- Select **Calculate From Width** to use the program defaults. Hinged, Pocket and Bifold doors default to **Single Door** when less than four feet (1200 mm) wide. If the width is greater than four feet, **Double Door** is the default.
- Select **Single Door** to force the selected hinged, pocket or bifold door to be a single door, regardless of its width.
- Select **Double Door** to force the selected hinged, pocket or bifold door to be a double door, regardless of its width.
- If a Slider door is selected, instead choose **Two**, **Three**, or **Four Panel**.

Note: The defaults for Calculate From Width are not editable.

2 **3D Display** - Specify whether the selected door is drawn open or closed in 3D and cross section/elevation views.

If **Draw Open** is selected, the Swing Angle set on the General panel is used in 3D views. See “General Panel” on page 368.

3 **Door Swing** - Specify how the selected door swings. Most options here are only available when the selected Hinged or

Pocket door is a Double Door. Not available for Bifold, Slider or Garage doors. See “Changing Door Swings” on page 363.

- Check **Both Doors Swing** to allow both sides of a Double Door to swing.
- Check **Left Swing Only** or **Right Swing Only** to allow only the left or right side of a Double Door to swing.
- Check **Swings from Center** to create a Double Door with hinges at the center rather than at the outside edges.
- Check **Swings Both Directions** to allow a door or both sides of a Double Door to swing both directions.

4 For a selected **Garage Door**, specify the number of **Vertical Panels**.

- If the selected door has been specified as the “Glass” Door Type on the General panel, the top Vertical Panel will be glass and the rest, solid panels. The number and style of the lites and the Muntin Width can be specified on the Lites panel.

5 The **Safety** settings afffect how the selected door is listed in the Door Schedule. See “Schedules and Object Labels” on page 1231.

- Check **Tempered Glass** to specify the selected door as having tempered glass.
- Check **Fire Door** to specify the selected door as being a fire door.

6 The **Recessed into Wall** options allow you to recess the selected door’s jamb into a wall, away from the exterior surface. This setting also affects the exterior casing and lintel, if used. Only available if the door is placed in a multi-layered wall. See “Wall Type Definitions” on page 295.

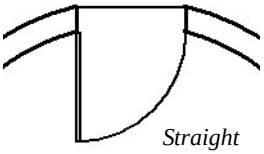
Not Recessed

Recessed to Main Layer

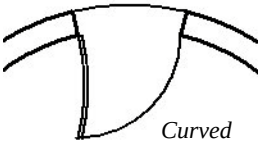
Recessed to Sheathing Layer

- Check **Recessed** to activate the settings that follow.
- Select **To Main Layer** to recess the door to the wall’s Main Layer.
- Select **To Sheathing Layer** to recess the door to the wall’s sheathing layer.

7 **In Curved Wall** - Specify whether a door placed in a curved wall is **Straight** or **Curved**. Curved is selected for Pocket Doors and cannot be changed. See “Drawing Curved Walls” on page 272.



Straight



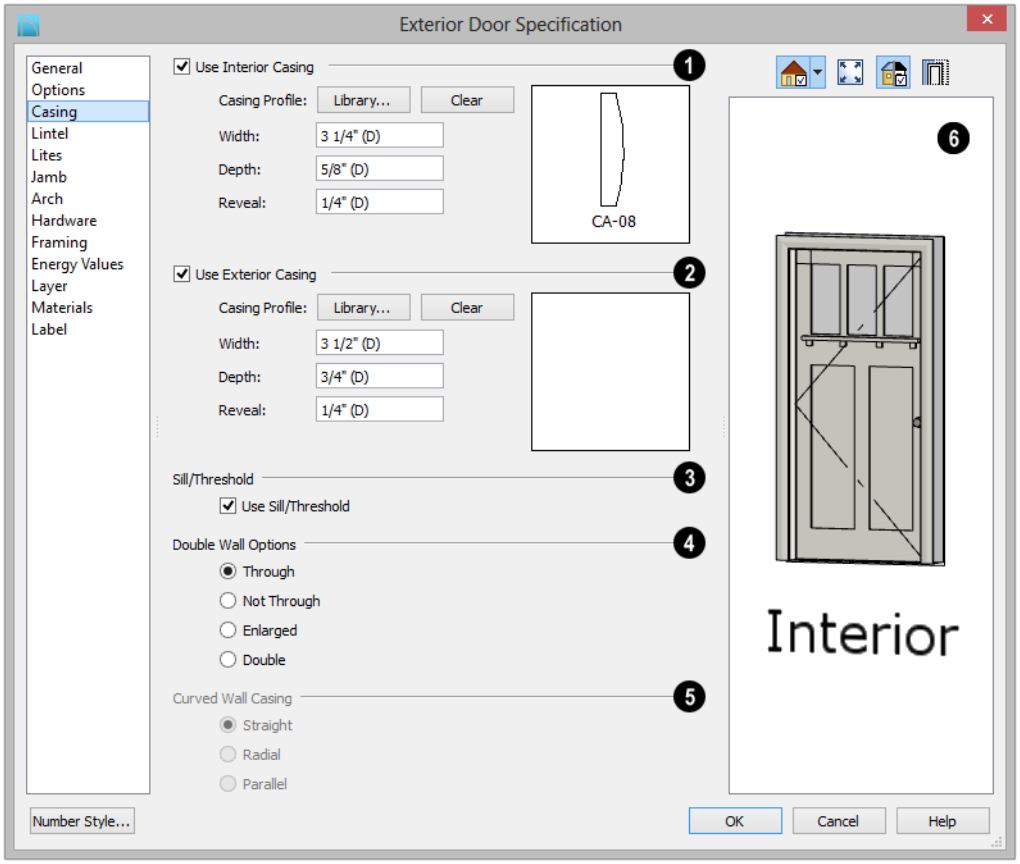
Curved

8 **Plinth Blocks** - Add an **Interior Plinth Block** and/or **Exterior Plinth Block** to

the selected door. Plinth blocks do not display in 3D views, but are counted in the Materials List.

9 A preview of the door displays on the right side of the dialog box. See “Dialog Preview Panes” on page 38.

Casing Panel



1 Check **Use Interior Casing** to enable the settings that follow, then specify the interior casing for the selected door(s) using those settings. When this box is unchecked, no casing is used.

- **Casing Profile** - Click the **Library** button to select a molding profile for the casing. A preview of the casing profile displays to the right. See “Select Library Object Dialog” on page 816.
- Click the **Clear** button to remove a selected casing profile from the door.
- Specify the **Width** of the selected casing.

- Define the **Depth** of the selected casing, as measured from the back to the front of the casing profile.
- Define the **Reveal**, which is the distance between the inside edge of the door frame and the inside edge of the casing.

❷ Check **Use Exterior Casing** to enable the settings that follow, then specify the exterior casing for the selected door(s) These settings are the same as those for the Interior Casing, and are not available for doors in interior walls unless **Use Exterior Trim and Materials** is checked on the General panel. See “General Panel” on page 368.

❸ Uncheck **Use Sill/Threshold** to prevent a sill from being generated under the door. See “Displaying Doors” on page 359.

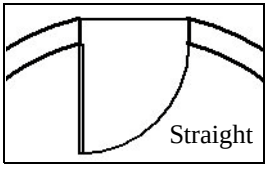
❹ The **Double Wall Options** affect doors placed in a Double Wall. See “Double Walls” on page 292.

- Select **Through** to create a single jamb running through both Double Walls. This option is selected by default.
- If **Enlarged** is selected, casing is created only on the wall the door is inserted in. The opening on the other wall is enlarged to accommodate the casing.
- Select **Double** to place a second door in the Double Wall opposite the selected door. This second door cannot be selected. Casing is produced as with the **Through** type window.
- Select **Not Through** to place the door in one wall with no corresponding opening in the other wall.

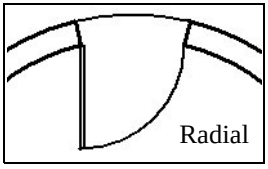
❺ The **Curved Wall Casing** settings are enabled if the selected door is located in a curved wall. See “Drawing Curved Walls” on page 272.

Door and window casing and jamb can be constructed three ways in curved walls:

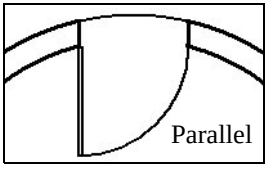
- **Straight** - Both the door and casing are straight. This can be used where the wall’s curvature is not too sharp and the opening is not too wide. It cannot be selected for Pocket Doors, which must be curved if placed in a curved wall.



- **Radial** - A vertical surface that would be perpendicular to a straight wall has its plane pass through the wall's center of curvature.



- **Parallel** - A vertical surface that would be perpendicular to a straight wall remains parallel to the line from the wall center through the opening center.



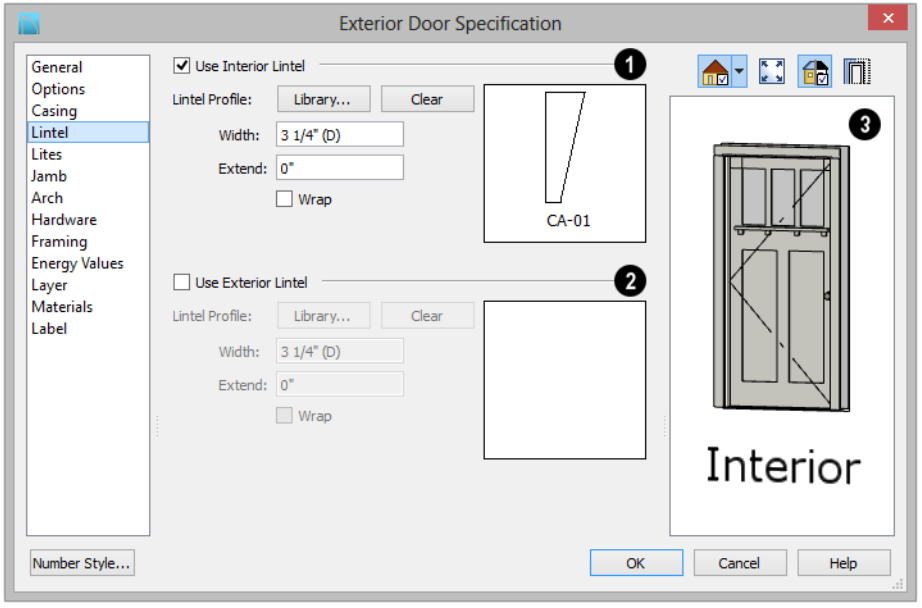
❻ A preview of the door displays on the right side of the dialog box. If casing is not specified for a Doorway, the Show Wall

option will be toggled on automatically. See “Dialog Preview Panes” on page 38.

Lintel Panel

The settings on the Lintel panel allow you to assign a lintel,or top molding that meets the side casing using a butt joint instead of a mitred joint. These settings are not available if the door has a reflected arch. See “Arch Panel” on page 376.

The profiles and materials of door and window lintels can be included in Room Finish Schedules.



1 Check **Use Interior Lintel** to enable the settings that follow, then specify the lintel applied to the interior side of the selected door(s) using these settings. When this box is unchecked, no lintel is used.

- **Lintel Profile** - Click the **Library** button to select a molding profile for the lintel. A preview of the selected profile displays to the right. See “Select Library Object Dialog” on page 816.
- Click the **Clear** button to remove a selected lintel profile from the door.
- Specify the **Width** of the lintel. This value is independent of the casing’s width; however, the lintel does inherit its depth from the casing.
- Specify how far to **Extend** the lintel past the outside edges of the casing on each side.

- Check **Wrap** to wrap the lintel profile back toward the wall.

❷ Check **Use Exterior Lintel** to enable the settings that follow, then specify the exterior lintel for the selected door(s) using these settings. These settings are the same as those for the Interior Lintel, and are not available for doors in interior walls unless Use Exterior Trim and Materials is checked on the General panel. See “General Panel” on page 368.

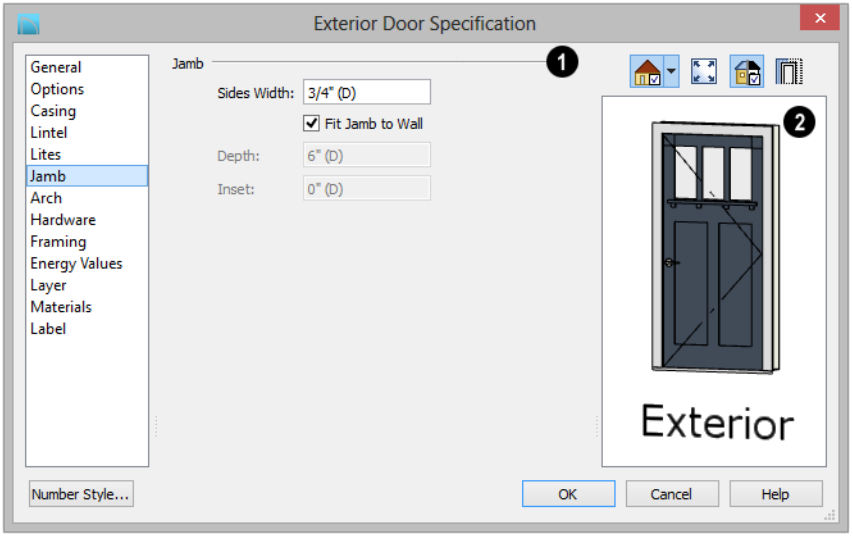
❸ A preview of the door displays on the right side of the dialog box. See “Dialog Preview Panes” on page 38.

Lites Panel

The settings on the Lites panel of the **Door Specification** dialogs are only available when the selected door is specified as a Glass door on the General Panel. These settings are also found on the Lites panel of the **Window Specification** dialog. See “Lites Panel” on page 407.

Jamb Panel

The settings on the Jamb panel are similar to those on the Frame panel of the **Window Specification** dialog. See “Frame Panel” on page 406.



❶ Specify the attributes of the selected door’s **Jamb**.

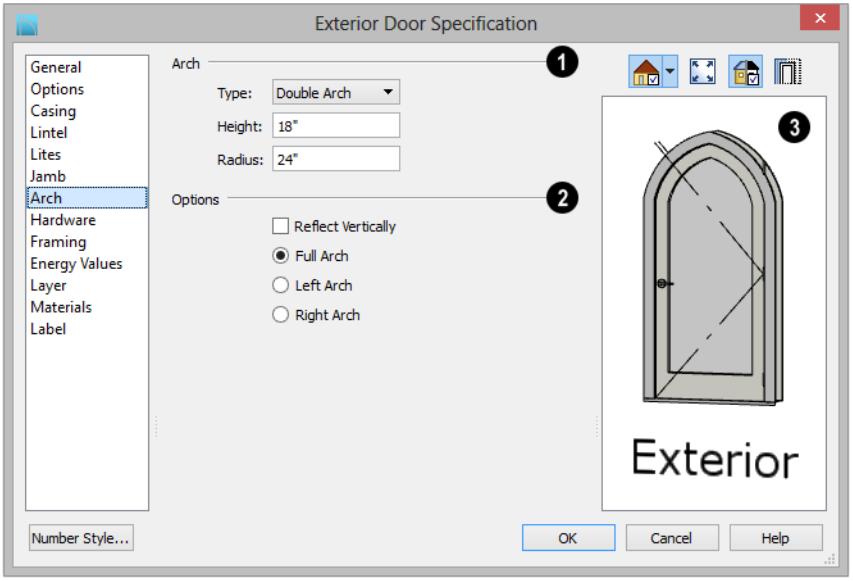
- Specify the **Sides Width**, which is the thickness of the pieces of the door jamb that display in floor plan view.

- Uncheck **Fit Jamb to Wall** to specify the Depth and Inset of the selected door's jamb. When this box is checked, the jamb Depth automatically extends from the Recessed Into Wall layer to the wall's inside surface with an Inset of 0". The Recessed Into Wall layer is specified on the Options Panel of this dialog.
- Specify the **Depth** of the door jamb from front to back.
- Specify the jamb's **Inset**, which is measured from the the Recessed Into Wall layer and moves the door jamb towards its interior side. If used, the casing and lintel are not affected by this setting.

❷ A preview of the door displays on the right side of the dialog box. See "Dialog Preview Panes" on page 38.

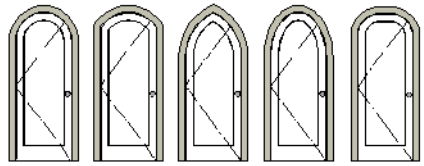
Arch Panel

The settings on the Arch panel are not available if the selected door is a Sliding, Bifold or Garage door. They are also unavailable if the selected door has been assigned a lintel. See "Lintel Panel" on page 374.

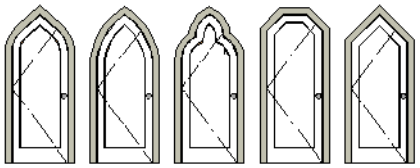


❶ Define the style and size of the **Arch**.

- Select a **Type** of arch from the drop-down list.



Round Top *Broken* *Gothic* *Elliptical* *Flat Top*



Tudor *Double* *Trifoil* *Octo-gonal* *Dogear*

- Specify the **Height** of the arch, as measured from the base of the arch to the top of the door. Not available for Round Top and Octagonal Arches.
- The **Radius** can also be defined for Tudor and Double Arches.

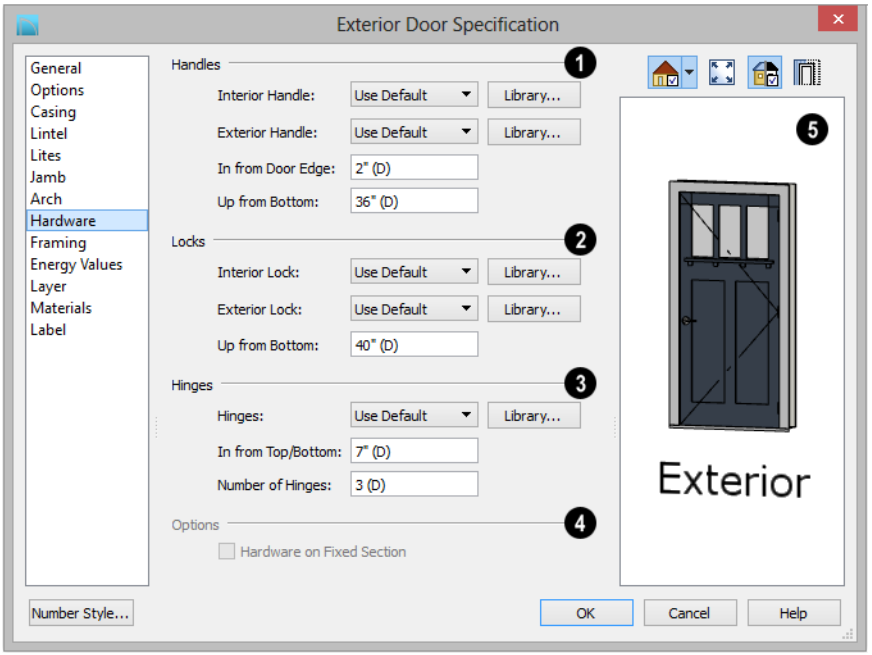
❷ **Options** - Define the orientation of the arch.

- Check **Reflect** to reflect the arch, top to bottom. This is rarely used for doors, but can be specified for windows to create unique configurations. Not available if a lintel is specified for the selected door. See “Lintel Panel” on page 374.
- Select **Full Arch** to produce an arch with the apex at the door’s center.
- Select **Left Arch** to produce an arch with the apex on the door’s right side.
- Select **Right Arch** to produce an arch with the apex on the door’s left side.

❸ A preview of the door displays on the right side of the dialog box. See “Dialog Preview Panes” on page 38.

Hardware Panel

Many of the settings on the Hardware tab are Dynamic Defaults: if “Use Default” is selected, the setting in the **Door Defaults** dialog is used. See “Dynamic Defaults” on page 74.



1 Specify the **Handles** to be used on the selected door.

- Select an **Interior Handle** and/or **Exterior Handle** from the drop-down lists. Select "Library" or click the **Library** button to select a handle from the library. See "Select Library Object Dialog" on page 816.
- Specify the location of the door handles **In From Door Edge**.
- Specify the location of the door handles **Up From Bottom**.

2 Specify the door's interior and exterior **Locks**.

- Select an **Interior Lock** and/or **Exterior Lock** from the drop-down lists. Select "Library" or click the **Library** button to select a lock from the library.
- Specify the location of the door locks **Up From Bottom**. The locks use the same In From Door Edge value as the handles.

3 Specify the **Hinges** to be used on the selected door.

- Select a style of **Hinges** from the drop-down list. Select "Library" or click the **Library** button to select a hinges from the library.
- Specify the distance **In From Top/Bottom** of the door to the center of the top and bottom hinges.

Note: For hinges to look right, it is best to have at least a 1/4" (6 mm) reveal for the interior, or hinge side, door casing.

- Specify the **Number of Hinges** on the selected door. Interior hinged doors and

bifold doors typically have two hinges while exterior hinged doors have three.

❹ Check **Hardware on Fixed Section** to include handles, locks, and hinges on the fixed side of a double Hinged door. Only available for Double Doors with Left or Right Swing Only selected. See “Options Panel” on page 370.

❺ A preview of the door displays on the right side of the dialog box. See “Dialog Preview Panes” on page 38.

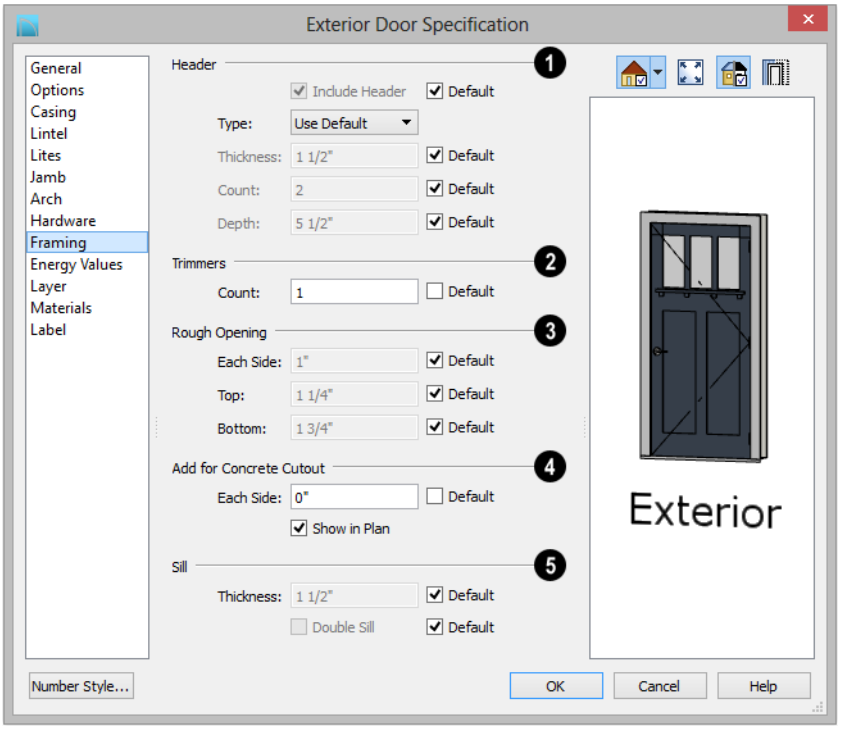
Shutters Panel

The settings on the Shutters panel of the **Door Specification** dialogs are also found on the Shutters panel of the **Window Specification** dialog. See “Shutters Panel” on page 379.

Framing Panel

The settings on the Framing panel control how the selected door or doors is framed. A similar panel is also found in the **Window Specification** dialog. See “Window Specification Dialog” on page 398.

⚠ Chief Architect is dependent upon user input and does not calculate loads or perform structural analysis. Always consult your local building authorities and contact a licensed engineer for structural calculations.



1 Specify the characteristics of the selected door's **Header**.

- Uncheck **Include Header** to prevent a structural header from generating when wall framing is created. When this box is checked, a header as defined below is generated; when it is unchecked, a single, non-structural, horizontal framing member of the same type as the wall studs is created above the door opening.
- Select the header's **Type** from the drop-down list.
- Specify the **Thickness** of each header framing member.
- Specify the **Count**, which is the number of the framing members used to create the header. Up to 10 headers can be specified, but only those that fit within the wall's framing layer will be generated when wall framing is created.
- Specify the vertical **Depth** of the header.
- In the **Door** and **Window Defaults** dialogs, an additional **Calculate from Width** checkbox is available. When checked, the header Depth is automatically calculated based on settings in the **Framing Defaults** dialog and the door's current width. See "Openings Panel" on page 574.

2 **Trimmers** - Specify the number of trimmers to be generated on each side of the selected door.

3 **Rough Opening** - Specify the amount to add to **Each Side**, the **Top** and the **Bottom** for the door's framed rough opening. The rough opening should be large enough to accommodate the door frame and space for shims. If the Bottom Rough Opening value is greater than the Floor to Bottom value, the difference is added to the top of the rough opening when framing is built.

4 **Add for Concrete Cutout** - Specify the amount to add to **Each Side** of the door opening when the upper part of the door is in a framed wall and the lower part is located in a concrete or masonry wall, stem wall, or garage curb. See "Wall Type Definitions" on page 295.

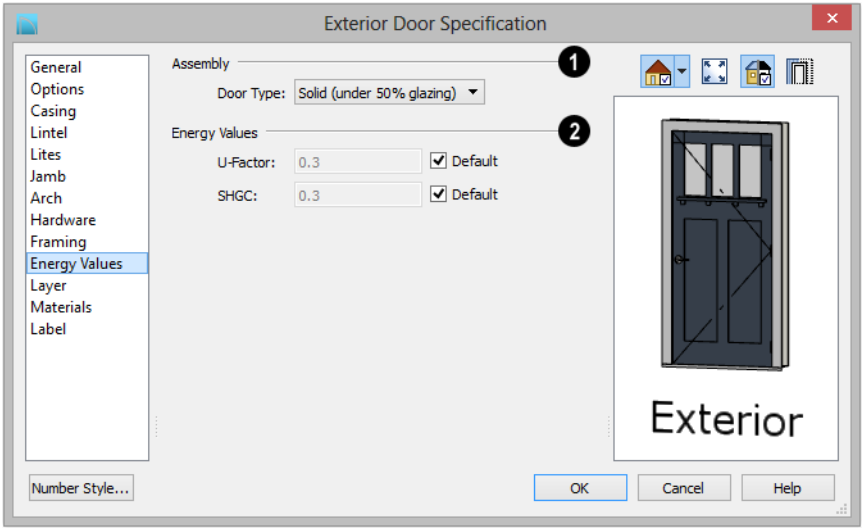
- Uncheck **Show in Plan** to suppress the display of the concrete cutout in floor plan view. A concrete cutout will only display in floor plan view if it is located in a garage curb. See "In Floor Plan View" on page 359.

5 **Sill** - When the bottom of a door is raised sufficiently off the floor, it will require a sill as part of its framing.

- Specify the vertical **Thickness** of the sill.
- Check **Double Sill** to generate two sill members of the specified thickness instead of one.

Energy Values Panel

The settings on the Energy Values panel let you specify information used for export to REScheck. See "Export to REScheck" on page 1157.



1 **Assembly** - Select a **Door Type** from the drop-down list.

2 **Energy Values** -

- Specify the selected door's **U-Factor**.
- Specify the selected door's **SHGC** (Solar Heat Gain Coefficient).

Layer Panel

The Layer panel is available for a variety of different objects. For more information, see "Layer Panel" on page 152.

Materials Panel

The Materials panel is available for a variety of objects throughout the program. For more information, see "Materials Panel" on page 831.

Label Panel

Door labels display in floor plan view and cross section/elevation views when the "Doors, Labels" is turned on and use the Text Style assigned to that layer. See "Door Labels" on page 360.

For information about the settings on this panel, see "Label Panel" on page 1243.

Door Schedules

The **Door Schedule** tool allows you to produce customizable door schedules as well as door labels that display schedule numbers. See "The Schedule Tools" on page 1232.

If a door is included in a Mulled Unit, it may instead be listed in a window schedule. See "Make Mulled Unit" on page 389.

Door casing profiles and materials can also be included in Room Finish Schedules.

Chapter 11:

Windows

Chief Architect can model a wide variety of windows. Fixed glass, hung, casement, sliding, awning, hopper, and louver window styles can all be created with the standard Window tool. The shape of a window can be angled or made into a round top or other arch styles. Chief Architect can create bay, box, and bow windows with a single click. In addition, the library contains many mulled window combinations and additional name-brand door catalogs are also available for download from our web site, chiefarchitect.com.

Once windows have been placed in the model, the program can automatically generate a window schedule. See “The Schedule Tools” on page 1232.

Chapter Contents

Window Defaults

Default Settings can be accessed by selecting **Edit> Default Settings**. Select Window from the **Default Settings** dialog and click the **Edit** button.

You can also double-click the **Window Tools** parent button to open the **Window Defaults** dialog.

The settings in the **Window Defaults** dialog control the attributes of a window when it is initially placed in a plan, so you should define the type of window that will be placed most often in your model. See "Default Settings" on page 72.

The panels in the **Window Defaults** dialog are similar to those found in the **Window Specification** dialog, with one exception:

On the General panel of the **Window Defaults** dialog, you can specify the **Minimum Separation** for component doors and windows in mulled units in the plan.

The **Minimum Separation** value in the **Window Defaults** dialog specifies how close windows in a mulled unit can be to each other. This setting also determines the width of the shared casing. If 0 is specified, no casing is created between mulled units.

For more information, see "Window Specification Dialog" on page 398.

Dynamic Window Defaults

A variety of window default values are dynamic, including the **Window Type, Add for Rough Opening** values, **Casing**, **Lintel** and **Sill Specifications**, **Sash** and **Frame** sizes, and **Treatments**. All **Materials** are also dynamic. When a dynamic default is changed, existing windows using the default value are affected. See "Dynamic Defaults" on page 74.

Window Framing

The defaults for window framing can be defined in the **Window Defaults** dialogs. You can also specify an additional amount to cutout for window openings in concrete walls when the upper part of the window is located in a framed wall. See "Framing Panel" on page 415.

The Window Tools

To place a window, select **Build> Window** and choose the desired window type. Click on a wall to place a window of the selected type at that location. Bay, box and bow windows can only be placed in straight walls, while standard windows can be placed in both straight and curved walls.

Windows cannot be placed in a wall specified as Invisible or if the wall in question is on a locked layer. See "Locking Layers" on page 145.

Standard Windows

Select **Build> Window> Window**, then click on a straight or curved wall to place a standard window at that location.

A standard window is a single window that is not a bay, box, bow window, a corner window or a blocked unit. These special types are made up of multiple standard windows.

A standard window that is part of a special window is called a component window.

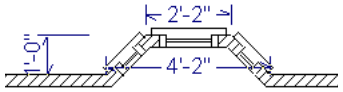
Standard windows can be specified as any of a variety of window types, such as double hung, casement and awning. See “Window Specification Dialog” on page 398.

Bay Windows

> The roof is affected by Bay, Box and Bow Windows. These windows should therefore be placed before the roof is built.

A **Bay Window** is composed of three wall sections, each with a single component window. The two side walls are at an angle to the main wall. Select **Build> Window> Bay Window** and click on a straight wall to produce a bay window.

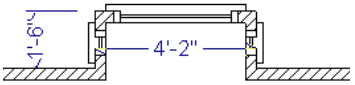
When initially placed, bay windows measure 2’-2” across at the front, 4’-2” across at the back, and are 1’-0” deep. The component windows are specified in the **Window Defaults** dialog and their sizes adjust to fit the available space.



Box Windows

A **Box Window** is a bay window with side angles set at 90°. Select **Build> Window> Box Window** and click on a straight wall to produce a box window.

Box windows initially measure 4’-2” wide with a depth of 1’-6”. The component windows are specified in the **Window Defaults** dialog and their sizes adjust to fit the available space.



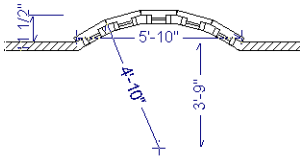
Bow Windows

A **Bow Window** is a group of identical wall segments that form a segmented curve. Select **Build> Window> Bow Window** and click on a straight wall to produce a 5-section bow window.

Bow windows can be composed of between two and twenty sections. The number of bow window components can be changed in the **Bow Window Specification** dialog. See “Bay/Box and Bow Window Specification Dialogs” on page 420.

The component windows are specified in the **Window Defaults** dialog. Their sizes adjust to fit the available space.

The 5-section bow below has a 4’-10” radius centered 3’-9” inside the wall, giving an opening 5’-10” across and a depth of 11½”.



Note that for a bow with an odd number of sections, the radial dimension is from the center of the arc to an outside corner where two window sections join. The depth (11 ½") is measured to the flat area of the center section, not to a corner. As a result, the radius is a bit greater than the sum of the depth and the distance from the center of the bow's curve to the exterior of the wall.

Note: Bay, box, and bow window areas are not included in the living area or in room standard area calculations. They are included in room interior area calculations.

Pass-Through

Select **Build> Window> Pass-Through**, then click on a straight or curved wall to place a Pass Through at that location.

A Pass-Through is simply a wall opening without a window unit placed inside. Like a window, it can have casing and a sill. It does not, however, have a sash, frame, or glass. It is one of the window **Types** available in the **Window Specification** dialog. See "General Panel" on page 398.

Windows Library

Select **View> Library Browser**, then browse to Chief Architect Core Catalogs> Architectural> Windows to access a selection of special window units. Select the desired window, then click on a wall to place the window at that location.

Special Windows

A variety of special windows can be created using multiple standard windows, the edit tools or custom symbols.

Creating Manual Bay, Box and Bow Windows

Sometimes it is easier to draw bay, box and bow windows manually than to use the automatic tools. Bays created using walls can have more than one window per section, which is not possible using a bay window unit.

Bear in mind that moving a manually created bay, box or bow window is generally more difficult than moving a unit created with one of the **Window Tools** since it is composed of individual walls.

Corner Windows

Corner windows are produced when each window has one edge at or past the interior side of the adjacent wall.

To create a corner window, first create the desired window on each side of the corner. The header height and the sill height of both windows must be the same.

To move a window all the way into a corner, check Ignore Casing for Opening Resize in the Plan Defaults dialog. See "General Plan Defaults Dialog" on page 86.

Slant top, or shaped windows can be components of corner windows as long as their heights are equal at the corners. Windows with single or two segment tops can be used, but windows with three cannot. If a two segment window is used, the segment nearest the corner must be flat.

Once the corner window is formed, its components and corner post size can be adjusted using dimension lines. Blocked units can also meet at a corner this way.

Special Window Shapes

A selection of special shaped windows is available in the Windows Library, including arched windows and mulled units.

In addition, you can create a wide variety of window shapes in the **Window Specification** dialog, including:

- Arched windows. See "Arch Panel" on page 411.
- Trapezoidal windows. See "Shape Panel" on page 409.
- Round windows can be created by reflecting an Round Arch window vertically. See "Arch Panel" on page 411.

Recessed Windows

A window or mulled unit placed in a brick or stone wall is often recessed into the wall's exterior, so the brick wraps the opening.

You can specify a window as recessed in the **Window Specification** dialog. See "Options Panel" on page 399.

Window Symbols

You can import custom windows and save them in your own library for use in future plans. See "Custom Symbols" on page 1159.

By default, window symbols are assigned the "Custom" Type in Window Schedules and in the **Window Symbol Specification** dialog, and they use automatic labels appended with the letters CU. The Type is derived from the **Symbol Specification** dialog, where you can also select the CAD block used to represent the symbol in floor plan view. See "Symbol Specification Dialog" on page 1159.

Placing a Gable Over a Window

Click the **Gable Over Door/Window** edit button to produce a gable roof over the selected window(s) the next time automatic roofs are built. See "Gable/Roof Lines" on page 503.

You can manually edit or delete this gable line at any time. Your changes take effect when the automatic roofs are rebuilt. This tool can also be used with group selected windows.

Stained Glass

A selection of solid stained glass materials is available in the Chief Architect Core Catalogs> Materials> Glass library. See “Materials” on page 827.

Vents

A selection of attic, foundation and gable vents are available in the Library Browser. See “The Library” on page 797.

Vents are placed in the same manner as regular windows and can be edited in much the same way, as well.

Grouped Windows

Windows can be grouped together to create a wide variety of custom configurations. Stacked windows are easy to create in 3D views, particularly cross section/elevation views, using their edit handles. See “Editing Windows” on page 395.

Notice how the windows and door in this example are separate, with spaces between them. Doors and/or windows can also be organized into a unit in which there are no spaces between the windows and door units, and the casing between them is shared.

To help organize their display in floor plan view, you can place stacked windows of varying heights on different Window Levels. See “Window Levels” on page 391.

Automatically Mulled Openings

To form a mulled group of windows and/or doors, move them close enough together so that their casings touch. Once the casings touch, the windows are mulled together with one casing between the two of them.

The sill of each window in the group must be at the same level for them to share the middle casing. The casing tops do not have to be at the same level. The casings are modeled as if they are one unit but the windows remain separate objects for dimensioning and the Materials List.

Windows can be automatically mulled to doors if the bottom of the window is at the elevation of the floor, equal to the bottom of the door.

The **Minimum Separation** value in the **Window Defaults** dialog specifies how close mulled window and door units can be to each other. Define a value that specifies the

desired width for the shared casing. See “Window Defaults” on page 384.

Mulled Units in the Library

A selection of mulled window units is available in the Windows library. To place one in your plan, select it and click on a wall in any view. See “Placing Library Objects” on page 814.

Make Mulled Unit

Windows and doors can be selected as a group and blocked together into a single unit by clicking the **Make Mulled Unit** edit button.

Make Mulled Unit

The **Make Mulled Unit** edit tool allows you to block a group of selected windows and/or doors into a single unit.

Wall openings in a mulled unit are referred to as components. Components of a mulled unit must be within 24” (600 mm) of one another in order to become a blocked unit; however, their casings do not have to touch.

Windows and doors in a mulled unit can be framed as a single opening or as multiple openings, and can be listed as a single unit or individual objects in the Materials List. See “Materials Lists” on page 1247.

To create a mulled unit

1. In any view, group-select multiple windows and doors on the same wall that are within 24” of each other.
2. Click the **Make Mulled Unit**  edit button to create a block.

The **Make Mulled Unit**  edit tool can be used to block component windows and/or doors only if they meet the following requirements:

- They must be placed in the same wall.
- Adjacent objects be within 24” (600 mm) of one another (side to side or top to bottom).
- The edges of adjacent components that face one another must be parallel.
- The edges of adjacent components that face one another must be straight, not curved.
- The selected components can be adjacent vertically or horizontally, but not a combination of the two. Complex units can be formed only by mulling several blocks together.

Unlike automatically mulled openings, adjacent component edges of mulled units do not need to be the same length.

Mulling Stacked Openings

Group selection can be done in floor plan view or any 3D view. Floor plan views work well for blocking windows that are side-by-side, but a camera or elevation view is needed to block vertically stacked objects.

To block stacked openings

1. In a cross section/elevation view, select the door and the windows on level 1 and 2 above it, then click the **Make Mulled Unit** edit button.
2. Repeat step 1 with the sidelight on the right and the window above it.
3. Repeat step 1 with the sidelight on the left and the window above it.
4. Group select the three vertically joined units and click the **Make Mulled Unit** edit button to join them side to side.

The configuration of the horizontal and vertical mullions in a mulled unit will vary depending on the order in which you block stacked openings.

- If you form a mulled unit by first blocking objects vertically, the vertical mullions of the larger unit will extend continuously from the bottom to the top of the entire unit, breaking any horizontal mullions.
- If you form a mulled unit by first blocking objects horizontally, the horizontal mullions of the larger unit will extend from side to side, breaking any vertical mullions.

In a complex unit composed of smaller units, there may be a variety of ways to organize the sub-units.

Selecting Components of Mulled Units

To select a component of a mulled unit, click at the location of the component in question, then click the **Select Next Object** edit button or press the Tab key until that individual component is selected. Only the component clicked on is selectable using this method. If you need to select a different component, click on it and repeat the process.

The selected component may be on any window level in the mulled unit. If there are multiple levels, it is easiest to select the components in a 3D view. When you have selected an individual component, you can change its parameters in the **Window Specification** dialog. See “Window Specification Dialog” on page 398.

If the selected component is not itself a mulled unit and has no components above it, its **Height** and **Arch** parameters can be changed. Changing the Height causes the component top to move. The bottom remains stationary.

Displaying Mulled Units

As with other windows, the display of mulled window units is controlled in the **Layer Display Options** dialog. See “Displaying Objects” on page 144.

Mulled units are placed on the “Windows” layer by default and have a single label, which is on the “Windows, Labels” layer. Mulled units are also included in the windows category of the Materials List and in window schedules. If the component objects of a mulled unit have unique moldings or materials, they will not be noted in the Materials List or in room finish schedules. See “Schedules and Object Labels” on page 1231.

If a mulled unit includes a door, **Treat as Door** will be checked in the **Mulled Unit**

Specification dialog. When this box is checked, the unit's label is placed on the "Doors, Labels" layer but the unit itself remains on the "Windows" layer unless you change it. Units set to **Treat as Door** are also included in the Doors category of the Materials List and in door schedules instead of window schedules. Similarly, their casing is recognized as door casing in room finish schedules. See "Options Panel" on page 399.

You can, if you wish, display a mulled unit's individual component labels instead of a single label for the unit. Labels are placed on the layers they would be on were the unit not mulled. A mulled unit's label setting also affects how it is listed in schedules and in the Materials List. See "Label Panel" on page 416.

- When **Suppress All Labels** is selected, individual components are counted in schedules and in the Materials List.
- When **Show Component Labels** is selected, components are counted in schedules and in the Materials List.
- When **Show Single Label for Entire Unit** is selected, the unit is treated as a single object in schedules and the materials list.

Mulled units can be placed on different Window Levels to control their appearance in floor plan view. See "Window Levels" on page 391.

Editing Mulled Units

A mulled unit moves as a single standard window in both floor plan and 3D views.

The components of a mulled unit cannot be moved relative to one another. If this is required, you will first need to explode the mulled unit.

To explode a mulled unit

1. Select the mulled unit.
2. Click the **Explode Mulled Unit** edit button.

Window Levels

It is often necessary to position more than one window, mulled unit, and/or door at the same location along a wall in floor plan view: for example, to create an entry with side lites and transom.

To help control and organize the appearance of stacked wall openings in floor plan view, you can assign windows at various heights to different **Window Levels**.

Window Levels do not define the height of a window, just the appearance and behavior of windows and doors in floor plan view.

- In floor plan view, windows and doors on the **Default Level** display the line color and style of the layer they are on. See "Layers" on page 143.
- Windows on any other level appear light gray, regardless of the layer they are on.

The Default Level

The **Default Level** is the Window Level that Standard Windows are initally placed on when created and affects several things:

- In floor plan view, windows and doors on the **Default Level** display the line color and style of the layer they are on.
- When you click on stacked doors and windows in floor plan view, those on the Default Level are selected first. To select an opening on another level, use the

  Select Next Object next edit button. See "Select Next Object" on page 183.

Typically, the Default Level is set as 0 (zero).

Window Level Zero

Window Level 0 (zero) is the level that all bay, box and bow windows and doors are always placed on. Typically, it is also the Default Level that standard windows are placed on, as well.

Because doors are always on Level 0 and because Window Levels affect line colors in printouts, it is usually best to keep the Default Level at 0. If you do change the Default Level, remember to change it back before printing.

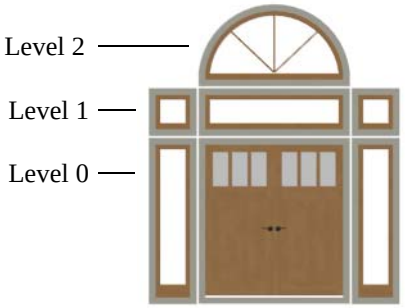
If you specify the Default Level as a value other than zero and then place a window in your plan, it will not use all Window Defaults settings. Instead:

- The program will position it above any windows that are at the same location but on a lower level rather than use the default Floor to Top height;
- Its Type will be Fixed Glass;
- Its Height will be 12" (300 mm);
- It will have no Sill.

Once the window is created, its parameters can be changed. See "Editing Windows" on page 395.

Using Window Levels

The door and windows in the illustration below were created on different Window Levels.



To stack windows using Window Levels

1. Place the door and side lites on Window Level Zero.
2. Open the **Window Defaults** dialog and change the Default Level to 1.
3. Place the second row of windows above the door and side lites on Level Zero. The program will automatically position fixed glass windows above the door and side lites.
4. Edit these fixed glass windows' Widths and other attributes as needed.
5. Open the **Window Defaults** dialog and change the Default Level to 2.
6. Place the top window above the others. The program will place a fixed glass window above the windows on Level 1.
7. Edit this window's Arch and other attributes as needed.
8. When you are finished, open the **Window Defaults** dialog and change the

Default Level back to 0.

In addition to using Window Levels to place and manage stacked windows, you can combine them into a single blocked unit. See “Make Mulled Unit” on page 389.

Displaying Windows

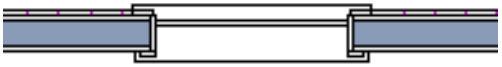
The display of windows, window labels, openings, casing, and headers in floor plan and 3D views can be controlled in the **Layer Display Options** dialog. See “Layer Display Options Dialog” on page 148.

Windows can only be placed in walls, so if a wall’s layer is turned off, any windows placed in that wall will not display, either. See “Displaying Walls” on page 274.

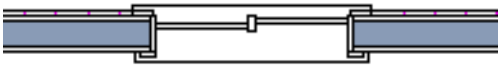
If the “Windows” layer is not set to display, window casing and other components are not visible, but the openings in the walls where they are located can still be seen.

In Floor Plan View

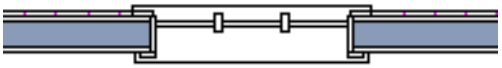
A window’s frame, glass, casing, and sill are all represented in floor plan view. This makes some window types, notably Sliding and Double and Triple Casement windows, distinguishable.



Double Hung



Left Sliding



Triple Casement

Window types in floor plan view

If a window is recessed, the affected wall layers will adjust to accommodate the casing.

Bay, box,and bow windows have dimensions lines associated with them.

- You can suppress their display by turning off the “Manual Dimensions” layer or on a unit by unit basis in the unit’s specification dialog. See “Bay/Box and Bow Window Specification Dialogs” on page 420.
- The arrow style and fill are set in the **Dimension Defaults** dialog. See “Dimension Defaults Dialog” on page 963.

Windows in pony walls display in floor plan view regardless of which part of the pony wall is visible. If you wish, you can instead display only openings located entirely in the

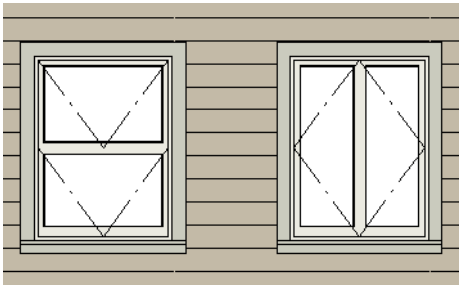
portion of a pony wall that is set to display in floor plan view. See “Pony Wall Defaults” on page 257.

If a window is placed in a Garage room at a height where it extends into the stem wall or curb, a cutout in the concrete will display on the floor below. You can specify the cutout’s size and whether it displays in floor plan view in the **Window Specification** dialog. See “General Panel” on page 398.

Interior and exterior window casings will display in all views when the “Casings, Exterior” and “Casings, Interior” layers are turned on. In floor plan view, the sills and vertical side casings will be shown, but the horizontal top casing or lintel will not.

In 3D Views

To show opening indicator arrows in Vector Views, turn on the “Opening Indicators” layer in the **Layer Display Options** dialog. See “Vector View” on page 928.



Windows showing opening indicators

You can change the direction of indicator arrows in the **Preferences** dialog. See “Architectural Panel” on page 107.

You can also specify whether window and door glass is opaque or transparent in Vector Views in the **3D View Defaults** dialog. See “Options Panel” on page 873.

Window Labels

Window labels display in floor plan and cross section/elevation views, centered on the windows they represent, when the “Windows, Labels” layer is turned on and use the Text Style assigned to their layer. See “Object Labels” on page 1241.

Automatic window labels indicate Width and Height, followed by Type. For example:

- In Imperial plans, the automatic label for a 3’-0” wide, 4’-0” high double hung window will read 3040 DH.
- In metric plans, the automatic label for a 900 mm wide, 1200 mm high double hung window will read 900x1200 DH.

If you prefer, you can use one of two other formats: Height/Width followed by Type and Width Only followed by Type. Label formats are specified in the **Window Schedule Specification** dialog or in the **Window Schedule Defaults** dialog if no schedule is present. See “Label Panel” on page 1239.

You can specify whether a Bay, Box or Bow Window displays a single label or displays the labels of its component windows. This choice will affect how the unit displays in schedules.

- When **Suppress All Labels** is selected, individual components of Bay, Box and Bow Windows are counted in schedules and in the Materials List.
- When **Show Component Labels** is selected, components of Bay, Box and Bow Windows are counted in schedules and in the Materials List.

- When **Show Single Label for Entire Unit** is selected, the Bay, Box or Bow Windows is treated as a single object in schedules but not in the materials list.

These options are also available for mulled units but affect their display in schedules and the materials list somewhat differently. See “Displaying Mulled Units” on page 390.

Customized labels using text and Object Specific Text Macros as well as label position and orientation can also be specified in the **Window Specification** dialog. See “Text Macros” on page 1033.

Editing Windows

Before a window can be edited, it must be selected. Click on a window when the **Select Objects** tool or any of the **Window Tools** are active. Doors and/or windows can also be group-selected and edited. See “Selecting Objects” on page 180.

To select a window that is part of a blocked unit, click the component window, then click the **Select Next Object** edit button. See “Selecting Components of Mulled Units” on page 390.

Windows can be edited using their edit handles, the edit toolbar buttons, and the **Window Specification** dialog. See “Window Specification Dialog” on page 398.

When you select a window in floor plan view, the window size label displays the width followed by the height. For example, a 3036 window is 3’-0” wide by 3’-6” high.

In the Specification Dialog

The most precise method of editing an individual window or group of windows is to use the **Window Specification** dialog. The window type, size, casing, materials, shape, and more can all be specified in this dialog. See “Window Specification Dialog” on page 398.

Using the Mouse

- In floor plan view, click either of the two end handles and drag along the wall to change the width. The label showing the size updates as the window is resized.
- In 3D views, a selected window has five edit handles: the Move handle at the center and a Resize handle on each edge. Click and drag an edge handle to resize the window.
- Using the edit handles, a window resizes according to the currently active **Edit Behavior**. See “Edit Behaviors” on page 176.

Note: Using the edit handles is the only way to resize bay, box and bow window units.

- A single window or a group of windows can be moved with the center edit handle.
- A door or window moved against an intersecting wall temporarily stops when it is the casing distance from the intersecting wall. You can continue to drag and it resumes movement past or onto the

intersecting wall. Enable **Ignore Casing for Opening Resize** in the **Plan Defaults** dialog to turn off this behavior. See “General Plan Defaults Dialog” on page 86.

Using Dimensions

Like various other objects, windows can be moved using dimensions. See “Moving Objects Using Dimensions” on page 989.

You can specify how windows and doors are located by dimensions in the **Dimension Defaults** dialog. See “Locate Objects Panel” on page 968.

Dimensions can be set to locate the centers, sides, casing, or rough opening of wall openings, or you can choose to not locate openings at all. If you wish, you can move a dimension’s extension lines to locate non-default locations on a window after the dimension is drawn. See “Editing Extension Lines” on page 986.

Using the Edit Tools

A selected window or windows can be edited in a variety of ways using the buttons on the edit toolbar. See “The Edit Toolbar” on page 35.

- Click the **Gable Over Door/Window** to create a gable over the selected window(s) the next time the roof is rebuilt. See “Gable/Roof Lines” on page 503.
- Click the **Components** edit button to modify or add information related to the selected window in the Materials List and schedules. See “Components Dialog” on page 1265.

Window Casing and Sills

Windows often feature casing, or trim, on both sides of the wall opening as well as a sill on one or both sides.

The default casing for windows is a basic rectangular stock profile. You can specify a window’s casing profiles in the **Window Specification** dialog, or you can choose to suppress casing altogether. See “Casing Panel” on page 401.

A separate molding profile can be specified for the lintel, or top horizontal molding. A sill profile can be specified, as well. See “Lintel Panel” on page 404.

Custom Muntins

You can design your own muntins for the glazing of a window or door. Muntins are formed from a CAD block composed of lines and arcs drawn over window or door glass in a cross section/elevation view. The CAD block should cover at least half the glass horizontally and one quarter of the area vertically, but should not overlap it in either direction by more than five percent.

Creating Muntins

Custom muntins are created by drawing their pattern using the CAD tools, blocking the pattern to create a CAD block, and then selecting the window and clicking the **Load Muntins** edit button.

To create custom muntins

1. Create a **Cross Section/Elevation** view of the wall the window or door is in and **Zoom** in on the window or door.
2. Use the **Draw Line** and **Draw Arc** tools to design the desired muntins. Try to make them start and end as close to the edge of the glass as possible.
3. When the muntin design is complete, group-select all lines and arcs and click the **Make CAD Block** edit button. See “Selecting Objects” on page 180.
4. Select the door or window and click the **Load Muntins** edit button to convert the CAD block into custom muntins.
   - If the window in question is the component of a mulled unit, bay, or box window, click on it and, then click the **Select Next Object** edit button.
   - If the window in question is the component of a bow window, the custom muntins will load onto all of its components - not just one of them.

If your window has more than one sash (a double-hung window, for example, has two), you must create a separate CAD block for each pane. When you click **Load Muntins**, all CAD blocks are loaded.

Custom muntins move with the opening and copy with their opening. They also stretch or compress when the glass area is resized. This stretching may not be perfect for non-rectangular glass areas that are resized by a large amount.

Custom muntins can be created for the components of **Bay Windows**, **Box Windows**, and mulled units. To create custom muntins for a **Bow Window**, you must draw them on the one component that is selectable. When the muntins are loaded, they will applied to all of the components See “Component Windows” on page 417.

The **Load Muntins** edit tool can also be used to add custom muntins to glass doors. See “Special Doors” on page 366.

A selection of CAD blocks created for use as custom muntins is available in the library in Chief Architect Core Catalogs> Windows> Custom Muntins.

Editing Muntins

Once blocked and loaded, custom muntins cannot be edited. If you wish to make changes to them, you must first remove them.

Removing Muntins

Remove custom muntins from a door or window by selecting the opening in cross section/elevation view and clicking the **Unload Muntins** edit button. The muntins disappear and the original CAD block takes their place.

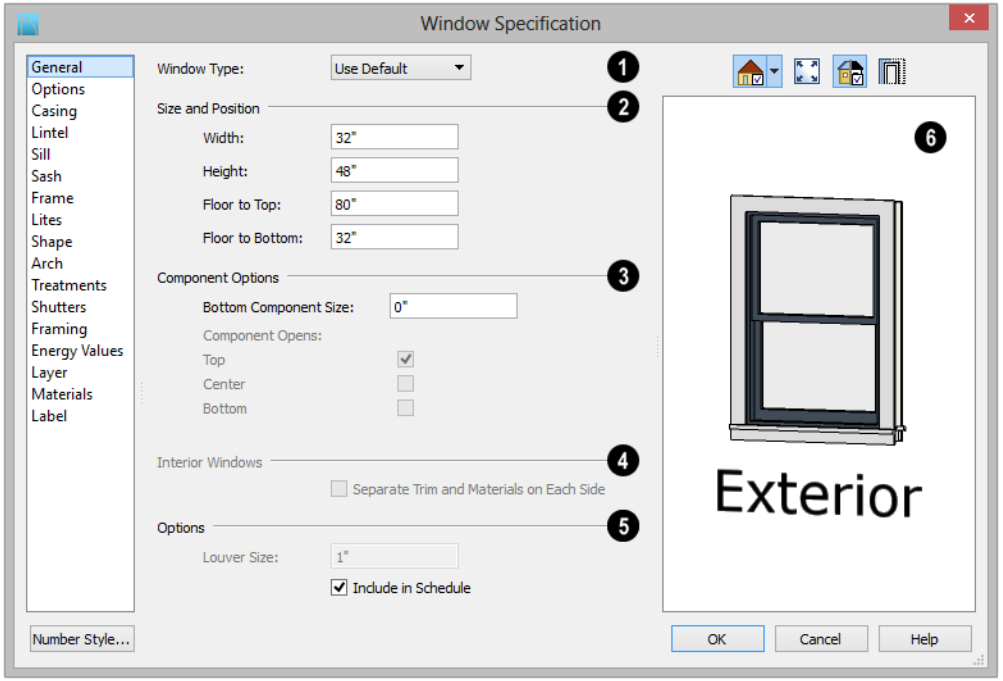
Window Specification Dialog

To open the **Window Specification** dialog, select a window or a group of windows and click the **Open Object** edit button; or double-click the window using the **Select Objects** or a **Window** tool.

The settings in this dialog are similar to those in the **Window Defaults** dialog. See "Window Defaults" on page 384.

The settings in this dialog are also similar to those in the **Mulled Unit** and **Window Symbol Specification** dialogs. Although similar, a number of the options cannot be edited when either a window symbol or a mulled unit is selected, and some panels are not available. See "Grouped Windows" on page 388.

General Panel



1 **Window Type** - Select the type of window from the list. The first entry in the list is the Default type set in the **Window Defaults** dialog.

2 Specify the **Size and Position** of the selected window.

- Specify the window's **Width** and **Height**.

- **Floor to Top** - Specify the height of the top of the window frame as measured from the subfloor.
- **Floor to Bottom** - Specify the height of the bottom of the window frame as measured from the subfloor.

Note: When either the Floor to Top or Floor to Bottom setting is modified, the other will adjust in response to prevent the overall Height value from changing.

❸ The **Component Options** affect windows with movable sections and are not available for Pass-Throughs, Fixed glass windows, mulled units, or window symbols.

- Specify the **Bottom Component Size** for Single Hung, Double Hung, Double Awning, Double Hopper, and Triple Hopper windows; specify the **Top/Bottom Component Size** for Triple Awning windows; or,
- Specify the **Side Component Size** for Triple Casement and Triple Sliding windows, the **Right Component Size** for Left Sliding windows, or the **Left Component Size** for Right Sliding and Double Casement windows.

A **Component Size** value of 0 creates a window with identically sized components.

- Specify how each **Component Opens** from the available options. Only available for Casement, Double and Triple Awning, and Double and Triple Hopper windows.

❹ The **Interior Windows** settings are only present when the selected window is placed in an interior wall. See “Exterior and Interior Walls” on page 263.

- Check **Separate Trim and Materials for Each Side** to specify the casing, lintels, sills, and all materials for each side of the selected window independently. When unchecked, the two sides of the window use the same trim and materials. Only available for Pass-Throughs placed in interior walls.

❺ **Options** -

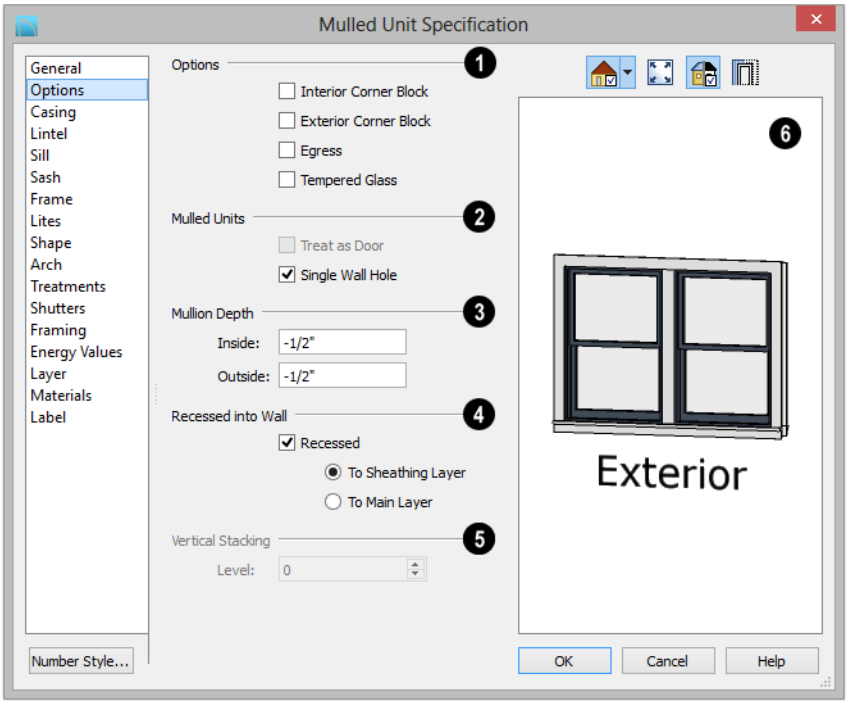
- **Louver Size** - Specify the vertical height of the selected window’s louvers. Only available for Louvered and Glass Louver windows.
- Check **Include in Schedule** to include the selected window(s) in Window Schedules. See “The Schedule Tools” on page 1232.

❻ A preview of the selected window displays here. See “Dialog Preview Panes” on page 38.

Window opening directions can best be seen using the Vector View Rendering Technique.

Options Panel

The Mulled Units and Mullion Depth settings on the Options panel are only available in the **Mulled Unit Specification** dialog. See “Grouped Windows” on page 388.



1 Options -

- Check **Interior Corner Block** to count interior corner blocks in the materials list. These do not display in 3D views.
- Check **Exterior Corner Block** to count exterior corner blocks in the materials list. These do not display in 3D views.
- Check **Egress** to specify the window as an egress window in the Window Schedule and Materials List. Not available for Pass-Throughs.

> ⚠ Consult your local building and fire code authorities for your local egress window requirements.

- Check **Tempered Glass** to specify the selected window's glass as tempered in the Window Schedule. See "Adding Custom Columns" on page 1235.
- Check **Reverse Symbol** to reverse a window symbol as though it were reflected about a vertical line through its center. Only available in the **Window Symbol Specification** dialog. See "Window Symbols" on page 387.

2 The **Mulled Units** options are only available when a mulled unit is selected.

- Check **Treat as Door** to include the unit in door schedules and the Door category of the Materials List rather than in the Window schedules and Materials List

category. Only available when the selected unit contains a door.

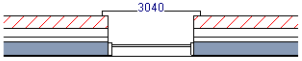
- Uncheck **Single Wall Hole** to produce individually framed wall openings for each unit in a mulled unit. When this box is checked, a single wall opening with one header for the entire unit is produced.

❸ Specify the **Mullion Depth** for the casing between the components of a mulled unit, measured from wall surface. Positive values move the mullion surface towards the wall center; negative values, away from it. Only available when a mulled unit is selected.

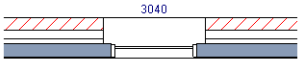
- Specify the **Inside** depth of the mullion on the interior surface of the wall.
- Specify the **Outside** depth of the mullion on the exterior surface of the wall.

❹ The **Recessed into Wall** options allow you to recess the selected window or mulled unit into a wall, away from the exterior surface. Only available if the window or mulled unit is in a multi-layered wall. Check **Recessed** to enable these options.

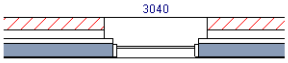
- Select **To Main Layer** to recess the window to the wall's Main Layer.
- Select **To Sheathing Layer** to recess the window to the wall's sheathing layer.



Not Recessed



Recessed (to Main Layer)



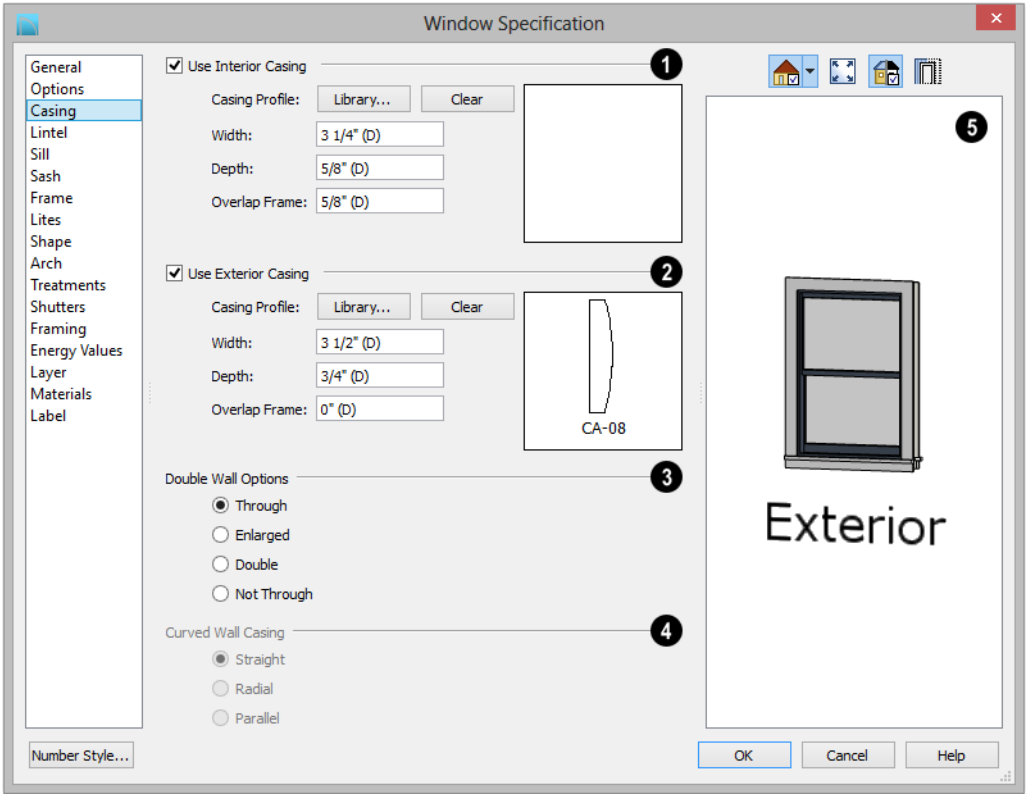
Recessed to Sheathing Layer

❺ **Vertical Stacking** - Specify the window **Level** that the selected window is placed on. Not available for mulled units or window symbols. See "Window Levels" on page 391.

❻ A preview of the selected window displays here. See "Dialog Preview Panes" on page 38.

Casing Panel

The Casing panel is not available in the **Window Symbol Specification** dialog.



1 Check **Use Interior Casing** to enable the settings that follow, then specify the interior casing for the selected windows(s) using those settings. When this box is unchecked, no casing is used.

- **Casing Profile** - Click the **Library** button to select a molding profile for the casing. A preview of the casing profile displays to the right. See “Select Library Object Dialog” on page 816.
- Click the **Clear** button to remove a selected casing profile from the window.
- Specify the **Width** of the selected casing.
- Define the **Depth** of the selected casing, as measured from the back to the front of the casing profile.
- Define the **Overlap Frame** value, which is the the distance between the outside edge of the window frame and the inside edge of the casing. The default is 0”, which places the inside edge of the casing against the outside edge of the frame.

  Type a positive value to overlap the casing over the frame by that amount.

  Type a negative value to produce a gap between the casing and the frame.

To produce a reveal of a certain width, subtract the desired reveal from the total width of the frame and type the result here.

❷ Check **Use Exterior Casing** to enable the settings that follow, then specify the exterior casing for the selected window(s) using those settings. These settings are the same as those for the Interior Casing. If the selected window is a Pass-Through placed in an interior wall, these settings will be unavailable unless **Separate Trim and Materials on Each Side** is checked on the General panel. See “General Panel” on page 398.

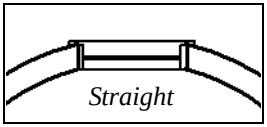
❸ The **Double Wall Options** affect windows placed in a Double Wall. See “Double Walls” on page 292.

- Select **Through** to create a single frame running through both Double Walls. This option is selected by default.
- If **Enlarged** is selected, casing is created only on the wall the window is inserted in. The opening on the other wall is enlarged to accommodate the casing.
- Select **Double** to place a second window in the Double Wall opposite the selected window. This second window cannot be selected. Casing is produced as with the **Through** type window.
- Select **Not Through** to place the window in one wall with no corresponding opening in the other wall.

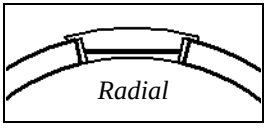
❹ **Curved Wall Casing** - This section is enabled if the window is placed in a curved wall. See “Drawing Curved Walls” on page 272.

Door and window casing and jamb can be constructed three ways in curved walls:

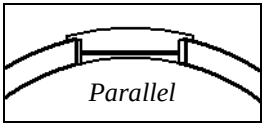
- **Straight** - Both window sash and casing are straight. Straight casing may not fit properly into a wall if the window is too wide or the curvature of the wall, too tight.



- **Radial** - The sides of the casing or jambs are inserted in the wall at an angle that passes through the center of the curve.



- **Parallel** - The sides of the casing are inserted in the wall at a right angle to the line tangent to the curved wall at the center of the window.



Normally, parallel casing has a straight sash. Radial casing is more like traditional curved windows, and typically has a curved sash.

❺ A preview of the selected window displays here. You may need to rotate the preview to see the casing you are editing.If casing is not specified for a Pass-Through, the Show Wall option will be toggled on automatically. See “Dialog Preview Panes” on page 38.

Lintel Panel

The settings on the Lintel panel of the **Window** and **Mulled Unit Specification** dialogs are also found on the panel of the same name in the **Door Specification** dialog. See “Lintel Panel” on page 374.

The Lintel panel is not available in the **Window Symbol Specification** dialog.

These settings are not available if the window has a reflected arch. See “Arch Panel” on page 411.

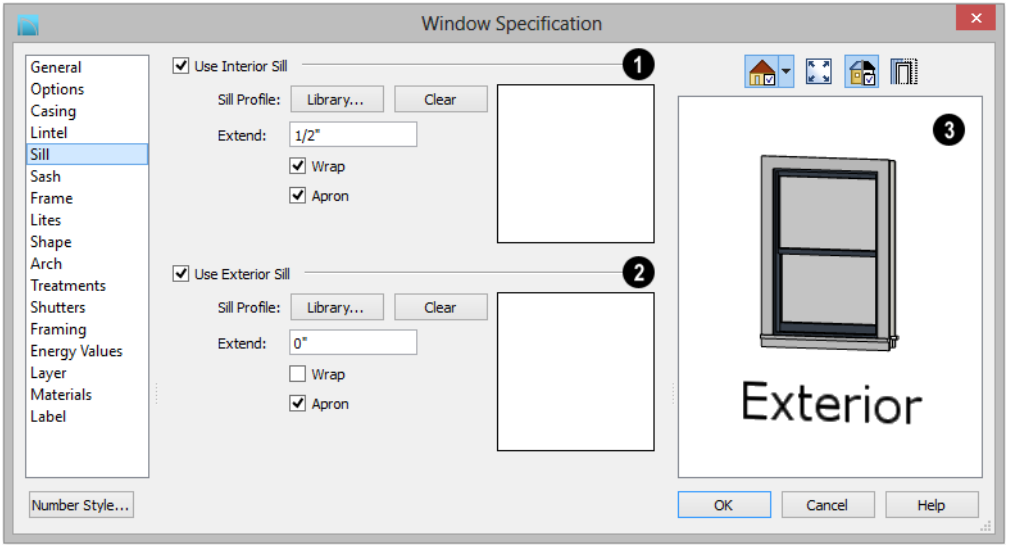
The profiles and materials of window lintels and sills can be included in Room Finish Schedules.

Sill Panel

The settings on the Sill panel of the **Window** and **Mulled Unit Specification** dialogs are not available if the window has a reflected arch. See “Arch Panel” on page 411.

The Sill panel is not available in the **Window Symbol Specification** dialog.

The profiles and materials of window lintels and sills can be included in Room Finish Schedules.



1 Check **Use Interior Sill** to enable the settings that follow, then specify the sill applied to the interior side of the selected window(s) using these settings. When this box is unchecked, no interior sill is used.

- **Sill Profile** - Click the **Library** button to select a molding profile for the sill. A preview of the selected profile displays to the right. See “Select Library Object Dialog” on page 816.

- Click the **Clear** button to remove a selected sill profile from the window.
- Specify how far to **Extend** the sill past the outside edges of the casing on each side. If an Apron is specified, it will also be affected by this setting.
- Check **Wrap** to wrap the sill profile back toward the wall.
- Check **Apron** to include an apron under the sill. When Wrap is checked, the apron will be 1/2" (12 mm) shorter than the sill on each side; when it is unchecked, it will be the same length as the sill.

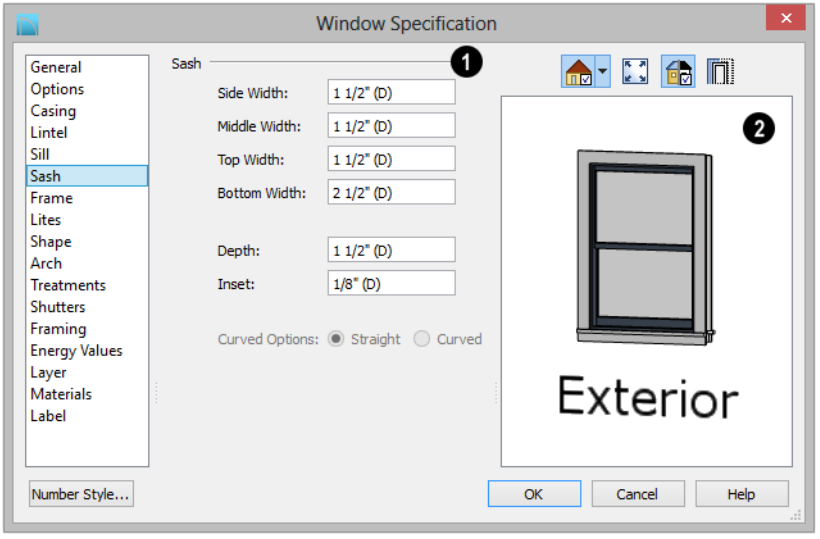
❷ Check **Use Exterior Sill** to enable the settings that follow, then specify the exterior sill for the selected window(s) using these settings. These settings are the same as those for the Interior Sill.

❸ A preview of the selected window displays here. See "Dialog Preview Panes" on page 38.

Sash Panel

The settings on the Sash panel control the size and position of the selected window's sash. Note that increasing the Side, Middle, Top or Bottom Width decreases the area of the glass and vice versa.

The Sash panel is not available in the **Mulled Unit** and **Window Symbol Specification** dialogs, and the settings on this panel are not available for Pass-Throughs.

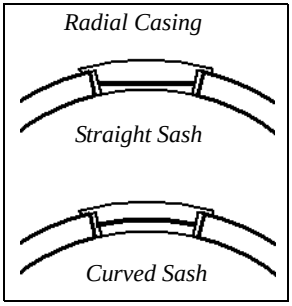


❶ Specify the width and depth of the selected window's **Sash**, which are the pieces of the window that hold the glass.

- Specify the **Side Width** of all vertical sash members: those at the window sides as well as the central members of Casement and Sliding windows. This is also

the width of the top portion of the window when an arch is specified.

- Specify the **Middle** width of horizontal components between the top and bottom sash in Double Hung, Double and Triple Awning, and Double and Triple Hopper windows. It does not affect Casement and Sliding windows.
- Specify the **Top** and **Bottom Widths**. The **Top** value is not used if the window has an arch.
- Specify the **Depth**, or thickness, of the sash stock measured from the exterior to the interior.
- Specify the **Inset**, the distance between the frame and the outermost sash. If there is no frame, the inset is measured from the outer surface of the wall's Main Layer.
- **Curved Options** - When the selected window is placed in a curved wall, specify whether it has a curved or straight sash. A curved sash is typically used with Radial casing. See "Casing Panel" on page 401.

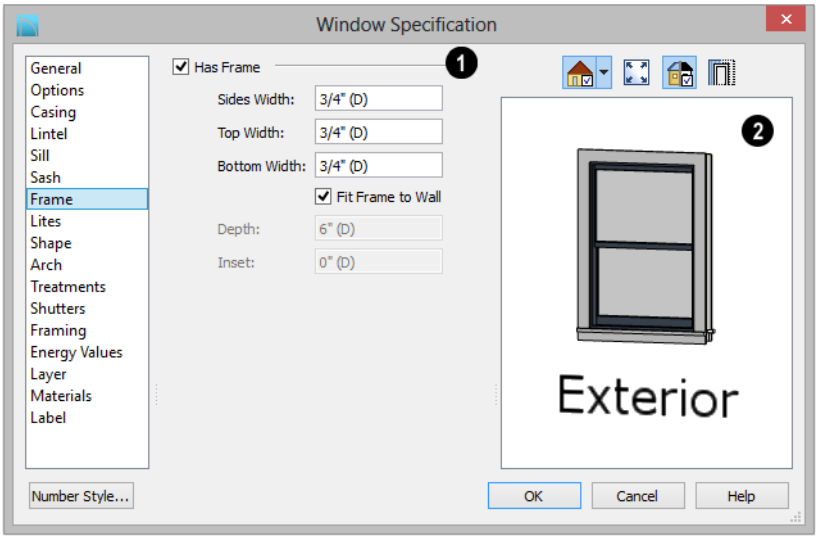


❷ A preview of the selected window displays here. See "Dialog Preview Panes" on page 38.

Frame Panel

The Frame panel is not available for mulled units or window symbols.

The settings on the Frame panel are similar to those on the Jamb panel of the **Door Specification** dialog. See "Jamb Panel" on page 375.



1 Specify the attributes of the selected window's Frame.

- Check **Has Frame** to include a frame and enable the settings below. When this is unchecked, the selected window has no frame around it.
- Specify the **Side**, **Top**, and **Bottom Widths** of the door's frame.
- Uncheck **Fit Frame to Wall** to specify the Depth and Inset of the selected window's frame. When this box is checked, the frame Depth automatically extends from the Recessed Into Wall layer to the wall's inside surface with an Inset of 0". The Recessed Into Wall layer is specified on the Options Panel of this dialog.
- Specify the **Depth** of the windowi frame from front to back.
- Specify the frame's **Inset**, which is measured from the Recessed Into Wall layer and moves the window frame towards its interior side. If used, the casing and lintel are not affected by this setting.

2 A preview of the selected window displays here. See "Dialog Preview Panes" on page 38.

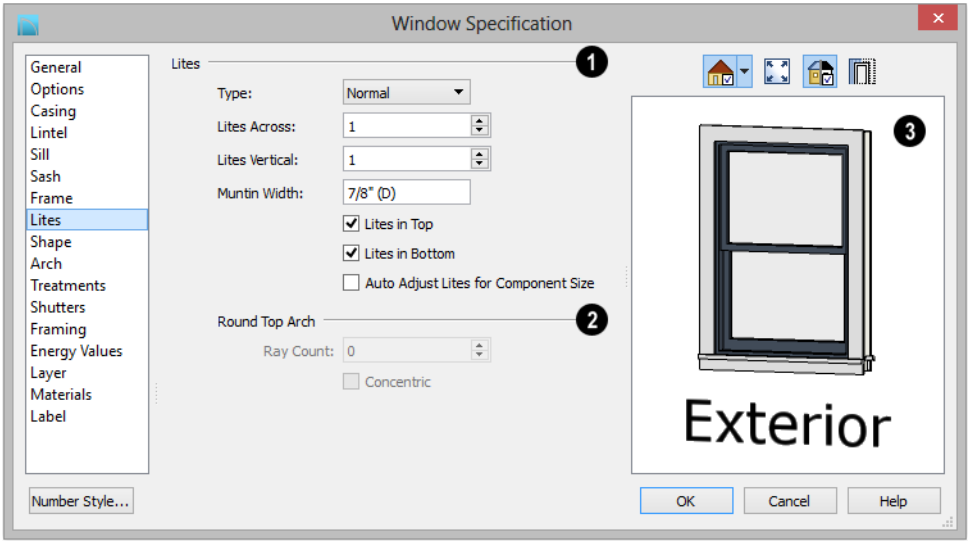
Lites Panel

The Lites panel allows you to add muntins to various window styles, and is also available for Glass doors. See "Doors" on page 355.

There are four possible styles of muntin bars for regular windows, plus two additional options for arched windows.

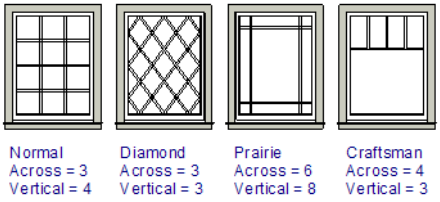
A window that has been modified using the Shape panel cannot have divided lites or shutters added. You can, however, create Custom Muntins for such a window. See "Custom Muntins" on page 396.

The Lites panel is not available for mulled units or window symbols.



1 Specify the number, position and style of **Lites** for the selected window.

- Select a **Type**, or style, of window lite from the drop-down list.



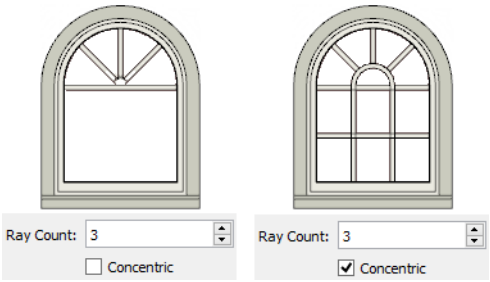
- **Normal** style is the most common, with muntins going horizontally and vertically. Colonial windows are an example of the normal style.
- **Diamond** style uses angled muntin bars to divide up the lites. French windows are an example of the diamond style.
- **Prairie** style is based on the normal style, but with all the central muntin bars removed, leaving only the two outside muntin bars both horizontally and vertically. Typically, both Lites Across and Lites Vertical should be set between 6 and 8. Federal or Federation windows are an example of the Prairie style.
- **Craftsman** style is based on the normal style, but only the topmost horizontal muntin bar is kept with all the portions of the vertical muntin bars above it. Typically, both Lites Across and Lites Vertical should be set between 4 and 8.
- Enter the number of horizontal **Lites Across** in each sash.
- Enter the number of vertical **Lites Vertical** in each sash.

- Specify the **Muntin Width**, which is the width of the bars dividing the panes of glass.
- Check or uncheck **Lites in Top** and/or **Lites in Bottom** - or **Lites in Left** and/or **Lights in Right** - to specify either one or both of the sashes to have divided lites.
- Check **Auto Adjust Lites for Component Size** to have the program produce lites that are consistent in size across all components. When this is checked, the window's lites and its specification settings may not agree; when unchecked, lites in the components may not be consistent in size.

Note: Because the fixed window in a Triple Sliding window is twice the size of the movable windows, the fixed section has a vertical muntin bar. To eliminate this, uncheck Auto Adjust Lites for Component Size..

❷ The **Arch Options** are only available if the window has an Arch specified.

- Specify a **Ray Count** of up to 10 radial muntin bars in the portion of the window within the arch. There is one more pane of glass than the number of rays specified. See "Arch Panel" on page 411.
- Check **Concentric** to produce muntins radiating from a curved inner muntin that is concentric with the window's arch. You must have at least three Lites Across for this to be used.



❸ A preview of the selected window displays here. See "Dialog Preview Panes" on page 38.

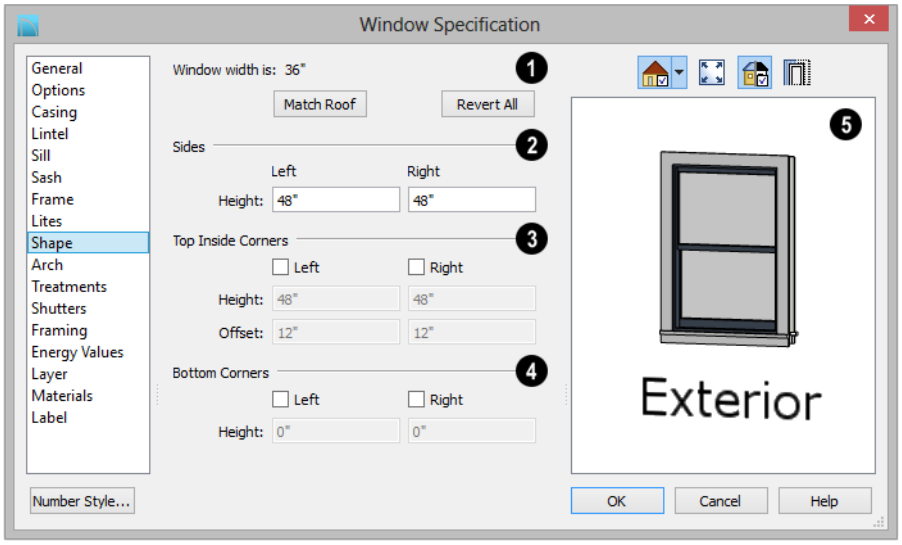
Shape Panel

The settings on the Shape panel control the position of the selected window's corners, allowing you to create angled edges and mitered top corners.

If any of these settings are used to create a custom shape, the selected window will be automatically specified as "Fixed Glass" on the General panel. If the selected window has an arch specified on the Arch panel, it will be removed.

The Shape panel is not available for mulled units or window symbols.

Note: The Left and Right settings on this panel refer to the window's exterior.



1 **Window Width** displays for reference. It can be changed on the General Panel.

- Click **Match Roof** to match the angle of the top of the window to the pitch of the roof above by changing its Sides heights, below. If either Top Inside Corner box is checked, it will become unchecked.

  Match Roof does not work for curved roofs, has no effect if the window is not in a gable end wall, and is not available in the Window Defaults dialog.
- Click **Revert** to restore the window to its original shape, type and arch settings.

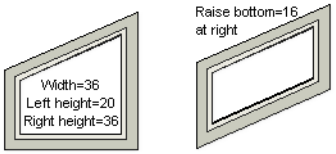
2 Specify the height of the window's **Left** and **Right Sides**, as measured from the bottom of the window. By default, these settings match the window's Height.

3 The **Top Inside Corners** settings allow you to create a second set of top corners with angled edges between them and the outside top corners.

- Check **Left** to add an additional corner along the top edge.
- Specify the **Height** of the left inner corner, as seen from the exterior, measured from the bottom of the window.
- Specify the **Offset** of the left inner corner, as measured from the left side of the window.
- An additional **Right** Inside Corner can be specified in a similar manner.

4 The **Bottom Corners** settings allow you to raise the heights of the bottom corners, as measured from the bottom of the window specified on the General Panel.

- Check **Left** to raise the height of the bottom left corner.
- Specify the **Height** of the bottom left corner. This value cannot exceed the Height of the Left Side.

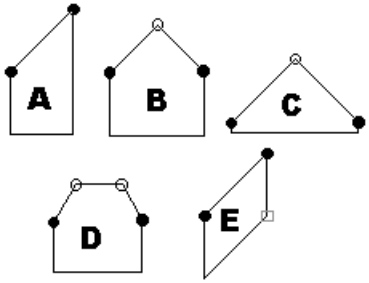


- The height of the **Bottom Right** corner can be raised in a similar manner.

❺ A preview of the selected window displays here. You may want to rotate the view so the window's exterior can be seen. See "Dialog Preview Panes" on page 38.

Note: The Left and Right settings on this panel refer to the window's exterior.

The following diagram represents added Inner corners using open circles and the left and right corners using solid black circles:

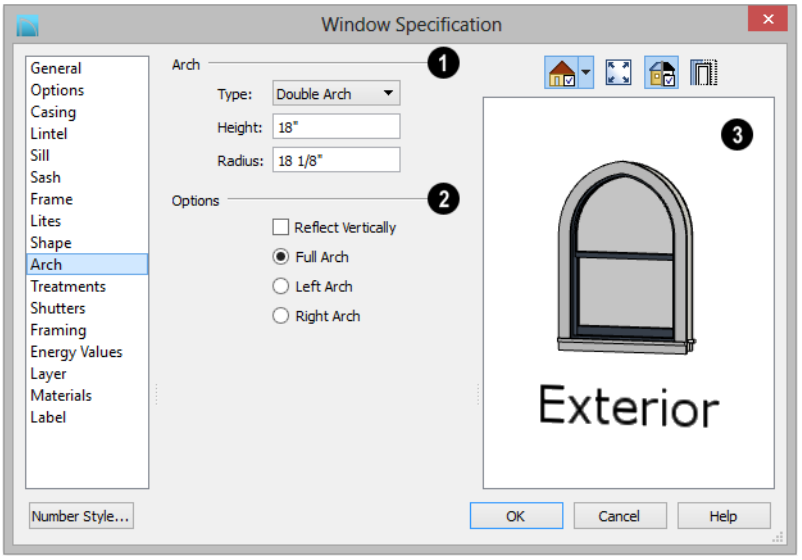


- **A** has different left and right Side Heights with no Top Inside Corner added.
- **B** has matching left and right heights with an added Top Inside Corner.
- **C** is the same as **B**, except that the left and right Side Heights have been shortened to 1/4".
- **D** is the same as **B** except it has two added Top Inside Corners.
- **E** is the same as **A** except that the Bottom Right Corner has been raised.

Arch Panel

The settings on Arch panel of the **Mulled Unit Specification** dialog define the overall shape of the blocked unit's top. If the mulled unit already includes a component window with an arch, these settings cannot be modified. If you intend to arch the top of a mulled unit, the top components should be constructed with horizontal, straight tops all at the same height.

The Arch panel is not available for window symbols, and its settings are not available if the selected window has been modified using the Shape Panel.



1 Define the style and size of the **Arch**.

- Select the **Type** of arch desired from the drop-down list.

Round Top *Broken* *Gothic* *Elliptical* *Flat Top*

Tudor *Double* *Trifoil* *Octo-gonal* *Dogear*

- Specify the **Height** of the arch, as measured from the top of the window to the base of the arch. The Height can be defined for all arch types except Round Top and Octagonal Arches.
- The **Radius** can also be defined for Tudor and Double Arches.

2 **Options** - Define the orientation of the arch.

- Check **Reflect Vertically** to reflect the specified arch, top to bottom. You can reflect a square window with a Round Top arch to create a circular window. Not available if a lintel or sill is specified for the selected window. See “Lintel Panel” on page 404 and “Sill Panel” on page 404.
- Select **Full Arch** to produce an arch with the apex at the window’s center.
- Select **Arch on Left** to produce an arch with the apex on the window’s right side, as seen from its exterior.

- Select **Arch on Right** to produce an arch with the apex on the window's left side, as seen from the its exterior.

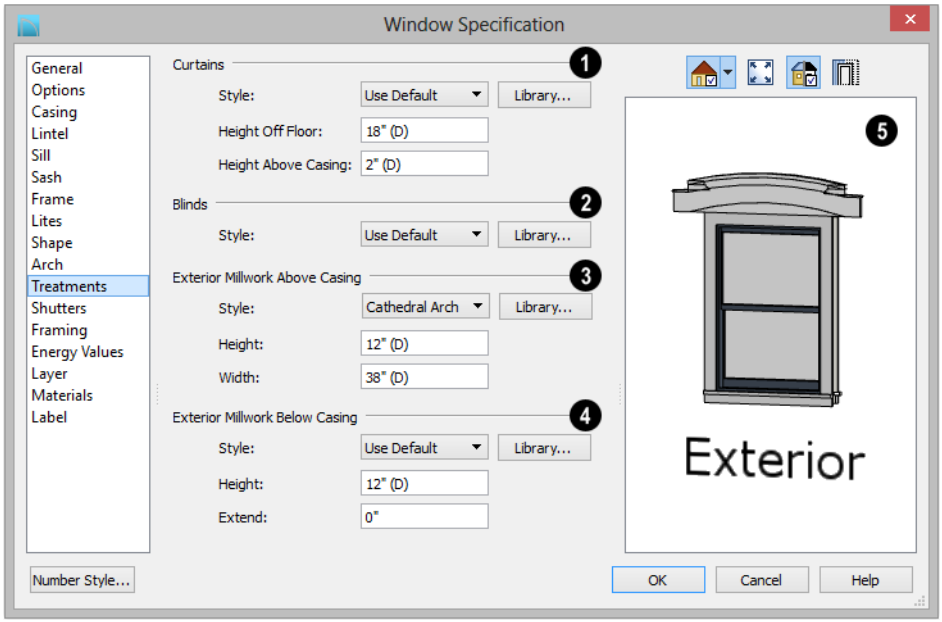
❸ A preview of the selected window displays here. You may want to rotate the view so the window's exterior can be seen. See "Dialog Preview Panes" on page 38.

Note: The Left and Right settings on this panel refer to the window's exterior.

Treatments Panel

The settings on the Treatments panel allow you to add embellishments to the interior and exterior of the selected window or mulled unit.

The Treatments panel is not available for window symbols.



❶ Specify **Curtains** for the selected window or mulled unit's interior side.

- Specify a style of **Curtains** by selecting "Use Default", "None" or "Library" from the drop-down list. If a non-default library item has been selected, its name will display in the list, as well.
- Click the **Library** button or select "Library" from the drop-down list to choose a style of curtain from the library. See "Select Library Object Dialog" on page 816.
- Specify the **Height Off Floor** of the bottom edge of the curtains.

- Specify the **Height Above Casing** of the top of curtains.

2 Specify a style of **Blinds** in the same manner that Curtains are chosen, above.

3 Specify an exterior **Exterior Millwork Above Casing** in the same manner that Curtains are chosen, above, and specify its **Height** and **Width**.

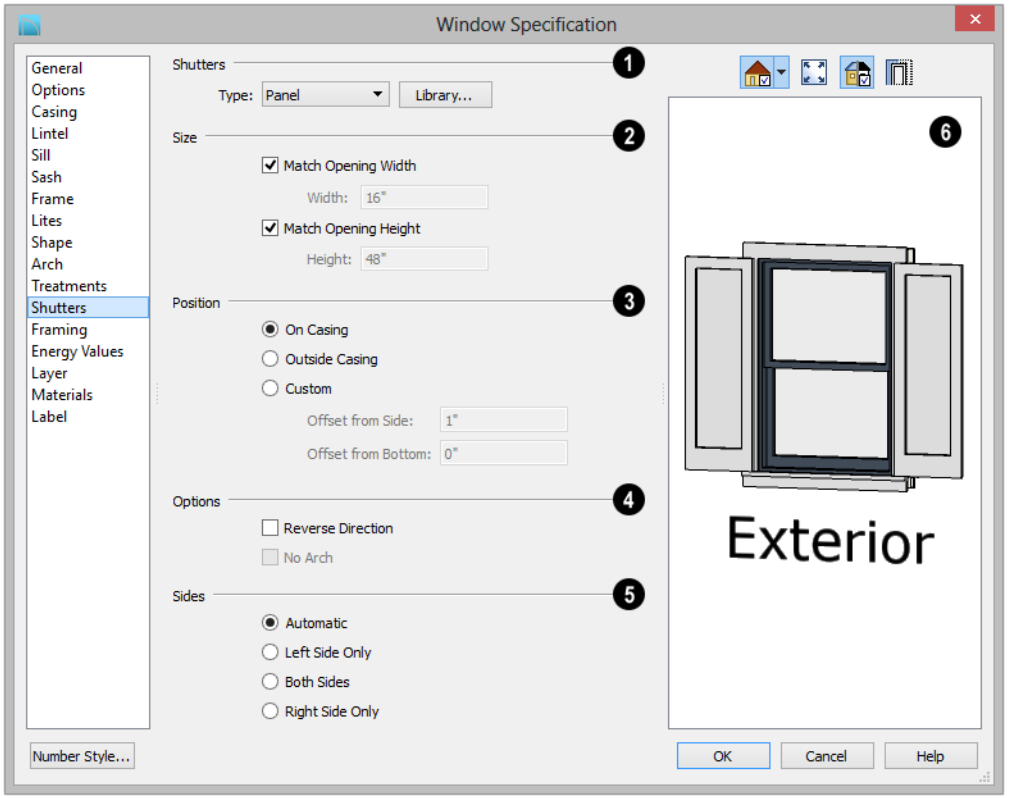
4 Specify an **Exterior Millwork Below Casing** in the same manner that Curtains are chosen, above. Specify the **Height** of the millwork and the distance that it should **Extend** past the side casing.

5 A preview of the selected window displays on the right. You may want to rotate the view so the window's interior or exterior can be seen, as needed. See "Dialog Preview Panes" on page 38.

Shutters Panel

The settings on the Shutters panel allow you to specify exterior shutters for the selected window or mulled unit.

The Shutters panel is not available for window symbols.



❶ Select a **Type** of **Shutters** from the drop-down list or click the **Library** button to select a style of shutters from the Library Browser. See “Select Library Object Dialog” on page 816.

❷ Specify the **Size** of the selected shutters.

- When **Match Opening Width** is checked, each shutter’s width is exactly half that of the window, excluding casing.
- Uncheck **Match Opening Width** to specify a **Width** in the text field. If the window is later resized, the shutters will not adjust in response.
- When **Match Opening Height** is checked, each shutter’s height equals that of the window, excluding casing.
- Uncheck **Match Opening Height** to specify a **Height** in the text field. If the window is later resized, the shutters will not adjust in response.

❸ Specify the **Position** of the shutters relative to the window.

- Select **On Casing** to position the shutters just outside the window frame, like functional shutters.
- Select **Outside Casing** to position shutters outside the window casing, as decorative shutters often are.
- Select **Custom** to create a custom position for the shutters by specifying the **Offset from Side** and **Offset from Bottom** in the fields below.

❹ Additional shutter **Options** can be specified here.

- Check **Reverse Direction** to orient the shutters so their exterior sides face outward and their interior sides face the wall. For functional shutters, this should remain unchecked.
- Check **No Arch** for shutters with flat tops that reach the bottom of the curved portion of an arched window. Only available when an Arch is selected. See “Arch Panel” on page 411.

❺ **Shutter Sides** - Specify which sides of the selected window receive shutters.

- Select **Automatic** to assign shutters to both sides of the window as long as there is sufficient room on the wall. If the window is next to a wall intersection or corner, the shutter closest to the intersection will not generate.
- Select **Left Side Only** to assign a shutter to the left side of the window and none on the right.
- Select **Both Sides** to assign shutters to both sides of the window under all circumstances, even if there isn’t enough room on the wall for one or both of them.
- Select **Right Side Only** to assign a shutter to the right side of the window and none on the left.

❻ A preview of the selected window displays on the right. In order to see the shutters, you may need to rotate the preview to show the Exterior. See “Dialog Preview Panes” on page 38.

Framing Panel

The settings on the Framing panel are also found on the panel of the same name in the **Door Specification** dialog. See “Framing Panel” on page 379.

Energy Values Panel

The settings on the Energy Values panel are also found on the panel of the same name in the **Door Specification** dialog. See “Energy Values Panel” on page 381.

Layer Panel

The settings on the Layer panel are the same as those found on the same panel in dialogs throughout the program. See “Layer Panel” on page 152.

Materials Panel

The settings on the Materials panel are the same as those found on the same panel in dialogs throughout the program. See “Materials Panel” on page 831.

The settings on the Materials panel of the **Mulled Unit Specification** dialog apply to all components of the blocked unit. Any settings made for individual components of the blocked unit are overridden here.

Label Panel

Window labels display in floor plan view and cross section/elevation views when the “Windows, Labels” layer is turned on and use the Text Style assigned to that layer. See “Window Labels” on page 394.

For more information about the settings on this panel. See “Label Panel” on page 1243.

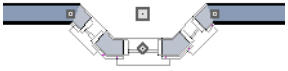
Bay, Box, and Bow Windows

Bay, Box and Bow Windows are created much the way regular windows are: select a tool, then click a wall to place that window type.

Chief Architect automatically builds a foundation under bay/box/bow windows placed on floor 1 unless they are raised from their original position. That section of the foundation wall is also a bay/box/bow, but without windows. If the foundation was generated before the window is placed, the foundation must be rebuilt or edited manually.

Editing Bay, Box and Bow Windows

Bay, box and bow windows are edited similar to regular windows, with one exception: in floor plan view, a diamond-shaped Depth edit handle displays on the section. Drag this Depth handle outward to increase the depth, or inward to decrease the depth of the unit. See “Editing Windows” on page 395.



Depth edit handle on a bay window

Bay, box and bow windows can also be edited in their respective specification dialogs. See “Bay/Box and Bow Window Specification Dialogs” on page 420.

Displaying Bay, Box and Bow Windows

The display of bay, box and bow windows is controlled in the **Layer Display Options** dialog. See “Layer Display Options Dialog” on page 148.

Like other windows, bay, box and bow windows can display labels: either a single label for the unit, or one for each component. See “Window Labels” on page 394.

Bay, box and bow window width and radius dimensions, which display in floor plan view when specified to do so in the window’s specification dialog, are placed on the “Dimensions, Manual” layer. See “Options Panel” on page 423.

Component Windows

A component window within a bay, box or bow window can be resized like any other standard window. To select a component window, click at the location of the component in question, then click the **Select Next Object**  edit button or press the Tab key.

- Only the bay or box window component that was clicked on is selected using this method. If you need to select a different component, click on it and repeat the process.
- In a bow window, all components are identical, so only one component can be selected. Changing this component changes them all.

Resizing Components

An individual component window can be resized using the edit handles, by changing settings in the component’s **Window Specification** dialog, or by using the **Transform/Replicate Object** dialog. See “Transform/Replicate Object Dialog” on page 238.

When a bay/box/bow window is first created, there is room for one standard trimmer on each side of each component window. When the bay as a whole is moved and resized, its components automatically resize so that a standard trimmer is still accommodated.

If you increase a component window’s width to the point where there is not enough room for standard trimmers, a thinner trimmer can be used. The size of this thinner trimmer is specified in the **Build Framing** dialog. See “Openings Panel” on page 574.

If a component window is resized, it retains its size if at all possible when the containing bay/box/bow window is moved or resized. If the bay is resized in such a way that the component is too large to fit even with a thinner trimmer, the component resumes its default behavior, resizing as the containing bay window is resized.

Floors and Ceilings

When originally created, the floor and ceiling within a bay, box, or bow window are the same heights as the floor and ceiling of the room in which it is placed.

Both the top and bottom heights of these window units can be adjusted in its specification dialog or a 3D view using its edit handles to create a lowered ceiling and/or a bench seat or garden window.

When the ceiling is lowered, the top heights of the walls that define the window unit are also lowered. When a roof is built over the unit, its height will be affected, as well.

When the bottom of the window is raised to create a bench seat, the unit's walls will not reach the ground. As a result, window units with bench seats will have no foundation beneath them when the foundation is built.

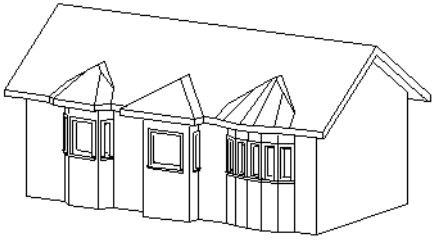
Bay, Box, Bow Windows and Roofs

Several different roof styles can be specified for bay, box and bow window units in the **Bay/Box** and **Bow Specification** dialogs. See "General Panel" on page 421.

If you change a bay, box, or bow window's roof specification, you will need to rebuild the roofs to see the changes. See "Rebuilding Roofs" on page 467.

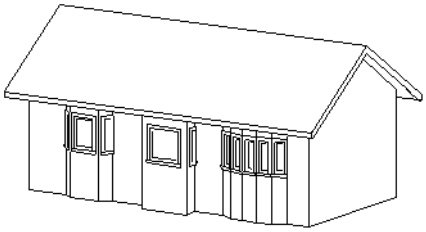
Hip Roofs

By default, a hip roof is built above the unit when roofs are automatically generated. No roof directives need to be selected in the specification dialog to produce this roof.



Use the Existing Roof

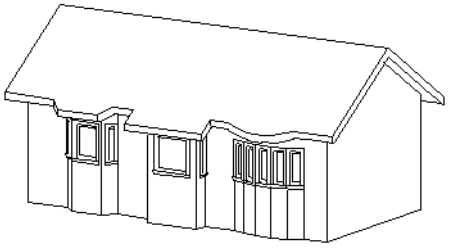
To generate a standard roof that ignores a bay, box, or bow window, check **Use Existing Roof**.



With this option the bay, box, or bow windows is tucked under the roof eave. You may find it helpful to increase the width of the eaves. See “Roof Panel” on page 469.

Extend the Existing Roof

To have the main roof extend down over the window unit and follow the shape of the unit, select **Extend Existing Roof Over**.

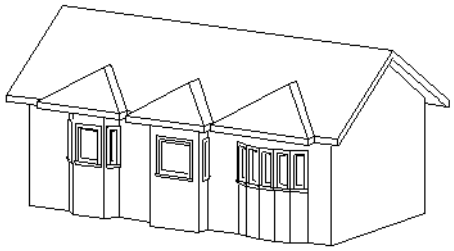


For this roof style, the ceiling heights of the window unit and the adjacent room must be the same. If you lower the ceiling of the window unit and then build the roof, a lower hip roof over the window is created. See “Floors and Ceilings” on page 417.

If a header is desired over the window unit, first build the roof, then lower the ceiling of the window unit. Once the ceiling is lowered, select **Rebuild Walls/Floors/Ceilings** . Do not rebuild roof planes.

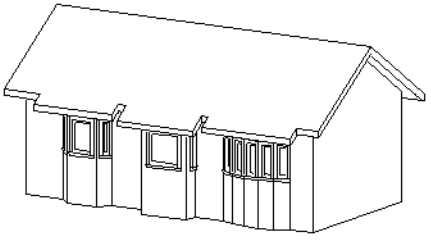
Rectangular Hip Roofs

To create a rectangular-shaped hip roof above a bay, box, or bow window, select **Rectangular Roof Over**.



Extend Existing Roof - Rectangular

To extend the main roof down over a window unit to create a rectangular roof over it rather than one that follows its shape, select both **Extend Existing Roof over** and **Rectangular Roof Over**.



Gable Roof

A gable roof is not one of the automatic options for the roof above a bay, box or bow window. A gable can be created by manually editing the rectangular hip roofs that are automatically created. See “Roof Planes” on page 477.

To create a gable over a bay window

1. Select the front ridge corner handle of each side hip roof plane and drag the edge forward until the fascia snaps to the edge of the front hip section.
2. Delete the front hip section.
3. Adjust the roof's overhang as needed.

To create a gable roof over a normal window, use the Gable Over Door/Window edit button. See "Gable/Roof Lines" on page 503.

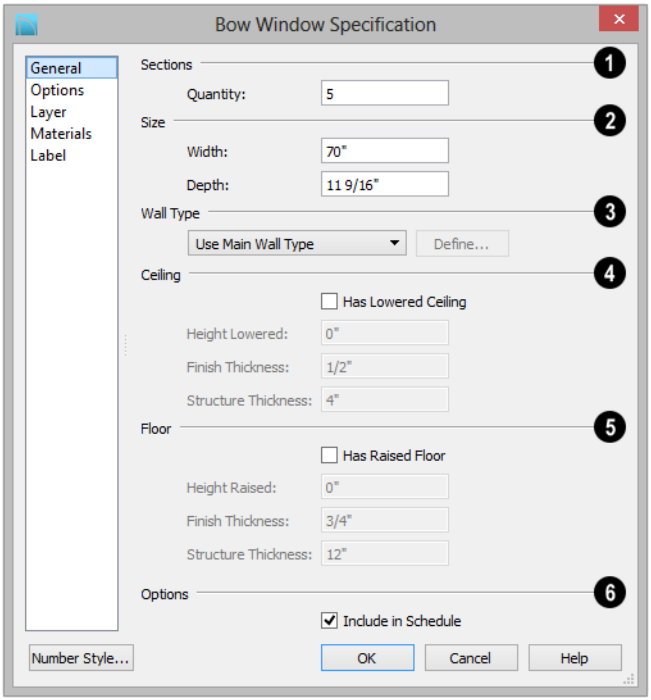
Bay/Box and Bow Window Specification Dialogs

To open the **Bay/Box Window Specification** or the **Bow Window Specification** dialog, select one or more Bay/Box or Bow Windows and click the **Open Object** edit button.

The options in this dialog can only be set for objects placed in a plan: Bay, Box, and Bow Windows do not have defaults dialogs.

The settings that are available in these dialogs depend on whether the selected object is a Bay, Box, or Bow Window.

General Panel



1 **Sections** -The setting that displays here depends on whether the selected window is a Bay, Box, or Bow Window.

- Specify the **Bay Angle**, which is the angle of the side components of a Bay or Box Window. Bay Windows have an angle of 45° by default; Box Windows have an angle of 90°.
- Specify the **Quantity**, which is number of component windows in a Bow Window.

2 **Size** - Specify the **Width** and **Depth** of the selected Bay, Box, or Bow Window.

3 Specify the **Wall Type** used by the walls embedded in the selected Bay, Box, or Bow Window. See “Wall Type Definitions” on page 295.

- Select “Use Main Wall Type” from the drop-down list to use the same wall type as that of the wall that the window unit is placed in.
- When a specific wall type is selected, click the **Define** button to modify its definition. See “Wall Type Definitions Dialog” on page 298.

4 Specify the height and structure of the **Ceiling** within the selected window.

- Check **Has Lowered Ceiling** to enable the settings that follow. When this is unchecked, the ceiling height and finish material within the window is the same as that for the adjacent room.

- Specify the **Height Lowered**, which is measured from the ceiling height of the adjacent room.

Note: If the Height Lowered is 0", Has Lowered Ceiling will become unchecked when you click OK.

- Specify the **Finish Thickness**, which is the thickness of the ceiling's finish material.
- Specify the **Structure Thickness**, which is the thickness of the ceiling's structural layer.

❺ Specify the height and structure of the **Floor** within the selected window.

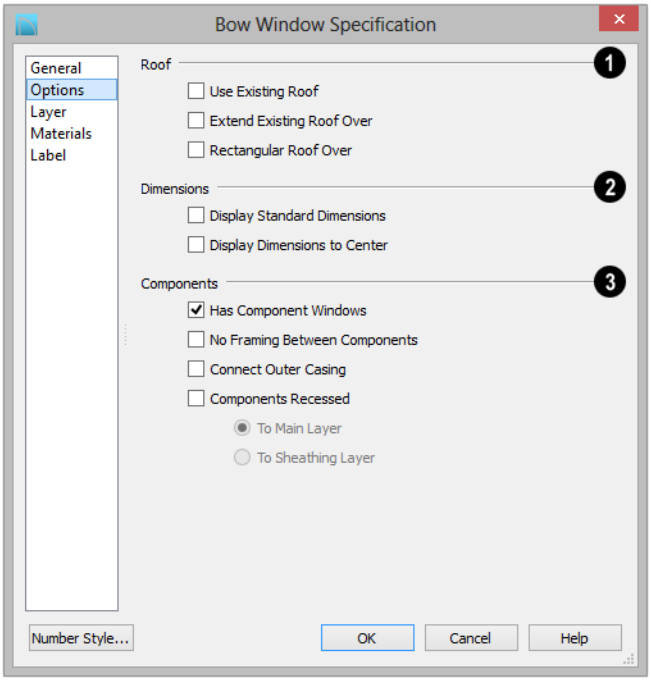
- Check **Has Raised Floor** to enable the settings that follow. When this is unchecked, the floor height and material within the window is the same as that for the adjacent room.
- Specify the **Height Raised**, which is the measured from the floor height of the adjacent room.

Note: If the Height Raised is 0", Has Raised Floor will become unchecked when you click OK.

- Specify the **Finish Thickness**, which is the thickness of the floor's finish material.
- Specify the **Structure Thickness**, which is the thickness of the floor's structural layer.

❻ Check **Include in Schedule** to include the selected window(s) in Window Schedules. See "The Schedule Tools" on page 1232.

Options Panel



1 Specify the structure of the automatic **Roof** over the selected window unit. See “Bay, Box, Bow Windows and Roofs” on page 418.

- Check **Use Existing Roof** if the existing roof needs no changes to accommodate the bay window.
- Check **Extend Existing Roof Over** to extend the existing roof plane to cover the bay window below.
- Check **Rectangular Roof Over** to create a roof over the bay window that is square across the end instead of following the profile of the roof.

2 Specify the appearance of the selected window unit’s **Dimensions** in floor plan view.

- Check **Display Standard Dimension** to display the automatically-produced dimensions that show the window’s width and depth.
- Check **Display Dimensions to Center** to display a Bow Window’s radial dimension.

3 Specify the structure of the selected window unit’s **Components** and the wall sections containing them.

- Uncheck **Has Component Windows** to remove the component windows of the

selected Bay, Box, or Bow Window and disable the settings that follow.

- Check **No Framing Between Components** to eliminate the trimmer studs for Bay and Box Window components, allowing the width of each component window to increase. See “Wall Framing” on page 562.
- Check **No Framing Between Components** to remove both studs between the component windows.

Note: If the selected unit is moved or resized, its components automatically resize to use a standard trimmer, regardless of whether either of the two options above are selected.

- Check **Connect Outer Casing** to have exterior casing surround the component windows of a Bow Window as a group rather than individually. Mullions are provided between components. This is how interior casing is always created.
- Check **Components Recessed** to recess the component windows into the wall and enable the settings that follow. Typically used if the window is placed in a brick wall and you want to produce a brick molding.
- Select **To Main Layer** to recess the components to the wall’s Main Layer instead of the exterior wall surface. See “The Main Layer” on page 295.
- Select **To Sheathing Layer** to recess the components to the sheathing layer instead of the exterior wall surface.

Layer Panel

For information about using the Layer panel, see “Layer Panel” on page 152.

Materials Panel

The settings on the Materials panel are the same as those found on the same panel in dialogs throughout the program. See “Materials Panel” on page 831.

Label Panel

Bay, Box, and Bow Window labels display in floor plan view and cross section/elevation views when the “Windows, Labels” layer is turned on and use the Text Style assigned to that layer. See “Window Labels” on page 394.

For more information about the settings on this panel. See “Label Panel” on page 1243.

Window Schedules

The **Window Schedule** tool allows you to produce customizable window schedules as well as window labels that display schedule numbers. See “The Schedule Tools” on page 1232.

Window casing profiles and materials can also be included in Room Finish Schedules.

Chapter 12:

Multiple Floors

When a new plan file is opened in Chief Architect, two floor levels are present: Floor 1 and the Attic Floor. You can add more floors whenever you like: up to 30 total. Once created, floors can also be copied, swapped, and deleted.

Chief Architect also supports special floors for foundations and attics. Only one foundation level and one attic can exist in a plan. Foundations are discussed in their own chapter. See “Foundations” on page 437.

Chapter Contents

Floor Defaults Dialog

There is a **Floor Defaults** dialog for each floor in a plan file. The defaults for the current floor can be accessed by selecting **Edit> Default Settings**. Select "Floor" from the category tree and click the **Edit** button to open the **Floor Defaults** dialog for the currently active floor. See "Default Settings vs Preferences" on page 72.

- The **Floor Defaults** dialog can also be opened by double-clicking the **Floor Tools** parent button.
- In addition, the **Floor Defaults** button can be added to a toolbar for quick access to the **Floor Defaults** dialog. See "Toolbar Customization Dialog" on page 135.

The **Floor Defaults** dialog also opens whenever you add a new floor to the plan. See "Adding Floors" on page 427.

The **Floor Defaults** dialog does not open when you build a foundation; however, the **Floor 0 Default** settings are created based on the current Foundation Defaults. See "Foundation Defaults" on page 438.

The **Floor Defaults** dialog is similar to the **Room Specification** dialog, but controls the default settings for all rooms on the current floor. The settings here also control the height of individual walls as they are drawn on the floor in question. See "Room Specification Dialog" on page 346.

Note: The default floor height for Floor 1 is 0. It can be modified in the Room Specification dialog, but not in the Floor 1 Defaults dialog. See "Floor and Room Defaults" on page 324.

Structure Panel

The settings on the Structure panel are similar to those in the **Room Specification** dialog. See "Structure Panel" on page 348.

Moldings Panel

The settings on the Moldings panel are similar to those in the **Room Specification** dialog. See "Moldings Panel" on page 643.

Fill Style Panel

The settings on the Fill Style panel are similar to those in the specification dialogs for many objects throughout the program. See "Fill Style Panel" on page 1067.

Materials Panel

The settings on the Materials tab are similar to those in the specification dialogs for many objects throughout the program. See "Materials Panel" on page 831.

Floor Tools

Select **Build> Floor** to access the floor tools.

Select **Build> Floor> Build New Floor** to build a new floor. A new floor can be generated based upon the

perimeter of the floor below or a blank floor can be created and drawn from scratch. See “Adding Floors” on page 427.

 Select **Build> Floor> Insert New Floor** to insert a new floor below the current floor. See “Adding Floors” on page 427.

 Choose **Build> Floor> Delete Current Floor** to remove the current floor from the plan. For more information, see “Deleting Floors” on page 431.

 Select **Build> Floor> Exchange With Floor Above** to move the current floor up one floor and the floor above it down. See “Exchanging Floors” on page 430.

 Choose **Build> Floor> Exchange With Floor Below** to move the current floor down one floor and the floor below it, up. See “Exchanging Floors” on page 430.

 Choose **Build> Floor> Build Foundation** to open the **Foundation Defaults** dialog and build a foundation floor. See “Building a Foundation” on page 442.

 Select **Build> Floor> Delete Foundation** to remove the foundation from the plan. See “Deleting Foundations” on page 448.

 Select **Build> Floor> Hole in Floor Platform** to draw a hole in a floor platform on the current floor. See “Floor and Ceiling Platforms” on page 337.

 Select **Build> Floor> Hole in Ceiling Platform** to draw a hole in a ceiling platform on the current floor. See “Floor and Ceiling Platforms” on page 337.

 Select **Build> Floor> Layered Material Polyline** to draw a Layered Material Polyline. See “Floor and Wall Material Regions” on page 779.

 Choose **Build> Floor> Rebuild Walls/Floors/Ceilings** to force Chief Architect to recalculate the relationship between the walls, floors, and ceilings in your model. See “Rebuilding Walls, Floors and Ceilings” on page 431.

Adding Floors

When a new plan file is opened in Chief Architect, two floor levels are present: Floor 1 and the Attic Floor. You can add up to 30 total living floors, as well as create a foundation below Floor 1.

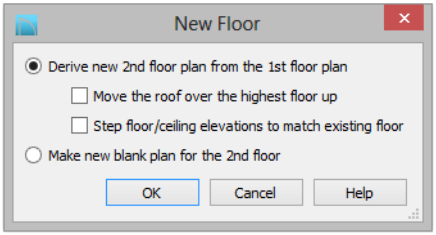
Floors can be added whenever you like; and once created, they can also be copied, swapped, and deleted.

Note: Chief Architect allows only one floor, the foundation/basement, below the first floor. Keep this in mind when you begin an as-built or plan for a multi-story building. See “Foundations” on page 437.

Build New Floor

 New floors can be created in floor plan view as well as in 3D views, and are always added above the top living floor.

To create a new floor, select **Build> Floor> Build New Floor**.



- **Derive new 2nd floor plan from the 1st floor plan** creates a new top floor with exterior walls generated directly over the exterior walls of the floor below. Wall types and roof directives associated with the walls on the floor below are duplicated; however, interior walls are not. See “Roof Panel” on page 307.
- Check **Move Highest Floor’s Roof Up** to move any roof planes displaying on the highest floor in the plan up one floor when the new floor is created. Roof planes displaying on floors other than the top floor are unaffected. This option is only available if there are roof planes built on the top floor and is not available when **Auto Rebuild Roofs** is enabled. See “Build Roof Dialog” on page 468.

When Move highest floor roof up is checked, roof planes on the top floor will move even if the “Roof Planes” layer is locked and manually edited roof planes are set to be retained. See “Roof Panel” on page 469.

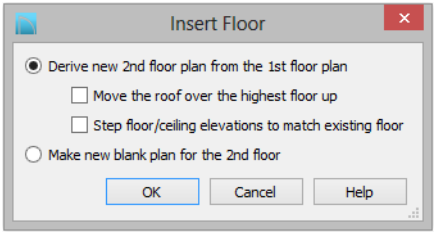
- Check **Step floor/ceiling elevations to match existing floor** to maintain all ceiling heights on the existing floor by stepping floor heights on the new floor to match. Ceiling heights on the new floor also become stepped accordingly. See “Stepped Floor and Ceiling Platforms” on page 338.
- **Make new (blank) plan for the 2nd floor** creates a new top floor that is blank. This option is typically selected only if none of the exterior walls on the new floor will be directly above the exterior walls on the floor below. If you choose this method, it may be helpful to turn on the Reference Floor when drawing walls on the new floor. See “The Reference Floor” on page 434.

When you click OK, the **Floor Defaults** dialog for the newly created floor opens. Make any necessary changes to the floor structure, moldings, or materials and click OK. See “Floor Defaults Dialog” on page 426.

The new floor becomes the current floor in floor plan view. If, however, the new floor is created in a 3D view, the camera remains on its original floor and does not move.

Insert New Floor

A floor can also be inserted beneath the current floor in both floor plan view and 3D views. Begin by making the floor you would like to insert a floor under as the Current Floor, then select **Build> Floor> Insert New Floor**. See “Change Floor / Reference” on page 435.



- Select **Derive new 2nd Floor plan from the 1st Floor plan** to insert a new floor below the current floor, based on the exterior walls of the current floor.
- Check **Move Highest Floor's Roof Up** to move any roof planes displaying on the highest floor in the plan up one floor when the new floor is created. Roof planes displaying on floors other than the top floor are unaffected. This option is only available if there are roof planes built on the top floor and is not available when **Auto Rebuild Roofs** is enabled. See "Build Roof Dialog" on page 468.

When Move highest floor roof up is checked, roof planes on the top floor will move even if the "Roof Planes" layer is locked and manually edited roof planes are set to be retained. See "Roof Panel" on page 469.

- Check **Step floor/ceiling elevations to match existing floor** to maintain the floor and ceiling heights on the existing floors by stepping floor and ceiling heights on the new floor to match. See "Stepped Floor and Ceiling Platforms" on page 338.
- Select **Make new (blank) plan** to insert a blank floor below the Current Floor.

Adding a Foundation

To add a foundation, select **Build> Floor> Build Foundation**  . See "Building a Foundation" on page 442.

Displaying Floors

Chief Architect allows you to view the floors in your plan in a variety of ways.

In Floor Plan View

In floor plan view, only one floor can be active for editing at a time. This is referred to as the Current Floor. See "The Current Floor" on page 433.

In addition to the Current Floor, one other floor can be displayed for reference purposes: the Reference Floor. Objects on the Current Floor can snap to those on the Reference Floor, helping you align objects. See "The Reference Floor" on page 434.

Floor and ceiling platforms do not display in floor plan view. When floor and/or ceiling framing is present, its display can be turned on; however, other components of floor and ceiling platforms like sheathing, drywall, and finish materials, cannot.

In 3D Views

In most 3D views, all floors in a plan are visible, from the foundation up to the attic. There are three exceptions:

- **Perspective Floor Camera**  views.
- **Orthographic**  and **Perspective Floor Overviews**  .

- **Wall Elevation** views.

Floor Cameras and **Overviews** show the Current Floor only, not including its ceiling, while the **Wall Elevation** tool creates an elevation of a wall on a single floor in a single room. See “3D View Tools” on page 877.

In the Materials List

The materials that make up floor and ceiling platform assemblies are listed under different Categories in the Materials List:

- **Subfloor** - Lists floor framing and structural subflooring materials specified in all Floor Structure Definitions in the current plan. See “Floor and Ceiling Platform Definitions” on page 337.
- **Flooring** - Lists flooring and subflooring materials specified in all Floor Finish Definitions in the current plan.
- **Framing** - Lists ceiling framing and any other materials specified in all Ceiling Structure Definitions in the current plan.
- **Wall Board** - Lists ceiling finish materials specified in all Ceiling Finish Definitions in the current plan.
- **Insulation** - Floor insulation is calculated for all rooms that have a floor, and ceiling insulation is calculated for all rooms that have a ceiling - regardless of the Floor or Ceiling Structure Definition. When a ceiling is not present, insulation is calculated for the roof. See “Structure Panel” on page 348.
- **Foundation** - Lists the concrete and mesh for all Floor Structure Definitions in the current plan with a layer of concrete material. See “Material Types” on page 837.

See “Materials Lists” on page 1247.

Exchanging Floors

Select **Build> Floor> Exchange With Floor Above** or **Exchange With Floor Below** to swap the current floor with the floor above or below.

The floor that was moved becomes the current floor at its new location. You can easily move a floor up or down several floors by using either one of these buttons repeatedly.

Copying Floors

The **Edit Area** tools can be used to make copies of entire floors in a plan. See “Edit Area Tools” on page 246. You can use these tools to:

- Make a copy of an existing floor to be pasted onto a new floor.
- Make a copy of all existing floors in a plan to be pasted into a different plan.

You can also copy the information on a floor by pressing Ctrl + A (Select All), then using **Copy** and **Paste Hold Position**. See “Paste Hold Position” on page 171.

Copying Between Plans

While you can copy and paste floors from one plan file to another, this is not always the best approach.

- To make a copy of the plan for backup or your records, use **Save As** to save the file using a new name. See “Saving, Exporting, and Backing Up Files” on page 53.
- To copy the model into another plan with multiple structures, consider exporting it as a symbol and importing it into the new plan. See “Custom Symbols” on page 1159.

Deleting Floors

Select **Build> Floor> Delete Current Floor** to remove the current floor from the plan. If there is a floor above, it becomes the current floor; if there is no floor below, the floor beneath becomes the current floor.

To delete Floor 0, select **Build> Floor> Delete Foundation**. You can delete the foundation without actually being on Floor 0. Floor 0 cannot be deleted while **Auto Rebuild Foundation** is turned on. See “Deleting Foundations” on page 448.

When a floor is deleted, all objects on that floor are deleted with it, including locked roof planes and any other objects on locked layers. See “Locking Layers” on page 145.

Rebuilding Walls, Floors and Ceilings

When you make a change to the walls or to the floor or ceiling platforms in your plan, they may not immediately resize or move in the 3D model. The program does detect such changes, though, and the next time you generate a 3D or section/elevation view, walls, floors and ceilings are rebuilt.

By default, walls, floors and ceilings are also rebuilt when an automatic roof is generated. See “Build Roof Dialog” on page 468.

You can direct the program to rebuild walls, floors, and ceilings at any time by selecting **Build> Floor> Rebuild Walls/Floors/ Ceilings** .

If you do not want the program to rebuild walls, floors and ceilings when a 3D view is created, uncheck **Auto Rebuild Floors and Ceilings** in the **3D View Defaults** dialog. This may speed up plan view editing for very large plans. When this is unchecked and the structure is not up to date, the Rebuild Walls, Floors, Ceilings icon displays near your mouse pointer. See “Options Panel” on page 873.

Split Levels

Both split level floor plans and split level entries can be created by controlling the floor and ceiling heights of individual rooms in a multiple story structure.

Split Level Floor Plans

A split level, or tri-level, structure is a building where the floor level in one part of the plan is located approximately half way between the floor and ceiling levels of another part of the plan.

Split Level Home

To create a simple split level plan

1. Draw a simple rectangular structure divided into two separate halves by an interior wall.
2. Select one of the rooms and click the **Open Object** edit button. See "Room Specification Dialog" on page 346.
3. Raise the **Floor Height** then press the Tab key.
4. Restore the **Relative Rough Ceiling** to the default value, then click OK.
5. Build a stem wall foundation. See "Foundations" on page 437.
   - The foundation under the room with the lower floor height will have the specified Min Stem Wall Height.
   - The foundation under the room with the raised floor will have taller stem walls.
   - Both can be edited in the **Room Specification** dialog.
6. If you add a Floor 2, note that the **Ceiling Height** in the room on Floor 1 will be reset to the default value.
   - To maintain a stepped condition on multiple floors, return to this room and set the **Relative Rough Ceiling** back to using the default.

For more detailed instructions, visit chiefarchitect.com .

Split Level Entries

A split level entry, or divided entry, is characterized by an entry door that opens onto a landing positioned half way between the basement floor and first floor levels.

Split Level Entry

To create a simple split level entry

1. Create a plan file with a full basement at the location of the entry door. See “Basement Rooms” on page 450.
2. Go to Floor 0 and draw a stair **Landing** at the location of the entry. See “Landings” on page 531.
3. Specify the desired height of the landing. See “Stair Landing Specification Dialog” on page 558.
4. Draw stairs upward from the basement floor to the landing.
5. Draw a second stair section from the landing upward.
6. Select the stairs and click the **Auto Stairwell** edit button. See “Creating a Stairwell” on page 544.

Split level entries are often associated with daylight basements. See “Daylight Basements” on page 451.

For more detailed instructions, visit chiefarchitect.com .

The Current Floor

Only one floor can be active at any given time. The active floor is referred to as the **Current Floor**, and it is the only floor on which objects can be edited.

If you want to edit two different floors at the same time, you can open the plan again. This opens a second window on the current open plan that has the same editing abilities as the first. Only one of these windows can be active at any given time.

Floor Up / Floor Down

If you are working with more than one floor, you can select **Tools> Reference Floors> Up One Floor** or **Down One Floor** to switch from one floor to another.

You can change the current floor in floor plan, cross section/elevation and 3D views. The current floor displays on the **Change Floor/Reference** button, which can be found between the **Down One Floor** and the **Up One Floor** buttons.

Floors become available once they have been built. The Attic and foundation levels are also accessible using these tools.

Change Floor / Reference

If there are multiple floors, select **Tools> Reference Floors> Change Floor/Reference** to open the **Change Floor/Reference** dialog, where you can select both the current floor and which floor is used in the Reference Floor, as well as control the appearance of the Reference Floor.

The Attic Floor

Chief Architect automatically creates a floor above the top numbered floor level of each plan. This floor is called the Attic floor and has only one purpose: to provide a space for automatically generated Attic walls. See “Attic Walls” on page 290.

Because the Attic floor is not meant to be a living area, a warning message will display if you try to draw walls or other objects on this floor.

In some situations, you may find it necessary to draw one or more walls on this floor; however, even if you enclose an area with walls, rooms cannot be created on the Attic floor.

If you wish to create an attic loft, bonus room, or storage area in your plan, you will need do so on a numbered floor level.

The Reference Floor

When there is more than one floor in a model, it is often helpful to see how they relate to each other. Any floor can be shown as the **Reference Floor** along with the current floor.

When the Reference Floor Display is turned on, the floor that you were last on prior to the current floor is used as the Reference Floor and is shown in red. Objects on the current floor can snap to objects on the Reference Floor; however, objects on the Reference Floor cannot be selected or edited.

Reference Floor Display

To turn on the Reference Floor, select **Tools> Reference Floors> Reference Floor Display** or press F9 on your keyboard. The Reference Floor can also be toggled on or off quickly in floor plan view by clicking the **Reference Floor Display** toggle button.

If the Reference Floor is on when a floor plan view is sent to layout, it is always on in that layout view and cannot be turned off.

If the Reference Floor is turned on when a view is printed, it will be included in the printed output. See “Displaying Objects” on page 1182.

Note: If objects on the current floor and the Reference Floor have edges that line up, the Reference Floor may be difficult to see on screen. When lines of two different colors are superimposed upon each other, discoloration may result.

Reference Floor Display Options

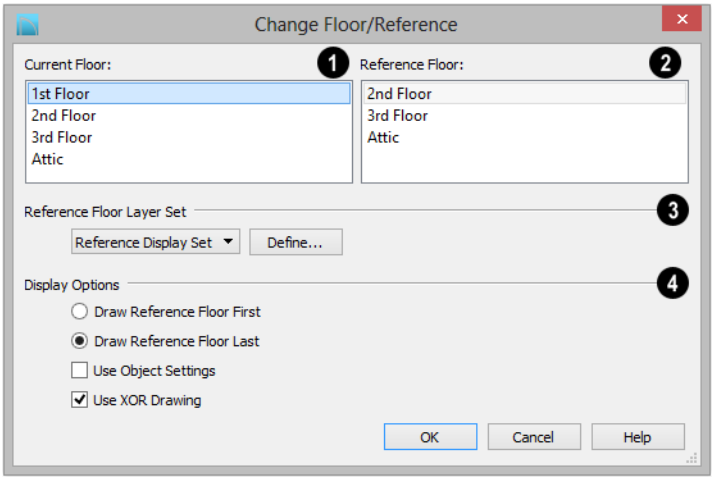
The display of objects in the Reference Floor is controlled by layer set. You can control the appearance of the layer set currently in use by selecting **Tools> Reference Floors> Reference Floor Display Options**. See “Layer Display Options Dialog” on page 148.

The current Reference Floor layer set can be specified in both the **Change Floor/ Reference** and **Layer Set Management**

dialogs. While the default Reference Display Set is usually sufficient, you also can create as additional layer sets and use any of them for the Reference Floor. See “Layer Set Management” on page 147.

Change Floor / Reference

By default, the floor below the current floor is the Reference Floor, but any floor can be referenced using the **Change Floor/Reference** dialog. To open the dialog, select **Tools> Reference Floors> Change Floor/Reference** button.



1 The **Current Floor** is highlighted here. You can select another floor to make it the current floor.

2 The **Reference Floor** currently used for reference is highlighted here. You can select another floor to display it instead.

3 The **Reference Floor Layer Set**, which controls which layers are visible in the Reference Floor, is listed here. By default, the Reference Display Set is used. Select another layer set from the drop-down list to use it for the Reference Floor Display.

> While any layer set can be used as the Reference Display Layer Set, for best results you should use the default Reference Display Set or create a new layer set specifically for reference display purposes. See “Layer Sets” on page 145.

4 **Display Options** allow you to control how the lines and fill patterns of objects in the Reference Floor appear.

- Select **Draw Reference Floor First** to draw the Reference Floor before drawing the objects on the current floor. The lines and fill patterns of objects in the Reference Floor display behind the current floor.

- Select **Draw Reference Floor Last** to draw the Reference Floor after the objects on the current floor are drawn. The lines and fill patterns of objects in the Reference Floor display in front of the current floor, and may cover objects on the current floor partially or completely.
- **Use Object Settings** displays the line and fill styles of objects in the Reference Floor that aren't using their default line and fill styles. When this is unchecked, objects display according to their layer settings in the Reference Floor Layer Set.
- **Use XOR Drawing** changes the color of lines in the Reference Floor that are drawn on top of one another. Lines with identical properties do not display.

Swap Floor/Reference

If one floor is defined as the current floor and another floor is defined as the reference floor, select **Tools> Reference Floors> Swap Floor/Reference** to switch the status of the two floors.

Foundations

There are three foundation types in Chief Architect: stem walls with footings, grade beams on piers, and monolithic slab. All three can be generated automatically or manually. The foundation type can be specified in the **Foundation Defaults** dialog when the foundation is built on Floor 0.

There can be only one foundation level in a plan, Floor 0; however, foundation structures can be drawn on any floor using the Foundation and Slab Tools.

Always consult registered geotechnical and civil engineers for information regarding the proper foundation for your site.

Chapter Contents

Foundation Defaults

There are several defaults dialogs that affect the foundation. They can be accessed by selecting **Edit> Default Settings**.

Select “Foundation” and click the **Edit** button to open the **Foundation Defaults** dialog.

If a foundation has been built and you are on Floor 0, select “Floor” and click the **Edit** button to open the **Floor 0 Defaults** dialog.

The settings here are initially drawn from those in the **Foundation Defaults** dialog. See “Floor Defaults Dialog” on page 426.

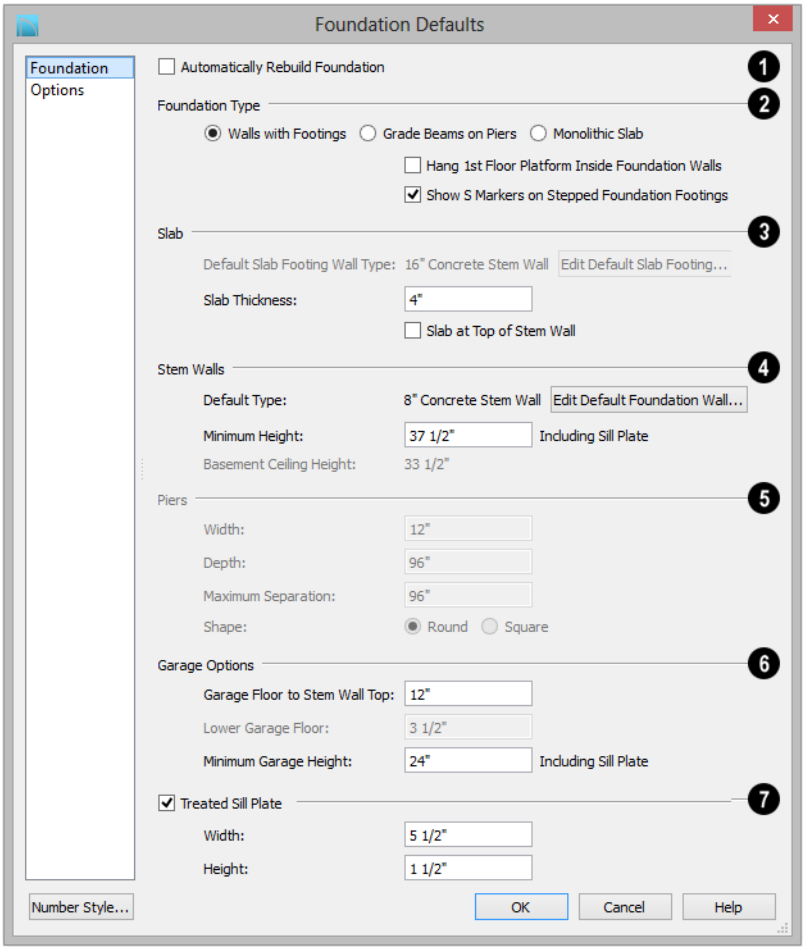
Click the + beside “Walls” to display the subheadings, then select “Foundation Wall” or “Slab Footing” and click the **Edit** button to open the defaults dialog for that wall tool. See “Wall, Railing, and Fencing Defaults” on page 254.

Foundation Defaults Dialog

The **Foundation Defaults** dialog allows you to specify stem wall height, slab thickness, treated sill plates, and other characteristics of a foundation. These values determine how a new foundation is generated as well as the sizes for manually drawn foundation walls added to an existing foundation.

The settings in the **Foundation Defaults** dialog are similar to those in the **Build Foundation** dialog, which opens when **Build> Floor> Build Foundation** is selected. The primary difference is that when you click **OK** in the **Foundation Defaults** dialog, no changes are made to the model. See “Building a Foundation” on page 442.

Foundation Panel



❶ Check **Auto Rebuild Foundation** to automatically rebuild the foundation whenever changes are made to Floor 1 that affect the structure of the foundation. See “Rebuilding Foundations” on page 445.

❷ Three different **Foundation Types** can be created in Chief Architect. Each type of foundation has different default settings, options, and behaviors. Select the radio button next to the desired type.

- Select **Walls with Footings** to produce a foundation composed of stem walls with footings that run continuously under the base of the walls.
- Select **Grade Beams on Piers** to generate a pier and grade beam

foundation. The floor framing rests directly on top of the grade beams.

- Select **Monolithic Slab** to build a slab foundation defined by Slab Footings. The foundation forms the floor platform for Floor 1. It is visible on Floor 0 and can be selected and edited. See “Slab Footing” on page 264.
- Check **Hang 1st Floor Platform Inside Foundation Walls** to produce stem walls that build up to the top of the floor platform of Floor 1. When unchecked, the stem walls build to the bottom of the floor platform, which bears on top of them. Only available when Walls with Footings is selected, above.
- Check **Show “S” Markers on Step Foundation** to include an “S” symbol in floor plan view anywhere there is a step in foundation wall height. Not available when Grade Beams on Piers is selected, above. See “Displaying Foundations” on page 444.

❸ Slab

- The name of the **Default Slab Footing Wall Type** displays here for reference. Click the **Edit Default Slab Footing** button to open the **Wall Type Definitions** dialog and change the definition of the default wall type. Only available when Monolithic Slab is the selected Foundation Type.
- Specify the **Slab Thickness**, which is the thickness of the slab produced above the footing or at the top of the stem wall.
- Check **Slab at top of Stem Wall** to raise the slab so its top is flush with the top of the stem walls. Only available when Walls with Footings is the selected Foundation Type.
  If **Slab at top of Stem Wall** is selected, all rooms on the first floor are automatically set to **Floor Supplied by the Foundation Room Below** in the **Room Specification** dialog. See “Structure Panel” on page 348.

❹ Stem Walls

- The name of the **Default Foundation Wall Type** displays here for reference.
- Click the **Edit Default Foundation Wall** button to open the **Foundation Wall Defaults** dialog and change the default settings for foundation walls. See “Foundation Walls” on page 264.
- If Monolithic Slab is the selected Foundation Type, the **Edit Garage Curb** button will be available. Click it to open the **Foundation Wall Defaults** dialog and define the walls that form curbs around Garage and Slab rooms.
- Specify the **Minimum Height**, which is the minimum height for foundation stem walls and grade beams and includes the treated sill plate.
- The **Basement Ceiling Height** displays here as a reference. This is the distance from the top of the slab floor to the basement ceiling and is equal to the Minimum Wall Height minus the Slab Thickness.

  If the Minimum Wall Height is at least 76” (1900 mm), a Ceiling Finish is added to the foundation room automatically. A slab floor is also generated above the footing. The ceiling height and finish can be changed later. See “Room Specification Dialog” on page 346. To remove this

slab, specify the room areas in the basement as “Open Below”. See “Room Types” on page 329.

❺ The **Piers** options are only available when Grade Beams on Piers is the selected Foundation Type.

- Specify the **Width**, **Depth**, and **Maximum Separation** of the piers.
- Choose either **Round or Square** piers.

❻ **Garage Options**

- Specify the **Garage Floor to Stem Wall Top**, which is the distance between the slab and the tops of the stem walls in both Garage and Slab rooms. Available for Walls with Footings and Grade Beams on Piers foundation types. See “Foundation Defaults” on page 438.

Note: The Garage Floor to Stem Wall Top setting only affects Garage rooms that have a Floor Height of 0. See “Structure Panel” on page 348.

- Specify the **Lower Garage Floor** height, which is the distance that Garage and Slab room floors are lowered when a Monolithic Slab foundation is built. This value is also the height of the curbs around these rooms. See “Garages” on page 449.
- Specify the **Minimum Garage Stem Wall Height**, which is the minimum height that stem walls defining a Garage foundation will be, regardless of the Minimum Stem Wall Height for the rest of the foundation.

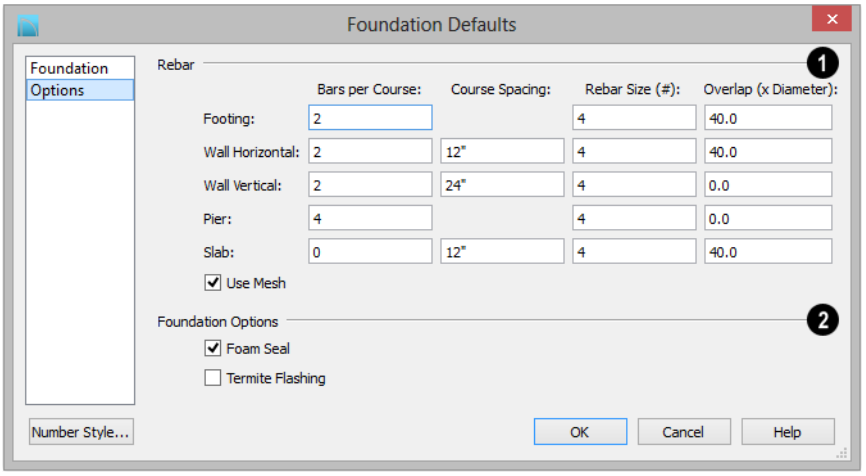
❼ Check **Treated Sill Plate Size** to reserve space for a treated sill plate, or mud sill, between stem walls and grade beams and the floor platforms or framed walls that bear on them. Treated sill plates are generated when the floor framing for Floor 1 is generated. See “Treated Sill Plates” on page 563.

- Specify the **Width** and **Height** of the treated sill plates. If the Height is set to zero, no sill plates are produced. Not available if **Monolithic Slab** is the selected **Foundation Type**.

Options Panel

The Options panel allows you to include rebar and other materials related to the foundation in the Materials List. See “Materials Lists” on page 1247.

Some options on this panel may be unavailable depending on the foundation type selected on the Foundation panel.



1 Specify the **Rebar** used in the major foundation components: **Footing**, **Wall Horizontal** courses, **Wall Vertical** courses, **Pier**, and **Slab**. Rebar is calculated in the Materials List but does not display in any 2D or 3D views of the model. See "The Materials List Tools" on page 1248.

- **Bars per Course** - Specify the number of bars of rebar to be used per course for each foundation component.
- **Course Spacing** - Define the spacing for Vertical and Horizontal Wall courses, and for Slabs. If slabs are to have rebar instead of mesh, this spacing value applies to both directions.
- **Rebar size** - Define the rebar size in 1/8th inches. 4 represents 4/8, or ½ inch.
- Specify the **Overlap** where sticks of rebar meet, in terms of the rebar's **Diameter**. A value of 40.0, for example, equals 40 times the Rebar Size.
- Check **Use Mesh** to reinforce the slab floor with mesh instead of rebar, or uncheck it to use rebar.

2 **Foundation Options** - Select either **Foam Seal**, **Termite Flashing**, or both. These options are added to the Materials List, but do not display in the model.

Building a Foundation

Foundations can be generated automatically or drawn manually. A combination of the two methods can also be used.

Three foundation types are available: stem walls with footings, grade beams on piers, and monolithic slabs. The first two options are created using walls; the last creates concrete slabs with footings.

Automatically built foundations are placed on Floor 0 and are based on wall positions

and floor heights on Floor 1. Foundation walls or slab footings are generated under:

- All exterior walls on Floor 1 that define a room other than a Court, Deck or Balcony room type. See “Room Definition” on page 325.
- Any interior walls on Floor 1 defining rooms with different floor heights. See “Floor and Ceiling Heights” on page 335.
- Any interior walls on Floor 1 that have **Create Wall/Footing Below** checked in the **Wall Specification** dialog. See “Foundation Panel” on page 310.

At least one room must be defined on Floor 1 for a foundation to be automatically generated. If no rooms are defined on Floor 1, a blank Floor 0 is created.

There can be only one Floor 0 per plan. If your plan requires a foundation on more than one floor, you will need to draw the required foundation walls or slabs yourself.

To build an automatic foundation

1. Select **Build> Floor> Build Foundation** .
2. Specify the desired foundation type and other information in the **Build Foundation** dialog. The settings in this dialog are similar to those in the Foundation Defaults dialog. See “Foundation Defaults” on page 438.
3. In the **New Floor** dialog, select **Derive new Foundation plan from the 1st floor plan** and click **OK** to build a foundation based on Floor 1.

If you prefer, you can instead select **Make new (blank) plan for the Foundation** to create an empty foundation level where you can manually draw foundation walls or slabs.

In most cases, it is preferable to base Floor 0 off the first floor plan and then manually edit the foundation as needed. See “Editing Foundations” on page 445.

Mixing Foundation Types

You can also create a foundation that combines stem walls, grade beams and piers, and/or monolithic slabs.

To create a foundation of multiple types

1. Begin by specifying any rooms on Floor 1 that require a slab floor as either a Garage or Slab **Room Type**. See “Foundations and Rooms” on page 449.
2. Alternatively, or in addition, you can specify any rooms on Floor 1 as having a **Monolithic Slab Foundation**. See “Structure Panel” on page 348.
3. **Build Foundation** , as described above.
   - If the foundation will include any grade beams and piers, specify **Grade Beams on Piers** as the **Foundation Type** and build the foundation.
   - If the foundation will include a combination of stem walls and slabs, specify **Walls with Footings** as the **Foundation Type**.
4. Once the foundation walls have been generated, they can be moved or deleted, and new **Foundation Walls** , **Slab Footings** , and/or **Slabs** can be drawn. See “Foundation Walls” on page 264 and “The Slab Tools” on page 452.

Openings in Foundation Walls

Any doors placed in walls around a Garage will receive cutouts in the garage stem wall or curb. The width of that cutout can be specified in the **Door Specification** dialog. See “General Panel” on page 368.

Displaying Foundations

The display of foundation walls, slabs, curbs, piers and footings is controlled in the **Layer Display Options** dialog. See “Layer Display Options Dialog” on page 148.

- Foundation Walls, including grade beams, Slab Footings and Garage curbs, are placed on the “Walls, Foundation” layer by default.
- Footings under Foundation Walls and Slab Footings are placed on the “Footings” layer by default, as are foundation piers.
- Slabs created using the **Slab Tools** are placed on the “Slabs, Custom” layer by default.

In Floor Plan View

The appearance of foundation wall types, including line weights, colors and fill styles, is specified in the **Wall Type Definitions** dialog. See “Wall Type Definitions Dialog” on page 298.

Changes in stem wall and monolithic slab foundation heights are represented in floor plan view with S markers. These markers are located on the “Footings, Step Markers” layer and use the Text Style assigned to that layer. See “Stepped Foundations” on page 451.

If a door on Floor 1 extends into a stem wall or curb defining a Garage room, its location will be indicated on Floor 0. See “Displaying Doors” on page 359.

In 3D Views

In 3D views, all objects on Floor 0 will only display when the “Foundation” layer is turned on.

While the display of foundation walls and their footings can be controlled independent of one another in floor plan view, in 3D views this is not the case. If a foundation wall is set to display, its footing will as well - even if the “Footings” layer is turned off. The reverse is also true - if a foundation wall’s display is turned off, so will its footing’s.

The display of monolithic slab foundations in 3D views is controlled by the “Foundation” layer. **Slab Footings** are located on the “Walls, Foundation” layer; but if this layer is turned off, any **Slab Footings** that define a foundation room will continue to display as long as the “Foundation” layer is on.

In Cross Sections

When the **Auto Detail** tool is used in a cross section view, the fill style of each wall layer as set in its Wall Type Definition is used. See “Auto Detail” on page 884.

Foundation wall footings use a concrete fill that cannot be specified beforehand but can be edited once **Auto Detail** has been generated.

Monolithic slabs and their footings use the fill style specified for the slab room's Floor Structure definition. See "Floor and Ceiling Platform Definitions" on page 337.

In the Materials List

The materials that make up foundation walls, footings, and slab floors are listed under the Foundation category in the Materials List, including:

- Concrete for walls, slabs, and footings
- Rebar for walls and footings
- Rebar or mesh for slabs

Slab Footings and the room areas that they define can be assigned **Pour Numbers** in their specification dialogs. Typically, a Slab Footing will have the same Pour Number as the room it defines, although it is possible for it to define multiple rooms with differing Pour Numbers. Pour Numbers are listed separately under the Foundation category of the Materials List. See "Foundation Panel" on page 310 and "Structure Panel" on page 348.

Other objects relevant to foundations can be found in these categories:

- **Exterior Trim** - Lists slabs drawn with the **Slab** tools that are located outside of a structure.
- **Interior Trim** - Lists slabs drawn with the **Slab** tools that are located inside of a structure.
- **Masonry** - Lists fireplaces created with the **Fireplace** tool.

See "Materials Lists" on page 1247.

Editing Foundations

Stem wall with footings, wall with piers and monolithic slab foundations are all created using walls which enclose room areas.

- Foundation walls can be selected and edited much like other walls. See "Editing Walls" on page 278.
- Footing size can be changed on a wall by wall basis. See "Footing Width and Height" on page 447.
- Foundation rooms can also be selected and edited like other rooms. See Foundations and Rooms.

Rebuilding Foundations

By default, foundations do not update automatically when changes are made to the structure on Floor 1. For example, if exterior walls are moved or floor platforms are raised or lowered, the foundation must be rebuilt.

You can direct the program to rebuild an automatically generated foundation whenever changes are made on Floor 1 that affect the foundation by checking **Auto Rebuild Foundation** in the **Foundation Defaults** dialog. See "Foundation Panel" on page 439.

You can also rebuild an automatically generated foundation by selecting **Build> Floor> Build Foundation** from the menu.

When **Auto Rebuild Foundation** is enabled, walls cannot be edited, manually drawn or deleted on Floor 0. When the foundation is rebuilt, any manually drawn or edited walls are deleted. Similarly, rooms on Floor 0 cannot be edited while this option is enabled. If you try to draw a wall or edit a room or a wall while **Auto Rebuild Foundation** is turned on, a warning message will display.

Changing Foundation Types

When a foundation is generated, the program creates **Floor Defaults** settings for Floor 0 based on the information in the **Build Foundation** dialog. If you specify a Monolithic Slab foundation, the default Floor Structure on Floor 1 will also be changed to a slab rather than a framed platform. See “Floor Defaults Dialog” on page 426.

If you rebuild the foundation using a different Foundation Type, it is advisable to check the floor heights of all rooms on Floor 1 - particularly Garage and Slab rooms, as well as any rooms that do not use the default floor height of 0”.

> To avoid unexpected results, it is recommended that you not change the Foundation Type once the foundation is built.

Stem Wall Height

When a foundation is created, all of Floor 0 uses the stem wall height specified in the **Foundation Defaults** dialog,

This height is measured from the bottom of floor platform of Floor 1 to top of the stem walls’ footings. If Floor 1 has multiple floor platform heights, the foundation stem walls will be stepped.

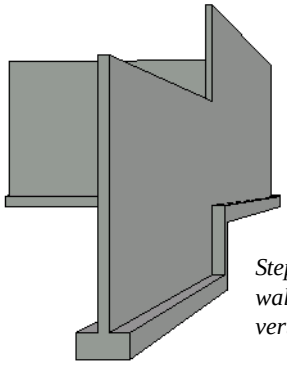
Once a foundation is created, stem wall heights can be adjusted either on a room-by-room basis or for individual walls.

To change a room’s stem wall height

1. Select a room on Floor 0 and click the **Open Object** edit button.
2. Specify the desired **Stem Wall Height** in the **Room Specification** dialog. See “General Panel” on page 347.
3. If you wish to reduce the **Stem Wall Height**, you will first need to reduce the **Ceiling Height** value by the same amount.

If adjacent rooms have stem wall heights that differ by at least 1/16 of an inch, the stem wall separating them uses the larger of these two values.

In 3D views, individual stem walls can be selected and edited. In most cases,this method should only be used for stepping the bottom of the foundation wall. See “Stepped Walls and Footings” on page 291.

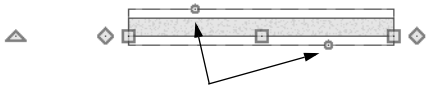


Stepped stem walls with vertical footing

Footing Width and Height

Foundation Wall footings derive their Width, Height and Offset from in the **Foundation Wall Defaults** dialog, Similarly, Slab Footings use the width and height specified in the **Slab Footing Defaults** dialog. Once a Foundation Wall or Slab Footing is created, its footing can be adjusted in its specification dialog. See “Foundation Panel” on page 310.

Footing Width can be adjusted using the edit handles in both floor plan and 3D views. Each side of the footing can be edited independently, which means that the Offset can also be modified using the footing resize edit handles.



Footing resize edit handles on a foundation wall

If the selected wall is a Slab Footing, the footing width can also be resized using dimensions and will resize the Wall Thickness, creating a new wall type if necessary. See “Editing Walls” on page 278.

Stem wall footing heights can also be edited in 3D views just as the rest of the stem wall can. Slab Footing heights, on the other hand, cannot be adjusted in 3D.

You can specify whether stepped stem walls have vertical footings on the Foundation panel of the **Foundation Wall Defaults and Specification** dialogs. You can also specify the chamfer width and height of monolithic slab foundation footings.

Interior Footings

Slab foundations often have interior footings: to support posts, for example. You can specify that an interior footing be created under an interior wall on Floor 1 when the foundation is built by checking **Create Wall/ Footing Below**. See “Foundation Panel” on page 310.

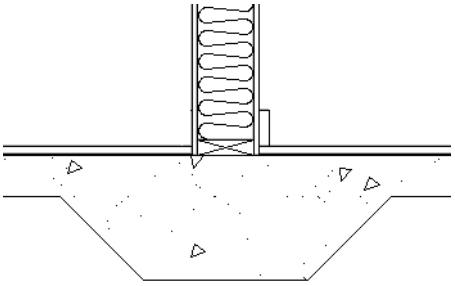
You can also draw them using the **Slab Footing** tool. See “Foundation Walls” on page 264.

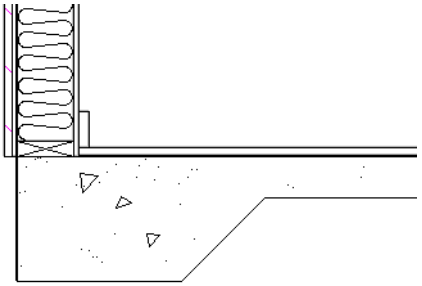
If an interior footing is inside of a room with a slab foundation and a curb, as in a garage, specify the **Slab Footing** as **Invisible** to prevent a curb from generating inside of the room. See “Room Dividers and Invisible Walls” on page 267.

Thickened Slabs

A thickened slab can be created by selecting a **Slab Footing** and specifying its **Chamfer Height** to equal the **Footing Height**. The **Chamfer Width** can be increased, as well.

- When the Slab Footing is drawn on the interior of a slab room, a thickened slab is created.





- When the Slab Footing defines the edge of a slab, a thickened slab edge results.

You can also specify the **Chamfer Height** and **Width** before the Slab Footings are created in the **Slab Footing Defaults** dialog. See “Foundation Panel” on page 310.

Aligning Foundation Walls

By default, foundation walls and slab footings will align with walls on the floor above along the outside surface of the Main Layer of both wall types. If you prefer, you can specify that foundation walls align to a different part of the walls above. See “Wall Type Definitions” on page 295.

If there is only one layer for both the stem wall and the first floor wall above it, the exterior surfaces of the walls align. The footing is centered on the stem wall unless this option is unchecked in the **Wall Specification** dialog. See “Foundation Panel” on page 310.

Brick Ledges

Brick ledges can be produced in stem wall, pier and monolithic slab foundations. The method used to produce a brick ledge varies depending on the foundation type. See “Brick Ledges” on page 265.

Deleting Foundations

Select **Build> Floor> Delete Foundation** to delete the entire foundation floor.

You can also select and delete individual foundation walls and slabs by clicking the **Delete** edit button or pressing the Delete key. See “Deleting Objects” on page 249.

Deleting and rebuilding the foundation is often the quickest way to update the model when substantial changes are made to Floor 1 after the foundation is built.

Foundations and Rooms

When a foundation plan is created, rooms included in the Living Area calculation generate a stem wall, grade beam, or slab foundation below them. Garage rooms generate slab foundations, but exterior rooms such as Decks, Courts and Balconies do not generate any foundation. See “Room Types” on page 329.

Interior foundation walls are not generated unless:

- They separate the area under a Slab or Garage room from the rest of the plan;
- They separate the area under a room specified as having a slab foundation from the rest of the plan;
- They define areas under rooms with different floor heights.
- A wall on Floor 1 is specified as a **Bearing Wall**. in the **Wall Specification** dialog. See “Foundation Panel” on page 310.

Note: To remove all or part of the concrete slab in the basement area, select a basement room and define it as Open Below in the Room Specification dialog.

Garages

When a foundation is generated based on the floor plan of Floor 1, a room on the first floor specified as either a Garage or Slab type will receive a stem wall or pier foundation with a slab floor and stem walls. If a monolithic slab foundation is generated, the room will receive a slab floor with curbs.

An opening placed in a wall defining a Garage will receive a cutout in the stem wall or curb that displays in floor plan view on the floor below provided that the stem wall or curb’s Main Layer has a Concrete or Brick material type.

The width of the concrete cutout can be defined and you can specify whether the cutout displays in the **Door** or **Window Specification** dialog. See “General Panel” on page 368.

By default, a room on Floor 1 specified as a Garage or a Slab will be assigned a lower floor height when the foundation is built. The amount that it is lowered depends on the foundation type:

- The floor height will drop the default thickness of the floor platform for Floor 1 plus 12” (300 mm) in a Walls with Footings or Grade Beams on Piers foundation.
- The floor height will drop 3 1/2” (88 mm) in a Monolithic Slab foundation.

These values are set in the **Foundation Defaults** dialog. See “Foundation Panel” on page 439.

To build a Garage slab with stem walls

1. Before the foundation is generated, specify the room as a Garage or Slab.
2. Build an automatic Wall with Footings or Grade Beamon Piers foundation.

In the Floor 1 Garage’s **Room Specification** dialog, **Floor Supplied by the Foundation Room Below** will now be checked. See “Structure Panel” on page 348.

By default, the program produces a 4" (100 mm) slab and 24” (600 mm) high stem walls

around the garage. These stem walls are drawn on Floor 0 and will indicate the locations of any doors that extend into them.

To build a Garage slab with curbs

1. Before the foundation is generated, specify the room as a Garage or Slab.
2. Build an automatic Monolithic Slab foundation, specifying the required Lower Garage Floor value.

By default, the program produces a 4" (100 mm) slab and 3 1/2" (88 mm) high curb around the garage. The curbs are drawn using Slab Footings on Floor 0, use the Default Foundation Wall type, and will indicate the locations of any doors that extend into them.

The floor height of the garage and the stem wall or curb height can then be adjusted, if necessary, in the Garage room's **Room Specification** dialog. See "Structure Panel" on page 348.

Basement Rooms

When a foundation's type is Walls with Footings or Grade Beams on Piers, and it is assigned a Minimum Wall Height of 76" (1900 mm) or greater, the resulting basement is automatically created with a 4" (100 mm) concrete slab floor. and a default Floor Finish like that on Floor 1.

Similarly, if a foundation is set up to have a Basement Ceiling Height of 72" (1800 mm) or greater when built, it is automatically given a painted drywall Ceiling Finish. See "Foundation Panel" on page 439.

Regardless of its ceiling height, however, you can specify a floor or ceiling finish for any room in the **Room Specification** dialog. See "Structure Panel" on page 348.

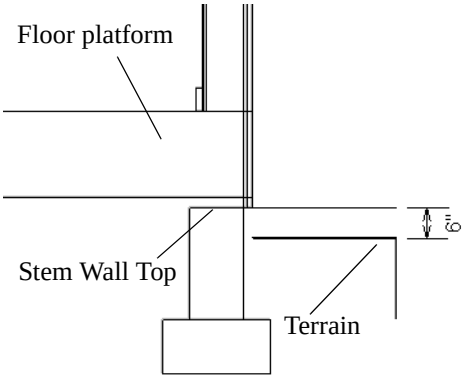
The resulting basement can be divided into separate rooms using **Interior Walls** or any wall type you wish. If the rooms in a basement have different floor heights, it is best to separate them using walls specified as **Foundation Walls** .

Foundations and the Terrain

Chief Architect automatically positions the terrain a set distance below Floor 1. See "Terrain Height vs Floor Height" on page 697.

In a plan with a foundation present, this distance will be:

- 6" (187 mm) below the top of the stem walls or grade beams in a Walls with Footings or Grade Beams on Piers foundation.
- 8" (200 mm) below the top of the slab in a Monolithic Slab foundation.



By default, the program will also create a flattened pad under the building footprint.

Not all foundations have these requirements, of course, so you can customize your foundation and terrain to suit your needs.

Daylight Basements

Daylight basements, also referred to as look-out basements, have walls that are tall enough for basement windows to be positioned above the terrain. They are often found in split level or split entry structures.

To create a daylight basement condition, build a stem wall foundation and modify these settings in the **Terrain Specification** dialog:

- Uncheck **Auto Calculate Elevation**.
- Increase the **Building Pad Elevation**, which is the distance between the default floor height of Floor 1 and the terrain.

Walkout Basements

Walkout basements are a type of daylight basement typically located on sloped terrain. They feature walls that are above ground at the lower end of the slope so that a door can be positioned above the terrain at that end.

To create a walkout basement, build a stem wall foundation and modify these settings in the **Terrain Specification** dialog:

- Uncheck **Flatten Pad**.
- Uncheck **Auto Calculate Elevation**.

You will also need to create sloped terrain and adjust the **Building Pad Elevation** and/or terrain data so that the terrain is at the appropriate height relative to the structure at both the high and low ends of the slope.

Stepped Foundations

Stepped foundations are usually built on sloping terrain. A stepped foundation will be produced automatically if more than one floor height is present on Floor 1 when the foundation is built.

In floor plan view, steps in stem wall and monolithic slab foundations are represented using S markers. See “Displaying Foundations” on page 444.

As with a walkout basement, you will need to build a stem wall foundation and modify these settings in the **Terrain Specification** dialog:

- Uncheck **Flatten Pad**.
- Uncheck **Auto Calculate Elevation**.

You will also need to create sloped terrain and adjust the **Building Pad Elevation** and/or terrain data so that the terrain is at the appropriate height relative to the structure at both the high and low ends of the slope.

You can also create a stepped foundation by editing foundation rooms and walls. See “Stem Wall Height” on page 446.

The Slab Tools

Select **Build> Slab** to access the Slab Tools. The Slab Tools are designed for more generic purposes than foundations and should not be substituted for a foundation plan. The settings in the **Foundation Defaults** dialog do not affect slabs created with the Slab Tools.

Slabs

Select **Build> Slab**> **Slab** or **Slab With Footing**, then either click or click and drag a rectangle to draw a slab. See “Rectangular Polyline” on page 1069.

Once created, slabs can be edited like other closed polylines. See “Editing Closed-Polyline Based Objects” on page 198.

Slab Holes

A hole can be placed in a slab or in the floor of a foundation slab with footings. Select **Build> Slab> Slab Hole** or **Build> Slab> Slab Hole With Footing**, then either click or click and drag within an existing slab to create a hole.

You can also create a Slab Hole in a Slab, or a Slab Hole with Footing in a Slab with

Footing, using the **Create Hole**  edit tool. See “Polyline Holes” on page 203.

Piers and Pads

Piers and pads can be manually placed under walls, railings, or beams on any floor. Select **Build> Slab> Round Pier** or **Build> Slab> Square Pad** and click in floor plan view to place a pier or pad.

For information about editing Piers and Pads, see “Editing Piers and Pads” on page 453.

Slabs and the Materials List

If the slab material type is specified as Concrete or Volume, the materials list calculates the total volume of the slab and all footings. See “Define Material Dialog” on page 841.

Editing Slabs

Slabs and Slab Holes can be selected in 2D and 3D views both individually and as a group and can be edited using the edit handles, the edit toolbar and the **Slab Specification** dialog. See “Slab Specification Dialog” on page 453.

Using the Mouse

Slabs and Slab Holes can be edited like other closed-polyline base objects in both 2D and 3D views. See “Editing Closed-Polyline Based Objects” on page 198.

Using the Edit Tools

One or more selected Slabs or Slab Holes can be edited in a variety of ways using the buttons on the edit toolbar. As with most objects, Slabs can be copied, replicated, moved, deleted, etc. See “The Edit Toolbar” on page 35.

Editing Piers and Pads

Round Piers and Square Pads can be selected individually and in groups in 2D and 3D views and edited using their edit handles and edit toolbars.

There are several ways to move piers and pads; however, they must always be positioned under a wall. A pier or pad can only be moved away from the wall it is placed beneath if it is moved to another wall.

Using the Mouse

In floor plan view, piers and pads can be edited like CAD lines. Three edit handles allow the pier or pad to be resized and moved along the wall it is placed beneath. See “Editing Line Based Objects” on page 184.

In 3D views, piers and pads can be edited like CAD boxes. See “Editing Box-Based Objects” on page 203.

Using Dimensions

In floor plan view, piers and pads can also be moved using dimensions. See “Moving Objects Using Dimensions” on page 989.

If you move a foundation wall or beam, any piers or pads it contains move with it.

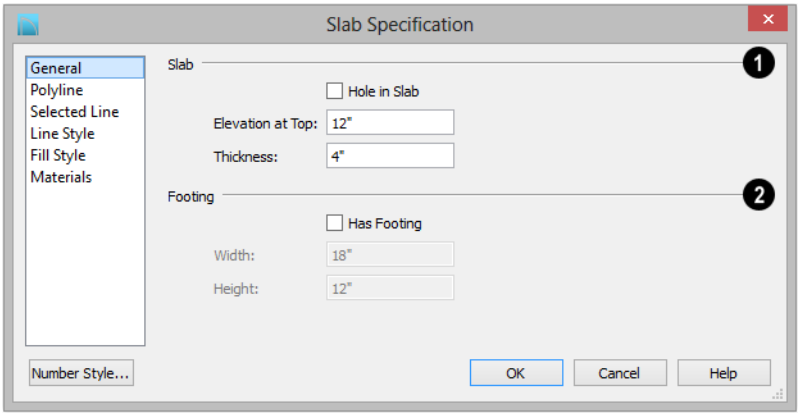
Using the Edit Tools

A selected pier or pad can be edited in a variety of ways using the buttons on the edit toolbar. As with most objects, piers and pads can be copied, replicated, moved, deleted, etc. See “The Edit Toolbar” on page 35.

Slab Specification Dialog

Select a Slab and click the **Open Object** edit button to open the **Slab Specification** dialog.

General Panel



1 Specify the characteristics of the selected **Slab**.

- Check **Hole in Slab** to convert the selected slab into a slab hole. A slab hole must be contained within a larger slab. See “Slab Holes” on page 452.
- Specify the **Elevation at Top**, which is the height of the slab’s top surface.
- Specify the **Thickness**, which is the measurement from the slab’s top to bottom surface.

2 Specify the characteristics of the selected slab’s **Footing**.

- Check **Has Footing** if you would like the slab to have a footing around the inside of its perimeter.
- Specify the **Height** and **Width** for the footing.

Polyline Panel

The **Length/Perimeter**, total **Area**, and **Volume** of the selected slab displays here. The volume is the amount of concrete required to pour the slab.

If the selected Slab has any Holes in it, they will be subtracted from the **Area** and **Volume** values. See “Slab Holes” on page 452.

Selected Line Panel

The Selected Line panel is available when the selected edge is a line as opposed to an arc. For information about the settings on this panel, see “Polyline Specification Dialog” on page 1066.

Selected Arc Panel

The Selected Line panel is available when the selected edge is an arc as opposed to a line. See “Change Line/Arc” on page 229.

Line Style Panel

For information about the settings on this panel, see “Line Specification Dialog” on page 1052.

Fill Style Panel

The settings on the Fill Style panel affect the selected slab's appearance in floor plan view. For information about these settings, see "Fill Style Panel" on page 1067.

Materials Panel

For information about the settings on this panel, see "Materials Panel" on page 831.

Fireplaces

A masonry fireplace can be placed in or away from a wall by selecting **Build> Fireplace** and then clicking in the drawing area.

- If created in a wall, it is considered a wall opening and can be moved or resized like a window or door.
- If created away from a wall, it moves and resizes similar to a cabinet.

A selection of prefabricated metal fireplaces is also available from the Fixtures (Interior) library category. These can be framed in with standard walls. See "The Library" on page 797.

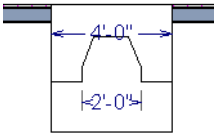
The display of fireplaces is controlled in the **Layer Display Options** dialog. See "Layer Display Options Dialog" on page 148.

Fireplaces are edited, moved, resized, and deleted similar other objects. See "Editing Objects" on page 175.

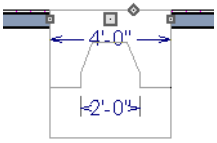
Built into a Wall

To place a masonry fireplace in a wall, select **Build> Fireplace** and click on a wall. A fireplace is created with the outside of the fireplace flush with the outside of the wall.

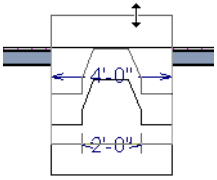
Fireplaces cannot be placed in a wall specified as Invisible or if the wall in question is on a locked layer. See "Locking Layers" on page 145.



Select the fireplace to display four edit handles located along the wall.



Click the diamond-shaped Depth handle and drag toward the outside of the wall. The fireplace will stop when the firebox front is flush with the inside edge of the wall.

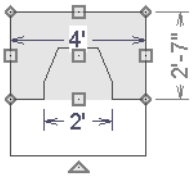


In 3D views, fireplaces placed in walls display five edit handles: a Resize handle along each edge and a Move handle at the center.

Fireplaces always face the interior when placed on an exterior wall. When placing a fireplace in an interior wall, click on the edge of the wall that you want the fireplace to face. The fireplace is created with the firebox on the same side as the wall edge you clicked on to create it.

Freestanding

To place a free-standing masonry fireplace, select **Build> Fireplace** and click in an open area away from a wall.



Unlike fireplaces placed in walls, free-standing fireplace have ten edit handles when selected and may be rotated, resized, or moved in any direction, similar to the way CAD boxes can. See “Editing Box-Based Objects” on page 203.

Free-standing fireplaces can be selected and replaced with a symbol from the library by clicking the **Replace From Library** edit button. See “Replace From Library” on page 818.

Fireplace Foundations

When a Walls with Footings or Grade Beams on Piers foundation is built, a fireplace foundation will be generated under any **Fireplaces** present on Floor 1. See “Building a Foundation” on page 442.

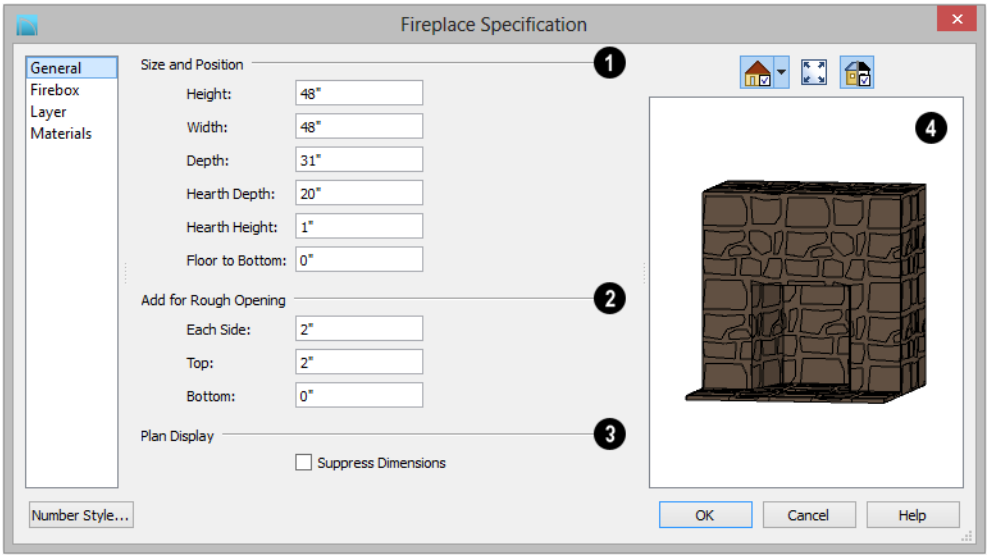
Fireplace foundations are the same material type as the original fireplace, but do not have a firebox or a hearth. Fireplace foundations can be edited or deleted as needed. A firebox and hearth can be added in the **Fireplace Specification** dialog.

Fireplace Specification Dialog

Select a masonry fireplace and click the **Open Object** edit button to display the **Fireplace Specification** dialog. Multiple fireplaces can be group-selected, but all objects in selection group must be either placed in a wall or free-standing.

Dimensions in this dialog here must be entered in whole inches. Fractions and decimals are not accepted.

General Panel



1 Specify the **Size and Position** of the selected fireplace and its hearth.

- Specify the **Height**, **Width**, and **Depth** of the fireplace.
- Specify the **Hearth Depth**. This is measured from the front of the fireplace out into the room. To eliminate the hearth altogether, enter a zero for this value.
- Specify the **Hearth Height**, relative to the floor in the room that the fireplace faces.
- Enter the **Floor to Bottom** distance from the floor to the bottom of the hearth.
- When the selected free-standing fireplace is outside a room and **Auto Adjust Height** is checked , its Floor to Bottom height is measured relative to the terrain height. When this is unchecked, the Floor to Bottom height is measured from the default floor height of Floor 1. Only available for free-standing fireplaces. See “Terrain Height vs Floor Height” on page 697 of the Reference Manual.

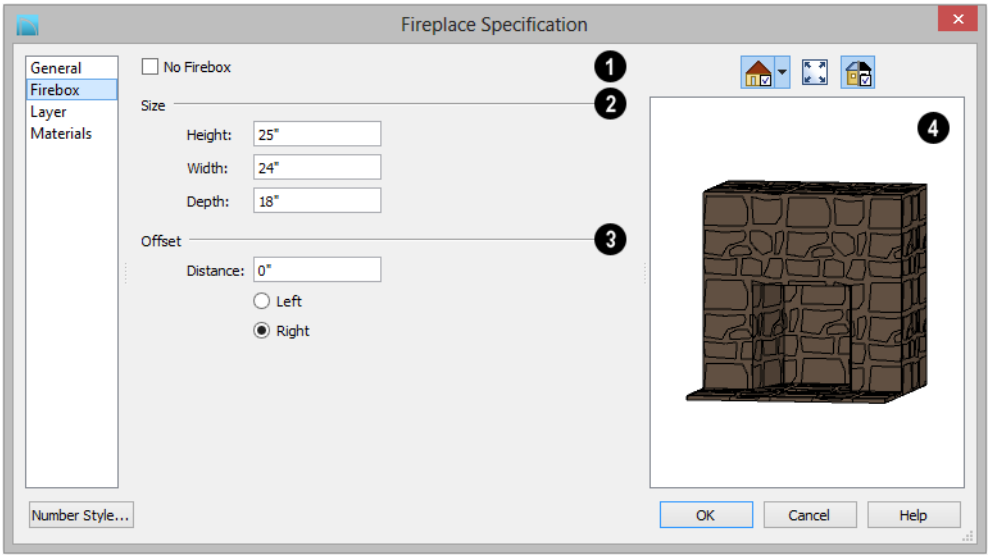
2 **Add for Rough Opening** - Specify the amount to add to **Each Side**, the **Top** and the **Bottom** for the fireplace’s framed rough opening. Only available for a fireplace placed in a wall, **Each Side** and **Top** are set to 2” (50 mm) by default.

If the Bottom Rough Opening value exceeds the fireplace’s distance to the floor, the difference is added to the top when wall framing is built. See “Framing” on page 561.

3 **Plan Display** - Check **Suppress Dimensions** to turn off the display of the selected fireplace’s width and firebox width dimensions in floor plan view.

4 The preview of the fireplace updates as changes are made. See “Dialog Preview Panes” on page 38.

Firebox Panel



1 Check **No Firebox** to eliminate the firebox from the fireplace. This is checked by default for a fireplace object generated on Floor 0 to serve as a solid matching base for a fireplace on Floor 1.

2 Define the **Size** of the selected fireplace's firebox.

- Specify the firebox's **Height** and **Width**.
- Specify the **Depth** of the firebox.

3 Define the firebox **Offset**, measured from the center of the fireplace.

- Enter the offset **Distance**, which is how far the firebox is offset from the fireplace center. A value of 0 centers the firebox in the fireplace.
- **Offset to Left/Right** - Choose to offset the firebox to the left or to the right.

4 The preview of the fireplace updates as changes are made. See "Dialog Preview Panes" on page 38.

Layer Panel

For information about the settings on this panel, see "Layer Panel" on page 152.

Materials Panel

For information about the settings on this panel, see "Materials Panel" on page 831.

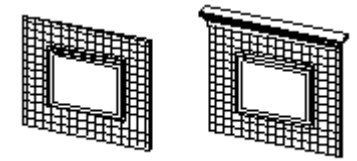
Library Fireplaces

A variety of different fireplace symbols are available in library. The fireplace symbols in the Library behave just like other Library objects. See “The Library” on page 797.

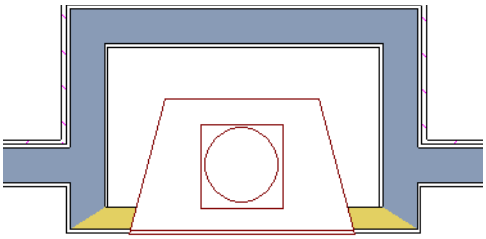
Placing a Library Fireplace

A variety of fireplace symbols are available in the library. See “Placing Library Objects” on page 814.

Flush fireplaces are designed to snap to wall surfaces.



Some fireplace symbols can be enclosed by walls or positioned to project through a wall.



Open Front fireplace projecting through a wall

Always check the manufacturer’s product information for the framing and clearance requirements of the fireplace unit you plan to use, and design your plan accordingly

Chimneys

Chimneys can be created using a variety of methods.

Masonry Fireplace Chimneys

To create a chimney on a masonry fireplace

1. Select the fireplace in a 3D view.
2. Ctrl + drag the top edge of the chimney upward through all the floors and the roof until it is to the desired height. See “Unrestricted Movement” on page 218.
3. When the chimney is approximately the correct height, select the fireplace, click the **Open Object** edit button, and type in the exact height.

Chimney Chases and Caps

There are two ways to draw a chimney chase:

- Place a 3D Box, closed box Geometric Shape, or Soffit over the chimney chase, resize it to match, then increase its height either in its specification dialog or in a 3D view using the same method as extending a masonry fireplace.
- Use walls to define the chimney chase as a room area, making sure these walls are aligned between floors. The chimney

chase “room” on the uppermost floor should have a much higher ceiling than the other rooms on that floor and should also have no ceiling or roof. See “Room Specification Dialog” on page 346.

A selection of chimney tops is available in the library. In addition, custom chimney caps can be made using polyline solids or other primitive objects, Geometric Shapes, and/or Soffits. See “Other Objects” on page 759.

Chapter 14:

Roofs

Chief Architect's manual and automatic Roof Tools allow you to draw almost any roof style.

Proficiency with the Roof Tools can only be attained through practice, but mastering these tools saves you time and effort in plan development. For information about creating specific roof styles, see "Roof Tutorial" on page 57 of the User's Guide.

Verify that all roof planes join as intended. The program does not confirm correct geometry between manually designed or edited roof planes. It is possible to design and edit roof planes with hips and valleys that do not meet properly.

Chapter Contents

Automatic vs. Manual Roofs

Chief Architect can create just about any roof style. Most common roof styles such as hips and gables can easily be generated automatically. See “Roof Tutorial” on page 57 of the User’s Guide.

More complex roof styles, including curved roof planes, can be created manually. The manual roof tools allow you to create any roof system that can be represented using roof planes.

Automatically Generated Roofs

The quickest and easiest way to create a roof over a structure is automatically. By default, a roof plane is generated over each exterior wall, creating a hip roof. The program automatically joins the roof planes at ridges, hips, and valleys and tries to create roof planes that join together to form a single, integrated system. See “Automatic Roofs” on page 465.

Any deviations from the default hip roof can be specified on the Roof panel of the **Wall Specification** dialog for any exterior wall. Here, you can specify a Full Gable Wall, High/Shed Gable Wall, or other options instead of a default hip roof. You can also specify a different overhang, pitch, an upper pitch, and the elevation where the upper pitch begins for the roof plane that rests on the selected wall. See “Roof Directives in Walls” on page 288.

When you need the roof planes over an area of a plan to be entirely separate from those over the rest of the structure, you can assign those areas to a non-default Roof Group. See “Roof Groups” on page 465.

Roofs can also be automatically generated based on a Roof Baseline Polyline. When a Roof Baseline Polyline is used, information that determines where and how roof planes are generated is contained in the **Roof Baseline Specification** dialog. See “Roof Baseline Polylines” on page 492.

Bay, bow, and box windows also produce roof planes automatically. For information about these windows and the roof styles that can be used with them, see “Bay, Box, Bow Windows and Roofs” on page 418.

Manually Drawn Roofs

Any roof system that can be created automatically can also be created manually. Each roof plane is drawn and edited individually, offering full control over the process and limiting the possibilities only to your imagination.

Note: You cannot manually draw or edit roof planes when Auto Rebuild Roofs is enabled in the Build Roof dialog. See “Roof Panel” on page 469.

Using Both Techniques

Another useful option is to start with an automatically generated roof and use manual design techniques to finish it. Using both automatic roof generation and the manual roof drawing and editing techniques, you can quickly design highly customized roof systems.

Roof Defaults

Select **Edit> Default Settings**, to open the **Default Settings** dialog for a variety of drawing tools, several of which directly affect roof generation.

Build Roof Dialog

While not listed in the **Default Settings** dialog, the **Build Roof** dialog functions as the defaults dialog for roofs. Many, but not all, initial default values for both manually drawn and automatically generated roofs are set in this dialog. See “Build Roof Dialog” on page 468.

If changes are made to the settings in this dialog after the roof has been built, you will need to rebuild the roof in order for your changes to take effect.

Roof Framing Defaults

Default settings for framing can be specified in either the **Build Roof** or the **Framing Defaults** dialog. Framing defaults control the depth of roof planes as well as the depth of floor and ceiling platforms, which influence roof plane heights. See “Framing Defaults” on page 562.

To create roof planes of a particular depth, begin by setting up the desired roof framing defaults, then build the roof. If you later need to change the structure of the roof planes, make the needed change to the Framing Defaults, and then rebuild the roof. You can also edit the structure of individual roof planes.

Floor and Ceiling Heights

The initial heights of floors and ceilings, which influence roof heights, are specified in the **Floor Defaults** dialog for each floor. See “Floor Defaults Dialog” on page 426.

The floor and ceiling heights in individual rooms also influence roof heights and are specified in the **Room Specification** dialog. See “Structure Panel” on page 348.

If Auto Rebuild Roofs is checked in the Build Roof dialog and you change floor or ceiling heights, floor or ceiling platform depths, wall positions or roof directives in walls, the roof rebuilds to reflect your changes. See “Rebuilding Roofs” on page 467.

Wall Specification Dialog

By default, when an automatic roof is built, a roof plane is generated over each exterior wall, creating a hip roof.

Any deviations from this default hip roof, such as a gable or a different pitch, can be specified in the **Wall Specification** dialog for any exterior wall. See “Roof Panel” on page 307.

Dormer Defaults

The settings in the **Dormer Defaults** dialog determine the initial settings for automatic dormers and are much like those in the **Dormer Specification** dialog. See “Dormer Specification Dialog” on page 512.

The **Dormer Defaults** dialog can be opened from the **Default Settings** dialog or by

double-clicking either of the **Auto Dormer** tools.

The Roof Tools

Select **Build> Roof** to access the Roof Tools.

Build Roof

Select **Build> Roof> Build Roof** to open the **Build Roof** dialog, specify the settings for automatically generated and manually drawn roof planes as well as manually drawn ceiling planes, and build or rebuild a roof. See “Build Roof Dialog” on page 468.

When roofs are automatically generated, a roof plane is created over each exterior wall by default, resulting in a hip roof, and the program tries to join them together to form a single, integrated system.

To automatically generate a roof plane using values other than the defaults or to not generate a roof plane bearing on a particular wall (as with a gable or the sides of a shed roof), you can change the settings in the **Wall Specification** dialog. See “Roof Panel” on page 307.

For more information about creating different roof styles, see “Roof Tutorial” on page 57 of the User’s Guide.

Roof Plane

Select **Build> Roof> Roof Plane** to draw a roof plane manually. See “Roof Planes” on page 477. You can also double-click the **Roof Plane** button to open the **Build Roof** dialog.

Note: You cannot use the Roof Plane tool when Auto Rebuild Roofs is enabled in the Build Roof dialog. See “Manually Drawn Roofs” on page 462.

Ceiling Plane

Select **Build> Roof> Ceiling Plane** to draw a ceiling plane manually. Ceiling planes are drawn and behave much like roof planes. See “Ceiling Planes” on page 498.

Gable/Roof Line

Select **Build> Roof> Gable/Roof Line** to draw a gable line that generates a gable along a baseline edge when roofs are automatically generated. See “Gable/Roof Lines” on page 503.

Skylight

Select **Build> Roof> Skylight**, then draw a rectangle over an existing roof plane to create a skylight. The skylight, skylight shaft, and ceiling hole (if a ceiling exists) are drawn at the same time. See “Skylights and Roof Holes” on page 506.

Auto Floating Dormer

Select **Build> Roof> Auto Floating Dormer** and click within an existing roof plane to place an auto floating dormer. See “Dormers and Crickets” on page 509.

Auto Dormer

Select **Build> Roof> Auto Dormer** and click within a roof plane to place a dormer. See “Dormers and Crickets” on page 509.

Edit All Roof Planes

Select **Build> Roof> Edit All Roof Planes** to open the **Roof Plane Specification** dialog and edit all roof planes in the entire plan at once. See “Roof Plane Specification Dialog” on page 486.

Delete Roof Planes

Select **Build> Roof> Delete Roof Planes** to delete all roof planes in the plan. See “Deleting Roof Planes” on page 486.

Delete Ceiling Planes

Select **Build> Roof> Delete Ceiling Planes** to delete all manually drawn ceiling planes in the plan. See “Ceiling Planes” on page 498.

Fix Roofs

Select **Build> Roof> Fix Roofs** to remove breaks where a single edge of one roof plane meets the broken edge of another along a ridge, hip or valley. **Fix Roofs** does not affect eave edges. See “Aligning Roof Edges” on page 481.

Automatic Roofs

When roofs are automatically generated, a roof plane is created over each exterior wall by default, resulting in a hip roof, and the program tries to join them together to form a single, integrated system.

There are a number of options available to produce variations in this default roof style.

Roof Directives in Walls

To automatically generate a roof plane using values other than the defaults or to not generate a roof plane bearing on a particular wall (as with a gable or the sides of a shed roof), you can change the settings in the **Wall Specification** dialog for that wall. See “Roof Panel” on page 307.

For more information about creating different roof styles, see “Roof Tutorial” on page 57 of the User’s Guide.

Roof Groups

When an automatic roof is generated, the program tries to create roof planes that join together to form a single, integrated system. Different parts of the structure influence how the roof is generated over the whole.

When you need the roof planes over an area of a plan to be entirely separate from those over the rest of the structure, you can assign those areas to a non-default Roof Group. The program treats different Roof Groups as separate buildings for the purpose of

automatic roof generation, preventing their roofs from influencing one another.

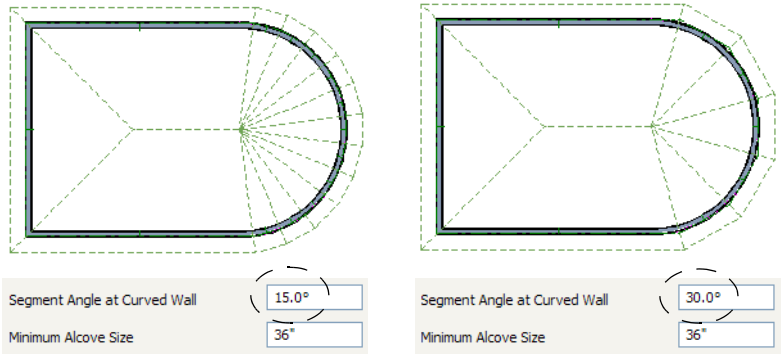
Bear in mind that the use of Roof Groups typically involves using a combination of both automatic roof generation and manual roof editing, and that changes to Attic walls may also be necessary. See “Using Both Techniques” on page 462.

Roof Groups are assigned using numbers. The Default Roof Group is always 0, and you can assign rooms to other roof groups in the **Room Specification** dialog. See “General Panel” on page 347.

Curved Walls and Roofs

Automatically generated roof planes are placed over curved walls at specified increments. In the **Build Roof** dialog, you can specify the degree increments for the roof over curved walls, from 6° to 90°. The lower the number, the more roof sections are created over the curved wall.

The following illustrations show a roof created at two different curved increments: 30° and 15°.

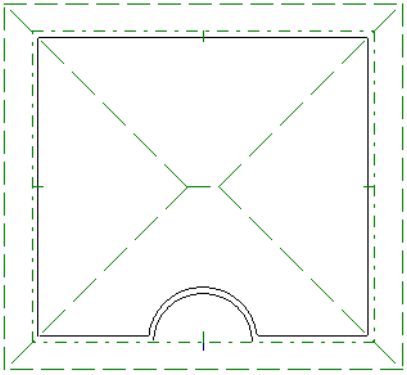


Concave Curved Walls and Roofs

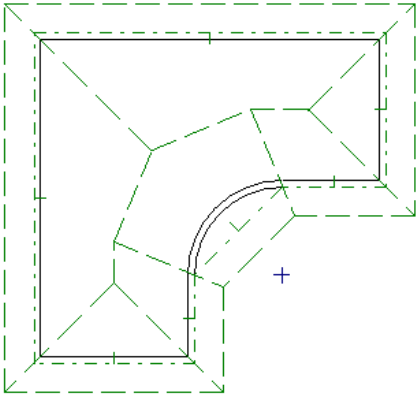
Regular roof plane sections can also generate over concave curved walls. For roof sections to generate over a concave curved wall, the sections’ baselines must be longer than the **Minimum Alcove Size** value on the Build panel of the **Build Roof** dialog.

If the baselines are shorter, the automatically generated roofs are simplified by either:

- Ignoring the curved wall, as if the walls on either side extended to their meeting point.



- Spanning the concave curved wall with a straight Baseline and produce a roof plane for it from that.



Rebuilding Roofs

By default, when changes are made to the model, the roof does not update to reflect these changes. This is the case even if the roof was automatically built.

When **Auto Rebuild Roofs** is checked in the **Build Roofs** dialog, on the other hand, any changes made to the position of an exterior wall or to its roof directives will prompt the roof to regenerate to reflect these changes. See “Roof Panel” on page 469.

Changes made to floor heights,or ceiling heights, or floor or ceiling platform thicknesses will also cause the roof to be automatically rebuilt.

You can also rebuild the roof at any time to reflect the current state of the model by opening the **Build Roof** dialog, checking **Build Roof Planes**, and clicking OK.

Manually dawn roof planes are specified as such in the **Roof Plane Specification** dialog. If a roof plane was automatically generated, it will instead have a **Mark as Edited** checkbox. See “Roof Plane Specification Dialog” on page 486.

When the roof is rebuilt using **Auto Rebuild Roof** or **Build Roof Planes** in the **Build Roof** dialog, all roof planes in the plan, both automatically generated and manually drawn, are deleted and replaced.

- To preserve any manually drawn roof planes, check **Retain Manually Drawn Roof Planes** on the Build panel of the **Build Roof** dialog before the roof is rebuilt.
- To preserve any automatically generated roof planes that you have edited, check **Retain Edited Roof Planes** on the Build panel of the **Build Roof** dialog before the roof is rebuilt.

Note: Under some conditions, when the roof is rebuilt new roof planes may be generated in the same location as retained manually drawn or automatic roof planes.

Roof planes cannot be edited or manually drawn when **Auto Rebuild Roofs** is turned

on. If you try to either edit or draw a roof plane using the **Roof Plane** tool, a question message will display.

Build Roof Dialog

The **Build Roof** dialog is used to automatically build or rebuild roof planes and generate Roof Baseline Polylines. The settings in this dialog act as defaults for both manually drawn and automatic roofs. See “Roof Defaults” on page 463.

To open the **Build Roof** dialog, select **Build> Roof> Build Roof**. You can also double-click the **Roof Tools** button or the **Roof Plane** button to open this dialog.

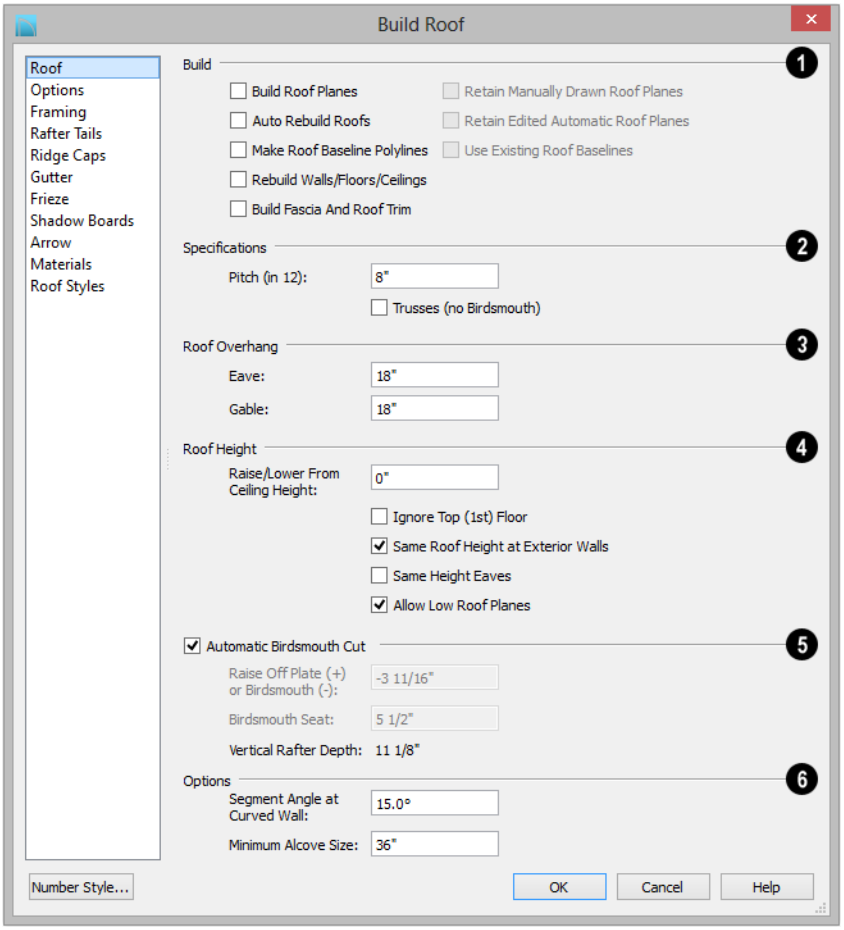
Roof planes and Roof Baseline Polylines are generated based on the positions and roof directive settings for each exterior wall in the plan. If you make changes to any of these walls or to any of the settings in this dialog, you will need to build the roof again for them to take effect. See “Roof Panel” on page 307.

The settings in this dialog are similar to those found in the **Roof Plane Specification** dialog, but affect all subsequently created roof planes rather than one or more selected roof planes. See “Roof Plane Specification Dialog” on page 486.

There are eleven panels in the **Build Roof** dialog:

- Roof Panel
- Options Panel
- Framing Panel
- Rafter Tails Panel
- Ridge Caps Panel
- Gutter Panel
- Frieze Panel
- Shadow Boards Panel
- Arrow Panel
- Materials Panel
- Roof Styles Panel

Roof Panel



1 The **Build** options are commands related to building and rebuilding roof planes.

- Check **Build Roof Planes** to build a new roof structure over the entire model. Unless you specify otherwise, the program discards the existing roof planes and produces new ones.
- If you check **Auto Rebuild Roofs**, the program automatically rebuilds the roof whenever you make a change that affects the generation of roofs, such as changes to exterior walls or ceiling heights.
- Check **Make Roof Baseline Polylines** to delete the existing roof and to create Roof Baseline Polyline(s) based on the exterior wall layout and roof information defined in those walls. If checked, **Build Roof**

Planes becomes unchecked. See “Roof Baseline Polylines” on page 492.

You can also rebuild aspects of the structure related to roofs:

- Check **Rebuild Walls/Floors/Ceilings** to rebuild the walls and floor and ceiling platforms of your model before the roof is built. It is independent of **Build Roof Planes** and helps ensure that your roof is generated based on the most up-to-date model. See “Rebuilding Walls, Floors and Ceilings” on page 431.
- Check **Build Fascia and Roof Trim** to regenerate fascia, frieze molding, shadow boards and gutters. See “Fascia and Shadow Boards” on page 516. You can check this box without also rebuilding the roof.

Build Fascia and Roof Trim is invoked automatically after you manually edit roof planes or draw new roof planes if **Auto Rebuild Walls/Floors/Ceilings** is checked in the **3D View Defaults** dialog. See “Options Panel” on page 873.

Specify how manually drawn or edited roof planes are handled when the roof is rebuilt automatically. These options are only available when **Build Roof Planes** is checked. See “Rebuilding Roofs” on page 467.

- Check **Retain Manually Drawn Roof Planes** to prevent manually drawn roof planes from being deleted when roof planes are rebuilt. Automatic roof planes may be generated in the same location. Also available if **Make Roof Baseline Polylines** is checked.
- Check **Retain Edited Automatic Roof Planes** to prevent automatic roof planes that have been manually edited - including roof planes over exploded dormers - from being deleted when roof planes are rebuilt. Also available if **Make Roof Baseline Polylines** is checked.
  If a newly generated roof plane is coplanar with a retained plane, and the area where they overlap is at least half the area of either of them, the new roof plane is deleted and only the retained plane is kept.

Note: Under some conditions, new roof planes may be generated in the same location as manually drawn or automatic roof planes that have been retained.

- Check **Use Existing Roof Baselines** to produce a roof plan based on your Roof Baseline Polyline(s) instead of the exterior wall layout.

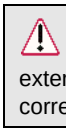
❷ The **Specifications** options are basic roof structure settings.

- Enter a value to describe the **Pitch** as a ratio over 12. For a conversion to degrees, see “Roof Pitches in Degrees” on page 519.
- Check **Trusses (no Birdsmouth)** if you wish to frame the roof using trusses rather than rafters. The roof height will be set so that the bottom edge of the truss top chord is flush with the top of the wall. See “Roof Trusses” on page 602.
- If you plan to use both trusses with rafters, leave **Trusses (no Birdsmouth)** unchecked so that the rafters’ depth can be accomodated. See “Mixing Trusses with Stick Framing” on page 608.

❸ **Roof Overhang** is measured horizontally from the outside Main Layer of exterior walls to the end of the top

of the rafter. It includes fascia and shadow boards but not frieze molding or gutters. See “The Main Layer” on page 295.

- **Eave** is the overhang distance outside of bearing walls for roof planes using the default Pitch. If a particular roof plane has a different Pitch, its overhang will adjust to keep its fascia at the same height. Overhang may be greater for a shallower pitch, lesser for a greater pitch.
- **Gable** is the overhang distance at gable ends or rake walls.



If the roof overhang values are not sufficient to extend past the outer surface of exterior walls, the walls may not generate correctly in 3D views.

4 The **Roof Height** options affect the heights of roof planes.

Specify the amount to **Raise/Lower From Ceiling Height**, which controls the height of roof planes relative to the ceiling height specified for the rooms below.

- The default value is 0, which creates roof planes that bear on the wall top plates at the Ceiling Height of the room below.
- Increase this value to raise roof planes so they do not bear directly on the wall top plates. If roofs are raised sufficiently, Attic walls will automatically generate to support them. The exact height depends on the roof pitch.
- Decrease this value to drop roof planes downward and decrease the height of the bearing walls. If roofs are lowered sufficiently, they may extend into rooms, producing areas with angled ceilings.
- Check **Ignore Top Floor** to ignore the top living floor when roof planes are generated. Roof planes are built on the top plates of the walls below the top floor.

Specify how you would like the eaves of roof planes with different pitches to meet. See “Aligning Eaves” on page 482.

- Check **Same Roof Height at Exterior Walls** to keep bearing walls the same height and change horizontal roof overhang distances as needed so that eaves meet correctly. When checked, this option ignores any overhang values you may have entered in the **Wall Specification** dialog. See “Aligning Eaves” on page 482.

  Uncheck this option to raise or lower some roof planes relative to the wall’s top plate, allowing all horizontal overhangs to be the same unless a non-default value has been entered in the **Wall Specification** dialog. See “Roof Directives in Walls” on page 288.
- Check **Same Height Eaves** to keep the eave height for all roof planes the same. Roof planes are raised and lowered as needed so that eaves meet correctly.

  The eave height used when this box is checked is that of a roof plane using the default Pitch and Overhang values. When this box is checked, all roof planes are affected, including those that do not need adjustment in order to align with adjacent planes.

  When **Same Height Eaves** is checked, any non-default overhang values specified in the **Wall Specification** dialog are used. Roof planes are raised or lowered so

that the eave height is the same, regardless of the horizontal overhang.

- Uncheck **Allow Low Roof Planes** only when an upper floor overhangs roof planes below.

5 Uncheck **Automatic Birdsmouth Cut** to enable the settings below. When checked, the birdsmouth is calculated based on the pitch and rafter depth and its values are listed here for reference. See "Birdsmouth Cut" on page 485.

The Raise Off Plate and Birdsmouth settings do not affect the bearing wall heights.

- Enter a positive **Raise Off Plate** value in this field to produce the trusses with an energy heel to allow for more insulation.
- Enter a negative **Birdsmouth Cut** value to control the Birdsmouth Depth. For example, for the Birdsmouth Depth of 3", enter -3". The location of the Baseline may change if you use the **Raise Off Plate** setting to specify the birdsmouth depth. See "Birdsmouth Cut" on page 485.
- Specify the **Birdsmouth Seat**, which is the horizontal depth of the birdsmouth cut. If you change this value, the **Raise Off Plate/Birdsmouth Cut** value will automatically adjust.

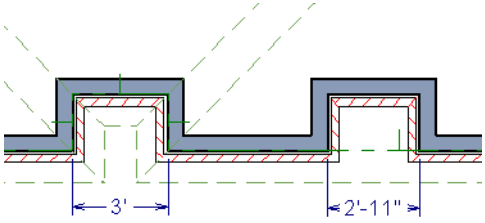
To control the Birdsmouth Cut, you should also check **Same Roof Height at Exterior Walls**, above.

- The **Vertical Rafter Depth** displays here as a reference. It can be changed on the Framing panel. See "Framing Panel" on page 475.

6 **Options** -

- Enter the maximum S**egment Angle at Curved Wall**, which is the angle for roof segments that cover a curved wall. This value is only used when roofs are automatically generated. A smaller angle produces more roof planes.
- Specify the **Minimum Alcove Size**, which is the minimum depth and width of an alcove in an otherwise straight exterior wall. Alcoves with both a depth and width less than this value are roofed over, while alcoves that are either wider or deeper than this value do not receive a roof.

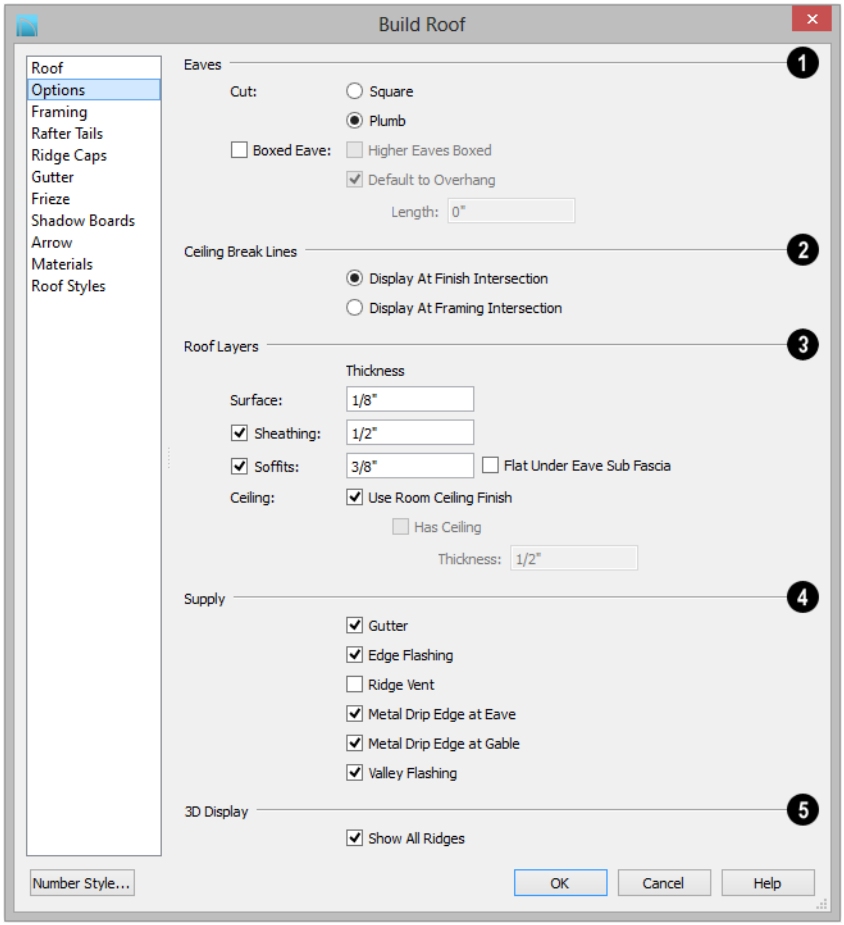
Effects of Minimum Alcove Size of 3' (36")



Roof builds around 3' wide alcove

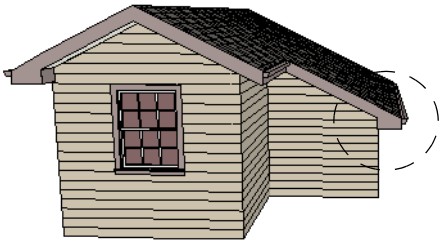
Roof builds over 2' 11" wide alcove

Options Panel

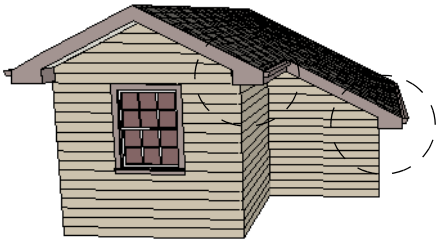


1 Specify how the roof **Eaves** are configured.

- Specify how the rafter ends are **Cut** by selecting either **Square Cut** or **Plumb Cut**.
- Check **Boxed Eave** to produce horizontal boxed eaves or uncheck it for sloping eaves. You can also change this for individual roof planes in the **Roof Plane Specification** dialog.
- **Higher Eaves Boxed** - If the selected roof plane contains more than one eave, check this box to box the higher eaves as well as the lower ones.



With Boxed Eave checked



With Higher Eaves Boxed checked

- By default, Boxed Eaves extend from the edge of the roof to the exterior main layer of the wall, covering the overhang area. You can instead uncheck **Default to Overhang** and specify the **Length** of the boxed eaves .

❷ Specify where **Ceiling Break Lines** display. See “Special Ceilings” on page 342.

- **Display At Finish Intersection** positions ceiling break lines where the ceiling finish surfaces intersect.
- Select **Display At Framing Intersection** to position ceiling break lines where the ceiling framing surfaces intersect.

❸ **Roof Layers** - Specify the **Thickness** of the roof’s non-framing structural component layers. The materials for these layers are specified on the Materials panel.

- Specify the **Thickness** of the **Roof Surface** material.
- Check **Sheathing** to include a sheathing material above the roof framing and specify its **Thickness**.
- Check **Soffits** to include soffits under the eaves and specify their **Thickness**.
- Check **Flat Under Eave Sub Fascia** to extend soffits downward until they meet the subfascia. When unchecked, soffits slope downward to the fascia, if the fascia depth is sufficient.
- When **Use Room Ceiling Finish** is checked, the ceiling finish thickness and material on the undersides of roof planes are defined by the room below. Uncheck this box to enable the two settings that follow and define the ceiling finish as part of the roof planes instead. When this is unchecked, you can specify the Ceiling Surface material on the Materials Panel.
- Check **Has Ceiling** to enable the Ceiling Thickness option. When this box is unchecked, the selected roof plane will have no ceiling surface at all and the “Ceiling Surface” component will not be available on the Materials panel.
- Specify the **Ceiling Thickness**, which is the thickness of the bottom surface of the ceiling plane.

❹ Specify the material components to **Supply** for subsequently-built roof planes. When checked, these items are calculated in the Materials List. See “Materials Lists” on page 1247. Only Gutter is available in the **Roof Plane Specification** dialog.

- Uncheck **Gutter** to not include gutters on subsequently-built roof planes. This option affects both the Materials List and 3D views.
- Check **Edge Flashing** to calculate edge flashing in the Materials List when one or more roof planes is against a wall.
- Check **Ridge Vent** to calculate ridge venting in the Materials List.
- Check **Metal Drip Edge at Eave** to calculate metal drip edge along the eaves in the Materials List.
- Check **Metal Drip Edge at Gable** to calculate metal drip edge along any gable eaves in the Materials List.
- Check **Valley Flashing** to calculate valley flashing in the Materials List when two or more roof planes form a valley.

❺ **3D Display** - When **Show All Ridges** is checked, a line along each hip between roof planes forming the conical roof above a curved wall displays in Vector Views. Uncheck this box to suppress these lines. See "Rendered and Vector Views" on page 868.

Framing Panel

The settings on the Framing panel of the **Build Roof** dialog are the the same as those on the Roof panel of the **Build Framing** dialog. Changes made in one dialog are also applied in the other. See "Roof Panel" on page 579.

Note: Changes made on the Framing panel will not affect the structure of existing roof planes. To make changes take effect, rebuild the roof.

Rafter Tails Panel

The settings on the Rafter Tails panel allow you to specify a rafter tail profile for exposed rafter ends under roof eaves. See "Rafter Tails" on page 518.

The settings on this panel are like those on the Moldings panel found in a variety of dialogs in the program. See "Moldings Panel" on page 643.

A few things about the Rafter Tails panel are unique:

- Only one rafter tail profile can be specified at a time, so the **Add New** button is only available when no profile is currently selected.
- Uncheck **Stretch to Fit Rafter** to use the rafter tail profile's default size or to specify its **Height** and **Width**, below. When checked, the profile is sized by the program to match the roof rafters.
- Specify the distance that the rafter tail profile should **Extend** past the inside surface of the subfascia. This distance is measured along the top of the rafter tail, so it is greater than the length as measured in floor plan view.

Ridge Caps Panel

The settings on the Ridge Caps panel allow you to specify a profile for ridge caps. See "Ridge Caps" on page 518.

The settings on this panel are like those on the Moldings panel found in many dialogs in the program. See "Moldings Panel" on page 643.

Three settings are unique to the Ridge Caps panel:

- Only available in the **Roof Plane Specification** dialog, check **No Ridge Cap on Selected Edge** to suppress the generation of a ridge cap on the roof plane's selected edge. See "Selected Edge" on page 181.
- Click the **Add Default** button to add the Default Ridge Cap profile, which has flat sides and follows the pitch of each roof plane.
- Check **Bend to Roof Pitch** to adjust the shape of the selected ridge cap profile to match the pitch of the roof.

Gutter Panel

The settings on the Gutter panel allow you to specify a gutter profile for the eaves of roof planes. See "Gutters" on page 517.

The profile specified here will only be generated when **Gutters** is checked on the Options panel. See "Options Panel" on page 473.

The settings on this panel are like those on the Moldings panel found in many dialogs in the program. See "Moldings Panel" on page 643.

Frieze Panel

The settings on the Frieze panel allow you to specify one or more frieze molding profiles to generate under the eaves and/or gable overhangs of roof planes. See "Frieze Molding" on page 517.

The settings on this panel are like those on the Moldings panel found in many dialogs in the program. See "Moldings Panel" on page 643.

Shadow Boards Panel

The settings on the Shadow Boards panel allow you to specify one or more shadow board profiles that follow the fascia on eaves and/or gable eaves. See "Shadow Boards" on page 516.

The settings on this panel are like those on the Moldings panel found in many dialogs in the program. See "Moldings Panel" on page 643.

One setting is unique to the Ridge Caps panel in the **Roof Plane Specification** dialog:

- Check **No Shadow Boards on Selected Edge** to suppress the generation of shadow boards on the roof plane's selected edge. See "Selected Edge" on page 181.

Arrow Panel

The settings on this panel allow you to control the appearance of roof plane slope direction arrows. See "Displaying Roofs" on page 479.

For information about these settings, see "Arrow Panel" on page 1055.

Materials Panel

The settings on this allow you to specify materials for the roof's various components. See "Materials Panel" on page 831.

The "Ceiling Surface" component is only available when **Use Room Ceiling Finish** is unchecked on the Options Panel.

Roof Styles Panel

The Roof Styles panel provides links to tutorial information about creating different

roof styles automatically. Click on a roof style to launch the online Help to a page with information about the roof style you selected.

See “Roof Tutorial” on page 57 of the User’s Guide.

Roof Planes

When creating a roof, it is helpful to know how to draw a roof plane manually and be familiar with its parts.

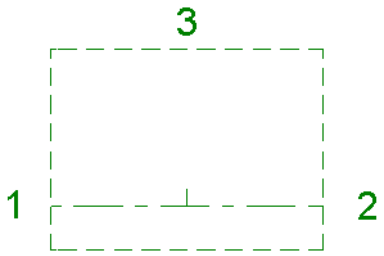
Drawing Roof Planes

Roof planes are CAD-based objects that are created and edited like much closed polylines, and also have pitch, elevation and structural properties.

Before drawing roof planes, you should set your roof defaults so that the 3D attributes of your roof planes are correct. See “Roof Defaults” on page 463.

To draw a roof plane

1. Select **Build> Roof> Roof Plane**  .
2. As in the following example, click and drag a Baseline from point **1** to point **2**.



Line 1 - 2 is the Baseline

3. Release the mouse button at point **2** and move your cursor in the upslope direction. As you move the cursor, a preview outline of the roof plane displays.
4. Click at point **3** to build the roof plane. Point 3 is located on the ridge edge of the roof plane.

Note: You cannot manually draw roof planes when Auto Rebuild Roofs is enabled in the Build Roof dialog. See “Roof Panel” on page 469.

The **upslope mark** displays at the center point of the Baseline and indicates the upslope direction of the roof plane.

The distance from the outer main layer of the wall to the end of the eave is the **overhang**.

The Baseline

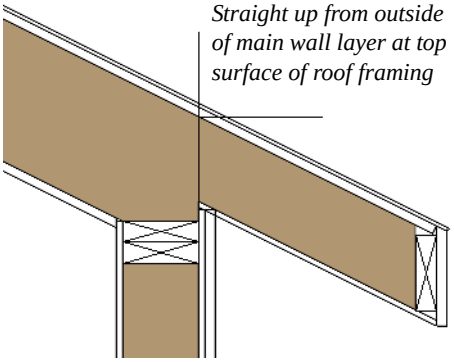
The pitch direction and initial height of any roof plane - manual or automatic - is determined by its Baseline.

The Baseline of the roof plane is normally located over the outer main layer of the wall and is used as the pivot point for the roof plane when the pitch is changed.

The Baseline height is determined by the following formula:

Elevation of the wall top plate
+ Vertical Rafter Depth
- Vertical Birdsmouth Depth
= Baseline Height

In a cross section, the Baseline is located directly above the outer surface of the main wall layer, at the top surface of the roof framing.



Location of Roof Baseline in cross-section

A roof Baseline displays as a separate line within its roof plane when the "Roofs, Baselines" layer is turned on. In 3D views, it can only be seen if the roof plane is selected.

A Baseline has a tick mark at its center point which indicates the direction that the roof plane slopes upward. If the upslope tick is pointing the wrong direction, either rotate the entire roof plane or delete it and draw a new one.

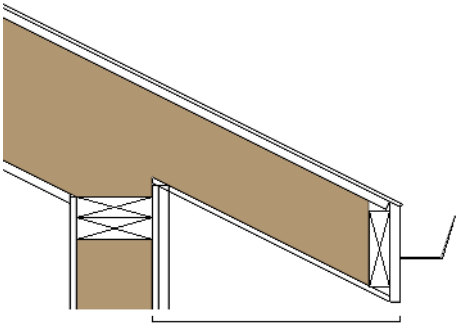
When drawing the Baseline of a roof plane, here are some things to consider:

- A Baseline does not have to be drawn over a wall, although it often is.
- A Baseline drawn along a wall should be drawn over the outer edge of the wall's main layer. It tries to snap to that layer.
- The elevation of the top plate is defined by the ceiling height in the room. If the roof plane is not drawn over a wall, it's height is based on the default ceiling height value for the current floor.
- If a Baseline is drawn over the top of any other roof plane, the Baseline height equals the height of the existing roof plane at the point where you started drawing.

Once drawn, a Baseline can be selected in floor plan view and edited independent of the roof plane. See "Editing Roof Baselines" on page 484.

Eave and Gable Overhangs

Roof overhangs are measured horizontally from the outside Main Layer of exterior walls to the end of the top of the rafter. They include fascia and shadow boards but not frieze molding or gutters. See "The Main Layer" on page 295.



Roof Overhang measured horizontally from the wall's Main Layer to outside of the fascia

The location of a roof plane's fascia and shadow boards also determines its area and the size of its polyline in floor plan view. See "Polyline Panel" on page 490.

Displaying Roofs

Roof planes are drawn on the “Roof Planes” layer by default, although you can place a roof plane on any layer. See “Line Style Panel” on page 503.

You can also choose to display gutters, gable lines, the overhang area, Roof Baseline Polylines, roof labels, frieze molding, ridge caps, shadow boards, valley truss bases and roof openings. See “Layer Display Options Dialog” on page 148.

If the “Roof Planes” layer is turned off and **Auto Rebuld Roofs** feature is turned on, changes made to the plan that cause the roof to rebuild will not automatically turn on the display of the roof planes. See “Rebuilding Roofs” on page 467.

The appearance of curved roof planes in 3D views can be controlled by adjusting the **Facet Angle** in the **Roof Plane Specification** dialog. See “General Panel” on page 487.

Roof Plane Labels

Roof plane labels indicating the pitch and slope direction are located on the “Roofs, Labels” layer and can be set to display in floor plan and cross section/elevation views.

You can specify whether roof plane labels display the pitch in terms of rise and run or in decimal degrees by checking or unchecking **Pitch in Degrees** in the **Roof Plane Specification** dialog. See “General Panel” on page 487.

A roof plane’s label can be customized in its specification dialog. See “Label Panel” on page 1243. Roof planes have named value pairs associated with them, so you can create custom labels using Text Macros. See “Text Macros” on page 1033.

Manually drawn **Ceiling Planes**  and **Skylights**  can also display labels when the “Roofs, Labels” layer is on. Unlike roof planes, these objects’ do not include a slope indicator and their Automatic Labels are blank; however, you can specify a custom label using text in their specification dialogs. See “Ceiling Planes” on page 498 and “Skylights and Roof Holes” on page 506.

When a roof plane, ceiling plane or roof hole/skylight is selected in a 3D view, its label will display on a temporary basis if the “Roofs, Labels” layer is turned on.

Display on Floor Above/Below

In floor plan view, roof planes can display on any floor without affecting their height in 3D.

To move the display of a roof plane to a new floor, select it in floor plan view and click either the **Display on Floor Above** or **Display on Floor Below** edit button. The display of group-selected roof planes can also be controlled in this manner.

Any skylights or roof holes placed in a roof plane moved in this manner will move, as well. Other associated objects like Auto Dormers or gutters will not move, however.

In Cross Section Views

When a roof or ceiling plane is viewed in a cross section, the layers that compose it can

be seen, including the roof surface, sheathing, and the ceiling surface.

- If roof framing has been built, its display can be turned on, as well. See “Displaying Framing” on page 588.
- If a roof or ceiling plane is located over a room with **Ceiling Over this Room** checked, the ceiling surface will not generate. See “Vaulted and Cathedral Ceilings” on page 343.

In the Materials List

The materials that make up roof and ceiling plane assemblies are listed under different Categories in the Materials List:

- **Roofing** - Lists most materials associated with roofs, including roofing, sheathing, rafters and trusses, gutters,and skylights.
- **Exterior Trim** - Lists automatically generated frieze molding and shadow boards. See “Roof Returns and Other Details” on page 515.
- **Insulation** - Insulation is calculated for roof and ceiling planes above rooms that do not have Ceiling Over This Room checked. See “Structure Panel” on page 348.
- **Wallboard** - Lists ceiling materials for all rooms, including those that use the underside of the roof as their ceiling.
- **Framing** - Lists ceiling framing for manually drawn ceiling planes.

See “Materials Lists” on page 1247.

Editing Roof and Ceiling Planes

A selected roof or ceiling plane can be edited in 2D and 3D using edit handles, edit toolbar buttons, its specification dialog, and the **Material Painter**  .

A roof or ceiling plane’s Baseline can also be selected and edited. To select it, first select the roof plane and then click the **Select Next Object**  edit button. See “The Baseline” on page 477.

By default, all roof planes are deleted and replaced whenever the roof is rebuilt using the **Build Roof** dialog. If you have manually edited roof planes and do not want them to be replaced, be sure to check **Retain Edited Roof Planes**. See “Roof Panel” on page 469.


Roof planes cannot be edited while Auto Rebuild Roofs is turned on. If you try to do so, the program will prompt you to turn it off.

2D Shape and 3D Orientation

There are two basic aspects to editing roofs: 2D shape and 3D orientation.

- The 2D shape of a roof or ceiling plane can be edited just like a CAD polyline. As a plane is reshaped in 2D, the program maintains its height and pitch in 3D. See “Editing Closed-Polyline Based Objects” on page 198.
- The 3D orientation of a roof or ceiling plane is defined by its height and pitch

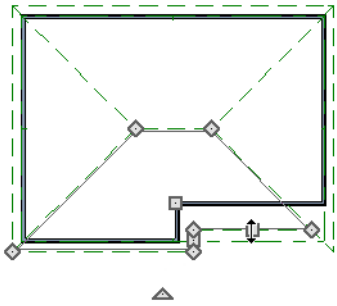
and can be edited in its specification dialog. See “General Panel” on page 487.

An understanding of these two concepts allows you to design almost any kind of roof.

A roof or ceiling plane’s display and appearance can be customized. See “Displaying Roofs” on page 479 and “Roof Plane Specification Dialog” on page 486.

Adding a Step to an Edge

You can make a step, or jog, in the edge of a roof or ceiling plane by selecting it, clicking the **Break Line** edit button and then clicking on the roof edge. See “Break Line” on page 228.



Aligning Roof Edges

By default, the edges of a roof plane will automatically snap to the outer surface of a nearby parallel wall. You can disable this **Special Snapping** behavior for a selected roof plane in its specification dialog. See “General Panel” on page 487.

After moving a corner edit handle, it may be difficult to make an edge parallel to an eave or a wall. Use the **Make Parallel/ Perpendicular** edit button to align a roof or ceiling plane edge with a wall, another roof plane edge, or another object with a straight edge. See “Using Make Parallel/ Perpendicular” on page 224.

If opposite sides of a roof plane are parallel, Temporary Dimensions will display between them when one side is selected.

Sometimes, what appears to be a single, straight roof plane edge may actually be broken into two or more edges, which can affect your ability to align the edge properly.

A single edge will have three edit handles; if more than three display, more than one edge is present. An extra handle can be removed removed manually by dragging it into an adjacent handle. You can also use **Build> Roof> Fix Roofs**. See “Fix Roofs” on page 465.

When **Bumping/Pushing** is enabled and **CAD Stops Move** is checked in the **Roof Plane Specification** dialog, a roof plane will bump against another roof plane, CAD or CAD based object as it is moved. Roof planes cannot push these objects, however. See “Bumping/Pushing” on page 218.

Join Roof Planes

Two roof or ceiling planes can be joined at adjacent edges in both 2D and 3D using the **Join Roof Planes** edit button. To use this tool, first identify which edges of the roof planes can extend to meet at a ridge, hip, or valley. The program will join the two planes along the line where they intersect whenever possible.

To use Join Roof Planes

1. Select a roof or ceiling plane on the edge to be joined to another plane.
2. Click the **Join Roof Planes** edit button (or press 2 on the keyboard).
3. Move your pointer to the edge of the second roof or ceiling plane that the first one needs to join to. When your pointer is over the second plane, this plane will highlight.
4. Click on the edge of the second roof or ceiling plane to join it to the first plane.

Note: Join Roof Planes cannot be used to join a roof plane and ceiling plane. Only planes of the same type can be joined using this tool.

If the planes are not close enough, or their shape is not correct, you may need to align their edges, remove extra edges, or move them closer.

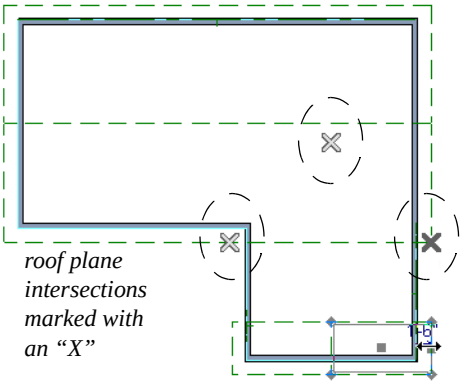
When roof or ceiling planes adjust, the program joins them at the proper location and the adjacent edges extend or contract to remain connected. If the joining of the two will completely eliminate or reverse an adjacent edge, the connection cannot be made.

Locating Intersections

When roof planes of differing slopes meet, they create a ridge, hip, or valley. The **Join Roof Planes** edit tool is the easiest way to move roof plane edges so that they meet correctly; but you can also locate roof plane intersection points where the ridge, hip or valley should be. Once you know where the planes will meet, you can drag edges or corners to those points.

To find roof plane intersection points

1. Make sure that **Automatically Place Roof Intersection Points** is turned on in the **Preferences** dialog. See "Architectural Panel" on page 107.
2. Select the roof plane you would like to place intersection points on.
3. Click the edge of another roof plane to place a temporary CAD Point where it would meet the selected roof plane.
4. Repeat steps 1 and 2 for the ridge edge and both fascia edges. You should have three points located on the larger roof plane: these are the intersection points.



roof plane intersections marked with an "X"

5. Once these intersection points are identified, you can snap the corners of the second roof plane to them.

Aligning Eaves

It is not uncommon for roof plans to feature more than one pitch. In order for the eaves of roof planes with different pitches to meet correctly at ridges and hips, you must control

the roof planes' heights and their horizontal overhang distances. Two options in the **Build Roof** dialog allow you to control how the eaves of automatically generated roof planes align. See "Roof Panel" on page 469.

- **Same Roof Height at Exterior Walls** maintains the default height of roof planes where they bear on exterior walls. The horizontal overhang distances of any non-default roof planes are adjusted so that they continue to join correctly with default roof planes.
- **Same Eave Heights** maintains the default roof plane height at the eaves as well as any non-default horizontal overhang distances . All roof planes are raised or lowered so that they all have the same height at the eaves as default roof planes.

Roof planes that do not join other roof planes with different pitches at ridges or hips are referred to as Independent.

- When **Same Roof Height at Exterior Walls** is checked, Independent roof planes are not affected and will maintain any non-default overhang values.
- When both **Same Roof Height at Exterior Walls** and **Same Eave Heights** are checked, the overhangs of Independent roof planes will be adjusted to preserve their heights at both the exterior walls and the eaves.

Move to be Coplanar

The **Move to be Coplanar** edit button allows you to move the selected roof plane to be coplanar (in the same plane) with the next selected roof plane. You can use this tool in both 2D and 3D views. The results can be easily seen in a cross section view. The two roof planes must have parallel Baselines for this to work.

Raising/Lowering Roof Planes

Roof planes can be raised or lowered in the **Roof Plane Specification** dialog. Begin by locking the **Pitch**, then change the value of the **Baseline Height**. See "General Panel" on page 487.

You can open the specification dialog for all roof planes in an entire plan by selecting Build> Roof> Edit All Roof Planes.

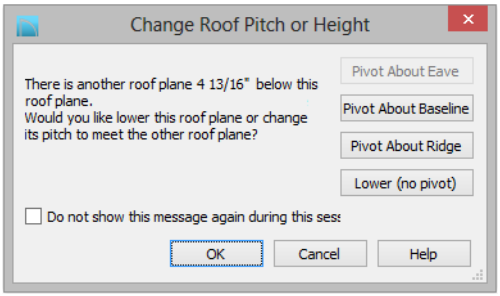
You can also raise or lower roof planes in the **Transform/Replicate Object** dialog. See "Transform/Replicate Object Dialog" on page 238.

In addition, when a new floor is added to a plan, you can choose to move any roof planes displaying on the top floor up one floor. See "Adding Floors" on page 427.

Change Roof Pitch or Height Dialog

The **Change Roof Pitch or Height** dialog displays when you attempt to snap the corner or an edge of a roof plane near the edge of another roof plane that does not match vertically. This dialog gives you the option to move the roof plane vertically, or pivot it about a point and change the pitch.

In this case, the current roof plane would have to raise its pitch or height in order to meet the second roof plane at the corner that you moved.



The amount of vertical displacement between the selected roof plane and another nearby roof plane is stated at the top left.

- Click on **Pivot About Eave** to maintain the current eave height and modify the baseline and ridge heights and pitch to meet the other roof plane. Not available when the selected corner is associated with the eave edge.
- Click on **Pivot About Baseline** to maintain the current baseline height and modify the eave and ridge heights and pitch to meet the other roof plane. Not available when the selected corner is associated with the baseline.
- Click on **Pivot About Ridge** to maintain the current ridge top height and modify the eave and baseline heights and pitch to meet the other roof plane. Not available when the selected corner is associated with the ridge edge.
- Click on **Raise/Lower (no pivot)** to maintain the current pitch and raise or lower the entire plane to connect the roofs. This may affect plate heights of the walls below.
- Click on **None of the Above** to close the dialog without making any changes to the selected roof plane.

To prevent this dialog from displaying, check **Don't show again during this session**. The dialog does not display again until you have terminated and restarted the program.

Unless you have a specific reason to adjust the roof plane this way, it is usually best to select None of the Above.

Editing Roof Baselines

The pitch direction and initial height of any roof plane - manual or automatic - is determined by its Baseline. See "The Baseline" on page 477.

In floor plan view, a Baseline can be selected and edited independent of the roof plane. To select it, click on the roof plane at the location of the Baseline and then click the **Select Next Object**  edit button. The Status Bar tells you when the roof plane Baseline is selected. See "Select Next Object" on page 183.

If a roof plane Baseline is moved, its height will not change. Instead, the height of the roof plane will be affected. In most cases, therefore, moving a roof plane's Baseline independent of the roof plane itself is not recommended.

If the angle of a roof plane's Baseline is changed, the direction of the roof plane's pitch will be modified. The Baseline Angle can be modified in either of two ways:

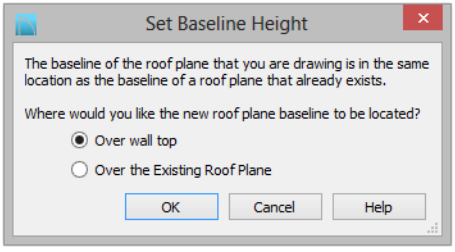
- In the **Roof Plane Specification** dialog. This will change its angle relative to the floor, and will tilt the roof plane along an axis perpendicular to its Baseline. This method is helpful when a specific eave angle is needed. See "General Panel" on page 487.

- Using its Rotate edit handle in floor plan view. This will change its angle relative to the roof plane's eave or ridge and will modify the direction of the pitch. This method is best when the pitch direction matters more than the angle of the eave.
- Both of these methods can be used to modify the same roof plane, although the second approach makes it difficult to control both the pitch direction and eave angle, and is not recomended.

The length of a roof plane Baseline can be lengthened or shortened using its edit handles without changing any of the roof plane's attributes.

Set Baseline Height Dialog

If you manually draw a roof plane so that it bears on a wall at its Baseline, and is placed in the same location as an existing roof plane, the **Set Baseline Height** dialog will display. See "The Baseline" on page 477.



- Select **Over Wall Top** to create a roof plane that bears on the wall it is drawn over and has an overhang as specified in the **Build Roof** dialog. This option would be appropriate to produce a full height dormer. See "Manually Drawn Dormers" on page 511.
- Select **Over the Existing Roof Plane** to produce a roof plane with a height based on that of the roof plane below it rather than the wall. The Baseline height equals the top height of the existing roof at the point where you began drawing the new roof plane Baseline, and has no overhang. This option would be appropriate to create a dormer vent or cricket. See "Manually Drawn Crickets" on page 511.

Editing Roof Plane Structure

To create roof planes of a particular depth, begin by setting up the desired roof framing defaults, then build the roof. See "Framing Defaults" on page 562.

If you later need to change the structure of the roof planes, make the needed change to the Framing Defaults, and then rebuild the roof. You can also edit roof structure on an individual roof plane basis. See "Roof Plane Specification Dialog" on page 486.

Birdsmouth Cut

The birdsmouth is the notch cut into a rafter where it rests on the wall top plate. You can control its vertical depth and the width of the birdsmouth seat in the **Build Roof** dialog. See "Roof Panel" on page 469.

There are two ways to create a roof plane with no birdsmouth:

- Check **Trusses (No Birdsmouth)** in the **Build Roof** dialog before drawing the roof plane.
- Specify a **Raise Off Plate** value of at least 1/16" in the **Build Roof** dialog.

To change the birdsmouth depth after the roof is built, you can move the roof planes up or down, or change the pitch. For example, if you lock the pitch and raise the roof plane by

one inch, you decrease the birdsmouth depth by one inch.

Locking Roof Planes

When the roof plan is correct, roof planes can be locked to prevent accidental changes. To do this, lock the “Roof Planes” layer in all layer sets. See “Layer Display Options Dialog” on page 148.

Locking roof planes will not prevent roof planes from being deleted if the floor they are on is deleted.

Deleting Roof Planes

There are several ways to delete roof planes.

 Delete the entire roof quickly by selecting **Build> Roof> Delete Roof Planes**.

 You can also delete all roof planes at once in the **Delete Objects** dialog. See “Delete Objects Dialog” on page 249.

In addition, you can select any roof plane or group of roof planes, then press the Delete key or click the **Delete**  edit button to delete it from the plan. See “Deleting Objects” on page 249.

Generally speaking, roof planes cannot be deleted if they are locked. An exception to this rule occurs when an entire floor of a plan is deleted. Any roof planes present on a floor will be deleted when the floor is deleted, locked or not. See “Deleting Floors” on page 431.

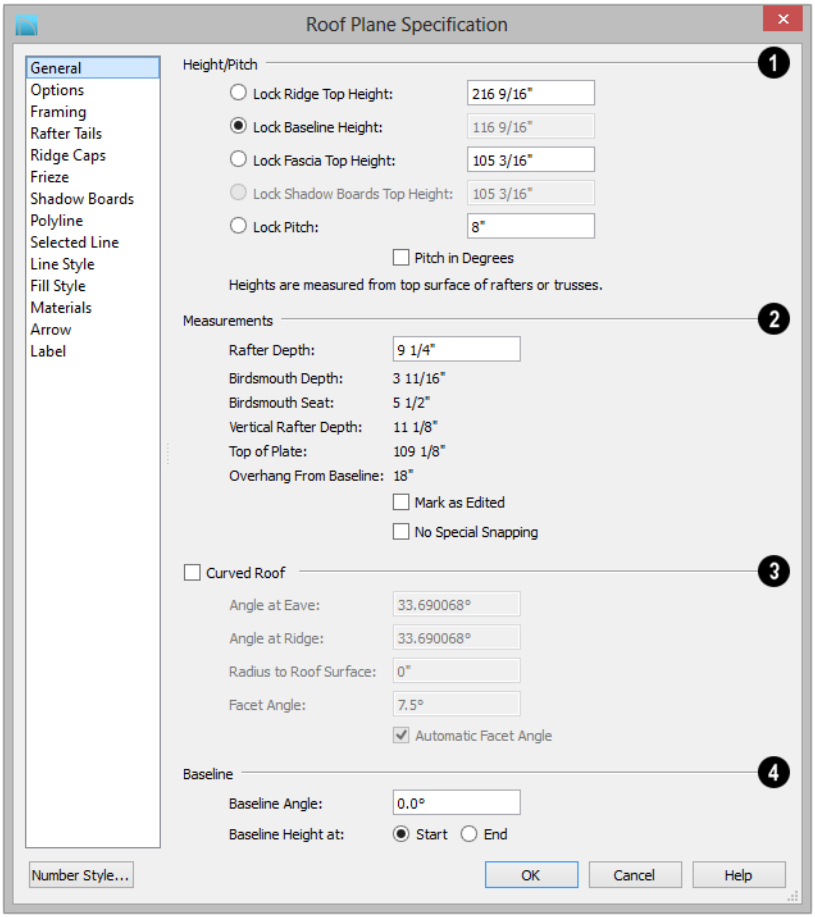
When a roof plane is deleted, any roof framing associated with it is automatically deleted, as well.

Roof Plane Specification Dialog

 Select one or more roof planes and click the **Open Object** edit button to open the **Roof Plane Specification** dialog.

You can also open this dialog for all roof planes in the entire plan by selecting **Build> Roof> Edit All Roof Planes**  .

General Panel

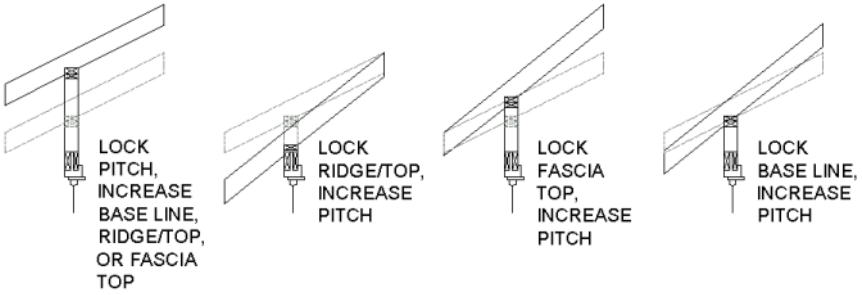


There are four values that define the 3D orientation of a roof plane: **Ridge/Top Height**, **Baseline Height**, **Fascia Top Height** and **Pitch**.

Locking any of the **Height** values defines that value as the pivot point for the selected roof plane. Each of these dimensions is measured from the first floor default elevation of 0' - 0".

If you lock the **Pitch** and change a Height value, the roof plane moves vertically, keeping the same slope. It will not pivot. For a conversion to degrees, see “Roof Pitches in Degrees” on page 519.

Changing these values does not affect the 2D representation of the roof plane.



❶ Specify the **Height** and **Pitch** of the selected roof plane(s). Heights are measured from the top surface of the roof plane(s) rafters or trusses. See “Roof Planes” on page 477.

- Define the **Ridge/Top** height, or lock this value to make it the roof plane’s pivot point.
- Define the **Baseline** height, or lock this value to make it the pivot point.
- Define the **Fascia Top** height, or lock this value to make it the pivot point.

Note: The Fascia Top height will decrease slightly if the fascia edge is aligned with the ridge top of another roof plane.

- Define the **Shadow Board Top** height, or lock this value to make it the pivot point. Only available when Shadow Boards are present on the selected roof plane. See “Fascia and Shadow Boards” on page 516.
- Specify the **Pitch** for the selected roof plane, or lock this value to move the roof plane vertically when a Height value is changed.
- Check **Pitch in Degrees** to display the pitch value in this dialog in degrees in this dialog and in roof plane labels. Values between -89° and 89° can be entered. When **Pitch in Degrees** in unchecked, Pitch is described in terms of rise and run: x inches in 12 in Imperial plans and x mm in 1000 in metric plans.

❷ **Measurements** - Information about the structure of the selected roof plane(s) displays here, mostly for reference.

- Specify the **Rafter Depth** for the selected roof plane. The default rafter depth is set in the **Build Framing** dialog. See “Build Framing Dialog” on page 569.
- The **Birdsmouth Depth** is the plumb or vertical depth of the birdsmouth cut. To change it, move the roof plane some way. For example, if you lock the pitch and raise the roof plane by one inch, you will decrease the birdsmouth depth by one inch. See “Birdsmouth Cut” on page 485.
- The **Birdsmouth Seat** is the horizontal width of the birdsmouth cut. This value is dynamically linked to the birdsmouth depth - if one changes, so does the other.
- The **Vertical Rafter Depth** is defined by measuring a plumb line across the rafter. The degree of pitch affects the Vertical rafter width. The greater the pitch, the greater the vertical rafter depth.

- **Top of Plate** is defined by the ceiling height of the room below. If no room is below the roof plane, this value is 0.
- **Overhang from Baseline** is the horizontal overhang measured from the Baseline to the eave.
- **Mark as Edited** - When an automatically generated roof plane is modified, the program marks it as "edited", giving you the option of retaining it when the roof is rebuilt. Uncheck this box to remove this status from the selected roof plane. See “Rebuilding Roofs” on page 467.
- **Mark as Edited** is only available for automatically generated roof planes. If a manually drawn roof plane is selected, the words **Manual Roof Plane** will display here instead.
- Check **No Special Snapping** to prevent the selected roof plane from snapping to the outer surface of any walls that it may butt against. When this box is unchecked, the roof plane’s edges will automatically snap to the outside of any nearby parallel walls.

❸ Check **Curved Roof** to specify the selected roof plane as curved. See “Curved Roof Planes” on page 495.

- Specify the roof plane’s **Angle at Eave**, **Angle at Ridge** and **Radius to Roof Surface**.
- These three values are interrelated - when one is changed, the other two adjust accordingly. You may find it helpful to first specify the **Radius** value, then the **Angle** values.

A flat roof plane with a pitch of 0 has angles of 0 at both the ridge and eave, as well as a radius of 0.

- Uncheck **Automatic Facet Angle** to specify the **Facet Angle**, which is the angle at which curved roof surfaces are broken in 3D views. The default value is 7.5°; a smaller value produces a smoother curve while a larger value may generate more quickly in 3D views.
  The **Facet Angle** value must divide into 360° evenly; if it does not, the program will choose the nearest value that does.

❹ Specify the angle of the selected roof plane’s **Baseline**, relative to the XY axis. See “Editing Roof Baselines” on page 484.

- A positive **Baseline Angle** value causes the Baseline to tilt upward from its default height. A negative value causes it to tilt downward. The top heights of any walls under the selected roof plane will become angled, as well.
- The **Baseline Height** defined above can be maintained at either the **Start** or **End** point. In floor plan view, the Baseline direction is clockwise around the house.

Options Panel

The settings on the Options panel are the same as those on the panel of the same name in the **Build Roof** dialog, but affect the selected roof plane only. See “Options Panel” on page 473.

Framing Panel

The settings on the Framing panel are similar to those on the Roof panel of the **Build Framing** dialog, but apply to the selected roof plane only. See “Roof Panel” on page 579.

One checkbox is unique to the Framing panel of the **Roof Plane Specification** dialog: check **Retain Roof Framing** to keep the selected roof plane's framing from being deleted and replaced when roof framing is rebuilt.

Rafter Tails Panel

The settings on the Rafter Tails panel are the same as those on the same panel of the **Build Roof** dialog, but affect the selected roof plane only. See "Rafter Tails Panel" on page 475.

Most of the settings on this panel are also like those on the Moldings panel found in a variety of dialogs in the program. See "Moldings Panel" on page 643.

Ridge Caps Panel

The settings on the Ridge Caps panel allow you to specify one more more ridge cap profiles on the ridge and hip edges of the selected roof plane and are the same as those on the same panel of the **Build Roof** dialog. See "Ridge Caps" on page 518.

If you customize the settings on this panel, bear in mind that your changes may only take effect in the model if the same changes are also made to adjacent roof planes.

Most of the settings on this panel are like those on the Moldings panel found in many dialogs in the program. See "Moldings Panel" on page 643.

One setting on this panel is unique: **No Ridge Cap on Selected Edge**. Check this box to remove the ridge cap profile(s) from the roof plane's Selected Edge. See "Selected Edge" on page 181.

Frieze Panel

The settings on the Frieze panel allow you to specify a frieze molding profile to generate under the eaves of the selected roof plane and are the same as those on the same panel of the **Build Roof** dialog. See "Frieze Molding" on page 517.

The settings on this panel are like those on the Moldings panel found in many dialogs in the program. See "Moldings Panel" on page 643.

Shadow Boards Panel

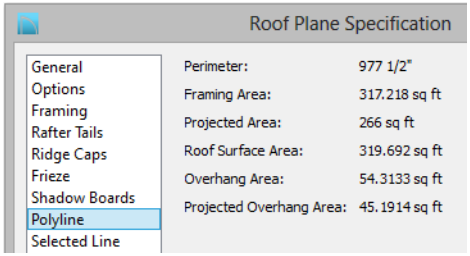
The settings on the Shadow Boards panel allow you to specify one or more fascia shadow board profiles that follow the selected roof plane's eaves. See "Shadow Boards" on page 516.

The settings on this panel are like those on the Moldings panel found in many dialogs in the program. See "Moldings Panel" on page 643.

One setting on this panel is unique: **No Shadow Boards on Selected Edge**. Check this box to remove the shadow board profile(s) from the roof plane's Selected Edge. See "Selected Edge" on page 181.

Polyline Panel

The Polyline panel indicates the length of the roof plane's **Perimeter** and its enclosed **Area**, calculated using several different methods.



- **Perimeter** - This is the length of the roof plane's perimeter, including fascia and shadow boards, with its pitch taken into account. It does not equal the perimeter as measured in floor plan view unless the pitch is 0.
- **Framing Area** - This is the area of the roof plane's framing, not including the fascia or shadow boards, with the pitch taken into account. It is slightly smaller than the Roof Surface Area as roofing typically overhangs the framing by a small amount.
- **Projected Area** - This is the area of the roof plane polyline, including fascia and shadow boards, as seen in floor plan view. It does not equal the Roof Surface Area unless the pitch is 0.
- **Roof Surface Area** - This is the area of the roof plane's top surface, which covers the fascia and shadow boards, with the pitch taken into account.
- **Overhang Area** - This is the area of the roof plane's overhang, including fascia and shadow boards, with its pitch taken into account.
- **Projected Overhang Area** - This is the area of the roof plane's overhang, including fascia and shadow boards, as seen in floor plan view.

Selected Line Panel

The Selected Line panel is similar to the Line panel of the **Line Specification** dialog. See "Line Panel" on page 1052.

Line Style Panel

For information about the settings on this panel, see "Line Style Panel" on page 1053.

Fill Style Panel

The settings on the Fill Style panel control the appearance of the selected roof plane in floor plan view. For information about these settings, see "Fill Style Panel" on page 1067.

Arrow Panel

The settings on the Arrow panel allow you to control the appearance of the selected roof plane's slope direction arrow. See "Displaying Roofs" on page 479.

For information about these settings, see "Arrow Panel" on page 1055.

Materials Panel

The settings on the Materials panel allow you to specify materials for the selected roof plane's various components. For more information, see "Materials Panel" on page 831.

The "Ceiling Surface" component is only available when **Use Room Ceiling Finish** is unchecked and **Has Ceiling** is checked on the Options panel.

Label Panel

Roof plane labels display when the "Roofs, Labels" layer is turned on and use the Text

Style assigned to that layer. See “Roof Plane Labels” on page 479.

For information about the settings on this panel, see “Label Panel” on page 1243.

Roof Baseline Polylines

Typically, the program builds an automatic roof based on the settings in the **Build Roof** dialog and on the Roof panel of the **Wall Specification** dialog, along with the layout of the exterior walls and floor and ceiling heights.

If you want to build a roof that diverges from the footprint of your building as well as the roof directives in the exterior walls, you can use Roof Baseline Polylines.

To create roof baseline polylines

1. Select **Build> Roof> Build Roof**  .
2. On the Build panel of the **Build Roof** dialog, check **Make Roof Baseline Polylines**.
3. Click **OK**. A set of roof Baselines is created along the outside edge of the Main Layer of the exterior walls, forming one or more closed polylines.

As with roof planes, the heights of Roof Baseline Polylines are determined by ceiling heights in the plan. If roof planes will be built at more than one height, a separate baseline polyline is created for each height.

Once created, a Roof Baseline Polyline can be edited in a variety of ways, then used as the basis for the roof then next time it is built automatically.

To create a new roof using the directives in your Roof Baseline Polyline(s), check **Use Existing Roof Baselines** in the **Build Roof** dialog and click OK. See “Roof Panel” on page 469.

Displaying Roof Baseline Polylines

Roof Baseline Polylines are placed on the “Roofs, Baseline Polylines” layer by default and use the Text Style assigned to that layer. See “Displaying Objects” on page 144.

Roof directive information displays along each edge of the polyline, including:

- **V** - vertical (against wall);
- **G** -gable/shed;
- **K** - knee wall;
- **L** - lower (extend slope downward).

If the directive information includes the pitch, the roof plane slopes toward that edge; if it includes the word (vert), it does not.

Editing Roof Baseline Polylines

A Roof Baseline Polyline’s shape can be edited much like a CAD polyline using its edit handles and edit toolbar buttons. See “Editing Closed-Polyline Based Objects” on page 198.

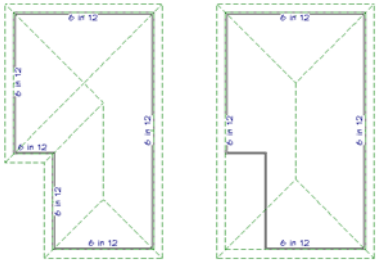
Roof Baseline Polylines always form a closed area with straight sides only. They cannot be severed or curved, but additional joints or corners can be added.

When a new roof is built, it follows the shape of the Roof Baseline Polyline even if that shape does not follow the exterior walls.

In addition to length and direction, each Roof Baseline Polyline edge has roof directives associated with it, much like the roof directives in individual walls. See “Roof Directives in Walls” on page 288.

An Example

For a simple example of Roof Baseline Polyline editing, consider an L-shaped house, with a rectangular roof. The inner part of the ’L’ is a patio that is covered under the same roof.



On the left is the baseline polyline as it was originally produced and the roof plan it creates.

To model the roof plan shown on the right

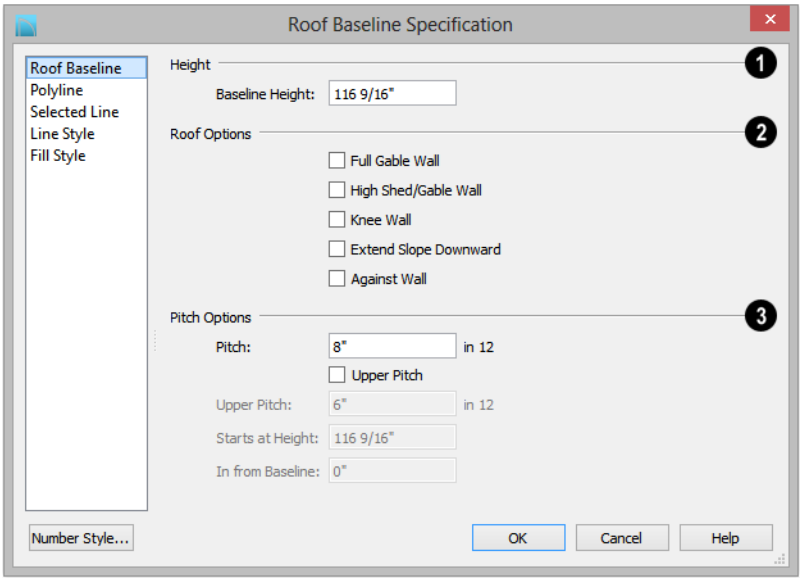
1. Select the Roof Baseline Polyline along its bottom-most edge.
2. Click the **Fillet Two Lines** edit button. See “Reshaping Objects” on page 227.
3. Click the left-most edge to remove the two intervening edges.
4. A message box informs you that “The system must delete intervening lines (those on the inside of the L) to join the two selected lines.” Click OK.
5. Open the **Build Roof** dialog and select the **Build Roof Planes** and **Use Existing Roof Baseline** check boxes to model the roof plan shown on the right side of the image above.

Roof Baseline Specification Dialog

Like walls, each line of a Roof Baseline Polyline contains roof directives that affect automatic roof generation. Select any edge of a Roof Baseline Polyline click the **Open Object** edit button open the **Roof Baseline Specification** dialog.

Roof Baseline Panel

The settings on the Roof Baseline panel control the roof directives associated with the selected edge of the Roof Baseline Polyline. See “Selected Edge” on page 181.



1 Specify the **Baseline height**, which is the height of the entire Roof Baseline Polyline, not just that of the selected edge. See “The Baseline” on page 477.

2 **Roof Options** -

- The first four checkboxes: **Full Gable Wall**, **High Shed/Gable Wall**, **Knee Wall**, and **Extend Slope Downward** are the same as those in the **Wall Specification** dialog. See “Roof Panel” on page 307.
- Check **Against Wall** if the roof plane rising from this baseline butts against an exterior wall. This is similar to checking High Shed/Gable Wall.

3 **Pitch Options** -

- Specify the **Pitch** for the selected edge of the Roof Baseline Polyline. This overrides the default pitch set in the **Build Roof** dialog. See “Build Roof Dialog” on page 468.
- The **Pitch**, **2nd Pitch**, and **Starts at** settings are the same those in the **Wall Specification** dialog.
- **Baseline height** - This is the height of the entire Roof Baseline Polyline, not just that of the selected edge. See “The Baseline” on page 477.

Polyline Panel

The Polyline panel indicates the length of the Roof Baseline Polyline’s **Perimeter**, its enclosed **Area**, and its **Volume**.

Selected Line Panel

This panel is similar to the Line panel of the **Line Specification** dialog. See “Line Panel” on page 1052.

Line Style Panel

For information about the settings on this panel, see “Line Style Panel” on page 1053.

Fill Style Panel

The settings on the Fill Style panel control the appearance of the selected Roof Baseline Polyline in floor plan view. For information about these settings, see “Fill Style Panel” on page 1067.

Roof and Ceiling Framing

Roof framing can be both drawn manually and generated automatically. You can also combine the two techniques. As with other kinds of framing, it is often easiest to begin by generating roof framing automatically and then editing it as needed. See “Manual vs. Automatic Framing” on page 563.

Roof Trusses cannot be generated automatically - they must be drawn manually and then replicated. If you intend to use Roof Trusses, make sure the settings in the **Build Roof** dialog are properly defined before you build the roof. See “Roof Trusses” on page 602.

When using a combination of Roof Trusses and stick framing, begin by drawing the roof planes and ceiling planes. When they are in place, draw and replicate the Roof Trusses. Finally, automatically generate or manually draw the stick framing and edit it as needed. See “Mixing Rafters and Trusses” on page 565.

Framing for manually drawn **Ceiling Planes** cannot be drawn manually - it must be automatically generated. The framing for manually drawn Ceiling Planes is generated when roof framing is built and uses the settings in the **Build Roof** dialog as defaults. Once it has been created, it can be edited. See “Ceiling Plane” on page 464.

Rebuilding Roof Framing

If roof framing defaults are modified after the roof and roof framing are built, neither will update automatically. In order to update the model you need to rebuild the roof, then rebuild the roof framing.

You can also modify the roof framing settings for individual roof planes, and then either build roof framing or click the **Build Framing for Selected Object** edit button. See “Keeping Framing Current” on page 592.

Curved Roof Planes

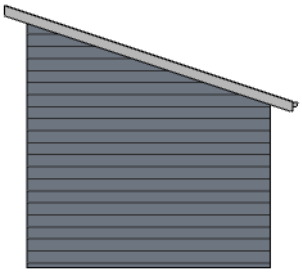
Any roof plane can be turned into a curved roof plane in the **Roof Plane Specification** dialog. See “Roof Plane Specification Dialog” on page 486.

One way to produce a barrel roof is using a single roof plane that starts out flat (zero pitch) and covers the entire building.

Curving a Single Roof Plane

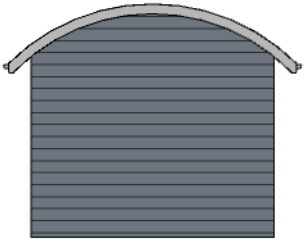
To curve a roof plane

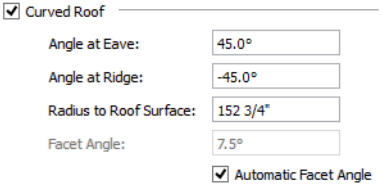
1. Draw a simple four wall structure with a 4 in 12 pitch shed roof.



2. Select the roof plane and click the **Open Object** edit button to open the **Roof Plane Specification** dialog.
3. On the General panel, change the **Pitch** to 0 in 12.

4. Check **Curved Roof** and notice that the Angle values below are both at 0.0°.
5. Change the **Angle at Eave** from 0° to 45° and press the Tab key. Notice that the other values update and that in order to maintain the 0 in 12 pitch, the **Angle at Ridge** becomes -45°.





Curving Two Roof Planes

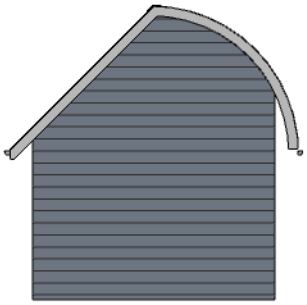
You can also create a barrel roof using two roof planes. A 12 in 12 pitch is used because it allows the curved roof to be nearly vertical at the eave and nearly flat at its peak.

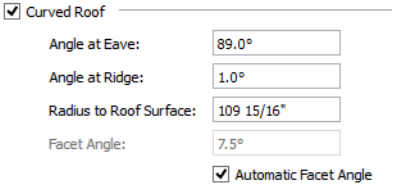
To curve two roof planes

1. Draw a simple four wall structure with a 12 in 12 pitch gable roof.

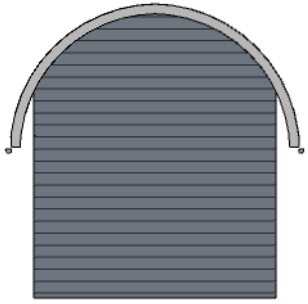
2. Select one of the roof planes and click the **Open Object** edit button to open the **Roof Plane Specification** dialog.

3. Check **Curved Roof** and notice that the Angle values below are identical.
4. Change the **Angle at Ridge** from 45° to 1°. This makes the roof plane nearly flat at the ridge. The Angle At Eave updates to maintain the 12 in 12 pitch.





5. Repeat this process with the other roof plane.



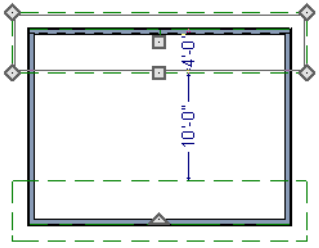
Compound Curved Roof Planes

Compound curves can be created using two or more curved roof planes or a combination of straight and curved roof planes.

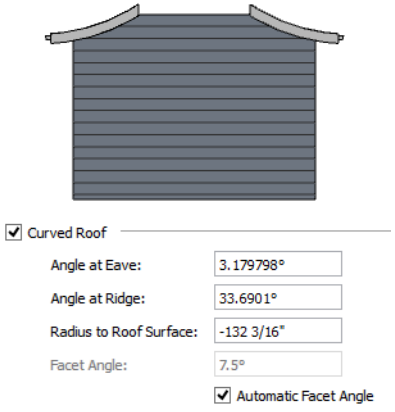
> Before curving roof planes or joining the edges of any curved plane, make sure all flat roof planes are correctly joined. See “Join Roof Planes” on page 481.

To create a compound curved roof

1. Draw a simple four wall with a 4 in 12 pitch gable roof.
2. In floor plan view, select one of the roof planes and pull its ridge edge back so that it is 4 feet from the wall. Do the same to the other roof plane.



3. Select both roof planes and check **Curved Roof** in the **Roof Plane Specification** dialog. Set the **Angle at Ridge** to 33.6901°, which is the same as 8 in 12. Notice that the **Angle at Eave** is almost flat.



4. Use the **Roof Plane** tool to draw the two high roof planes. As you create each one, draw its Baseline along to the ridge edge of one of the low roof plane. See “To draw a roof plane” on page 477.
5. Select the two new roof planes, click the **Open Object** edit button,and change their **Pitch** to 33.6901° - or 8 in 12.

Viewed in 3D, the planes appear to join together into one.

Curved Roof Plane Intersections

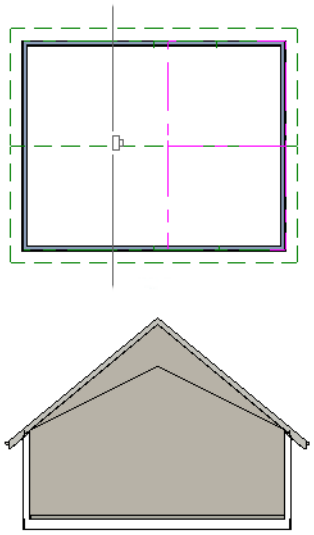
Curved roof planes can be joined to other roof planes using the **Join Roof Planes** edit tool. Often, the result is a curved roof valley or hip.

In order to straighten a curved roof edge, select the edge in question and click the **Straighten Curved Edge** edit button.

Ceiling Planes

Ceiling planes are drawn the same way as roof planes and are edited using the same tools. They are useful for creating custom vaulted ceilings. See “Vaulted and Cathedral Ceilings” on page 343.

Ceiling planes are drawn using the same pitch as roof planes, specified in the **Build Roof** dialog. See “Build Roof Dialog” on page 468.



Cross Section showing ceiling planes.

If you wish, you can specify the desired pitch in the **Build Roof** dialog before drawing a ceiling plane, or you can change the pitch after it is drawn in the **Ceiling Plane Specification** dialog. See “Ceiling Plane Specification Dialog” on page 500.

There are a few things to remember when drawing ceiling planes.

- Ceiling planes should be created over rooms that have **Ceiling Over this Room** unchecked in the **Room Specification** dialog. See “Structure Panel” on page 348.
- The Baseline of a ceiling plane should be drawn along the outer surface of the bearing wall’s Main Layer. This allows the ceiling plane to extend over and be supported by the wall. See “The Main Layer” on page 295.
- The sloping edge at the side of a ceiling plane should butt to the inside of the wall.
- Ceiling planes act independent of the roof planes above.
- Usually, the pitch of a ceiling plane is lower than the pitch of the corresponding roof plane.
- Ceiling planes can be joined together using the **Join Roof Planes** edit button. See “Join Roof Planes” on page 481.
- Select a ceiling plane and click the **Open Object** edit button to open the **Ceiling Plane Specification** dialog. See “Ceiling Plane Specification Dialog” on page 500.

Displaying Ceiling Planes

Ceiling planes are drawn on the “Ceiling Planes” layer by default, although you can place a ceiling plane on any layer. See “Line Style Panel” on page 503.

Manually drawn **Ceiling Planes** can also display labels when the “Roofs, Labels” layer is on. See “Roof Plane Labels” on page 479.

Editing Ceiling Planes

Ceiling planes can be edited much like roof planes using their edit handles and edit toolbar buttons. See “Editing Roof and Ceiling Planes” on page 480.

Ceiling planes can also be edited in the **Ceiling Plane Specification** dialog. See “Editing Roof and Ceiling Planes” on page 480.

As with roof planes, the ceiling planes layer can be locked to prevent editing.

Deleting Ceiling Planes

Select **Build> Roof> Delete Ceiling Planes** to delete all ceiling planes in the current plan.

Ceiling planes can also be deleted at once in the **Delete Objects** dialog. See “Delete Objects Dialog” on page 249.

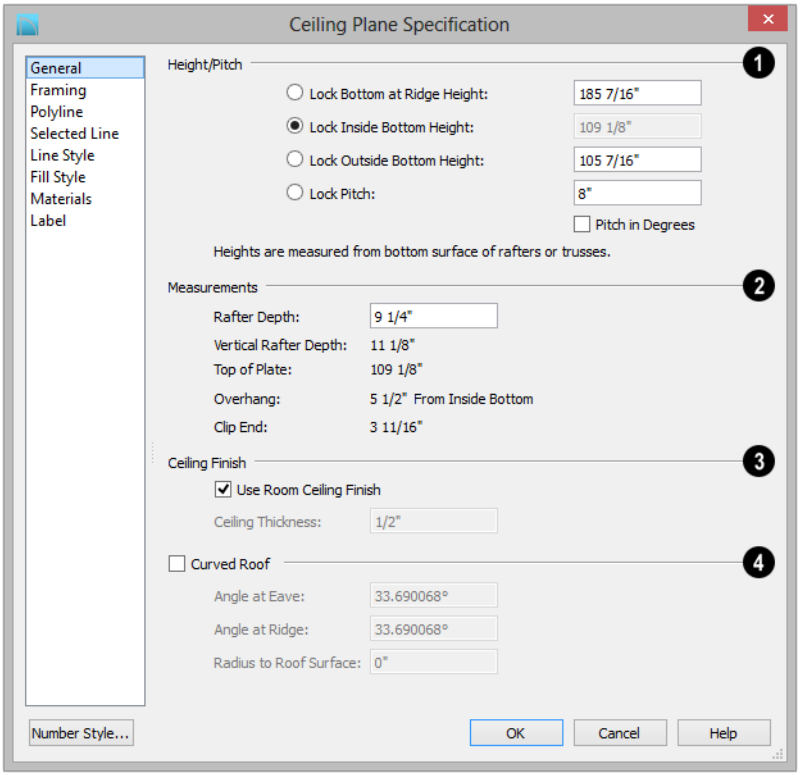
In addition, you can select any ceiling plane or group of ceiling planes, then press the Delete key or click the **Delete** edit button to delete it from the plan. See “Deleting Objects” on page 249.

Ceiling Plane Specification Dialog

Select a ceiling plane and click the **Open Object** edit button to open the **Ceiling Plane Specification** dialog.

The **Ceiling Plane Specification** dialog is similar to the **Roof Plane Specification** dialog. See “Roof Plane Specification Dialog” on page 486.

General Panel



There are four values that define the 3D orientation of a ceiling plane: **Bottom at Ridge**, **Inside Bottom**, **Outside Bottom** and **Pitch**.

Locking any of the **Height** values defines that value as the pivot point for the selected ceiling plane. Each of these dimensions is measured from the first floor default elevation of 0' - 0".

If you lock the **Pitch** and change a Height value, the ceiling plane moves vertically, keeping the same slope. It will not pivot.

Changing these values does not affect the 2D representation of the ceiling plane.

1 Specify the **Height** and **Pitch** of the selected ceiling plane. Heights are measured from the bottom surface of the ceiling plane's rafters or trusses.

- Define the **Bottom at Ridge Height**, or lock this value to make it the roof plane's pivot point.
- Define the **Inside Bottom Height**, or lock this value to make it the roof plane's pivot point. If the plane is drawn over a wall, this is located at the inside surface of the wall's Main Layer.

- Define the **Outside Bottom Height**, or lock this value to make it the roof plane's pivot point. Only available when a ceiling plane is drawn over a wall, this is the height of the lower edge of the ceiling rafters, were they not clipped by the wall below.
- Specify the selected ceiling plane's **Pitch**, or lock this value to move the plane vertically when a Height value is changed.
- Check **Pitch in Degrees** to display the Pitch value in degrees. See "Roof Pitches in Degrees" on page 519.

❷ **Measurements** - Information about the structure of the selected ceiling plane(s) displays here, mostly for reference.

- Specify the **Rafter Depth**. The default rafter depth is the same as that for roof planes and is set in the **Build Framing** dialog. See "Build Framing Dialog" on page 569.
- The **Vertical Rafter Depth** is defined by measuring a plumb line through a rafter. The greater the pitch, the greater the vertical rafter depth.
- The **Top of Plate** is the top plate height of the bearing wall, and is also the ceiling height of the room.
- **Overhang From Inside Bottom** - Only appearing when a ceiling plane is drawn over a bearing wall, this is the horizontal distance from the Baseline to the inside Main Layer surface of the wall. The Baseline is typically drawn over the outside Main Layer surface, so this value is equal to the wall's Main Layer thickness.
- **Clip End** - Only available when a ceiling plane is drawn over a bearing wall, this is the amount a ceiling rafter's underside must be clipped at its lower end to rest on the wall top plate. This is equal to the ceiling plane's rise in slope over the distance of the **Overhang from Inside Bottom**.

  The **Outside Bottom** value plus the **Clip end** value equals the **Top of Plate** value.

❸ **Ceiling Finish** -

- When **Use Room Ceiling Finish** is checked, the selected ceiling plane's ceiling finish thickness and material are defined by the room below and the "Ceiling Surface" component will not be available on the Materials panel. Uncheck this box to enable the **Ceiling Thickness** option.
- Specify the **Ceiling Thickness**, which is the thickness of the bottom surface of the ceiling plane.

❹ Check **Curved Roof** to specify the selected roof plane as curved. See "Curved Roof Planes" on page 495.

- Specify the roof plane's **Angle at Eave**, **Angle at Ridge** and **Radius to Roof Surface**.
- These three values are interrelated - when one is changed, the other two adjust accordingly. You may find it helpful to first specify the **Radius** value, then the **Angle** values.

A flat ceiling plane with a pitch of 0 has angles of 0 at both the ridge and eave, as well as a radius of 0.

Framing Panel

The settings on the Framing panel of the **Ceiling Plane Specification** dialog are a subset of those found on the Roof panel of the **Build Framing** dialog. See “Roof Panel” on page 579.

Polyline Panel

The Polyline panel indicates the the ceiling plane’s **Perimeter**, its **Framing Area**, and its **Projected Area**. See “Polyline Panel” on page 490.

Selected Line Panel

This panel is similar to the Line panel of the **Line Specification** dialog. See “Line Panel” on page 1052.

Line Style Panel

For information about the settings on this panel, see “Line Style Panel” on page 1053.

Fill Style Panel

The settings on the Fill Style panel affect the appearance of the selected ceiling plane in floor plan view. For information about these settings, see “Fill Style Panel” on page 1067.

Materials Panel

The “Ceiling Surface” component is only available when **Use Room Ceiling Finish** is unchecked on the General panel.

For more information about the settings on this panel, see “Materials Panel” on page 831.

Label Panel

Ceiling plane labels display when the “Roofs, Labels” layer is turned on and use the Text Style assigned to that layer. The Automatic Label for ceiling planes is blank, but you can specify a custom label. See “Roof Plane Labels” on page 479.

For information about the settings on this panel, see “Label Panel” on page 1243.

Gable/Roof Lines

The **Gable/Roof Line** tool can be used to automatically generate a gable above the bearing wall of a hip roof plane. It is best used in situations where roof directives in walls are not possible. For example:

- If a Wall Break would be required in the same location as a door or window;
- Where a wall is not present, such as across the front of an alcove;
- Over a Bay, Box, or Bow Window.

See “Roof Directives in Walls” on page 288.

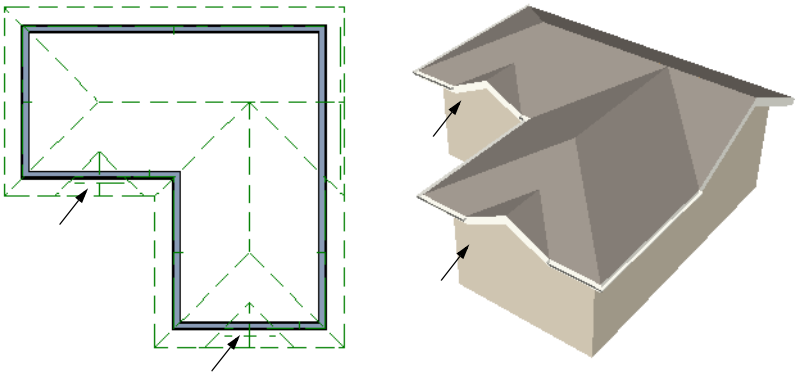
In addition, the **Gable Over Door/ Window** edit button allows you to add a small Gable/Roof Line over one or more selected doors or windows the next time automatic roof planes are built.

Gable/Roof Lines display in floor plan view when the “Roofs, Gable Lines” layer is set to display and can be selected and edited much like regular CAD lines. See “Editing Line Based Objects” on page 184.

Creating a Gable

To create a gable using a Gable/Roof Line

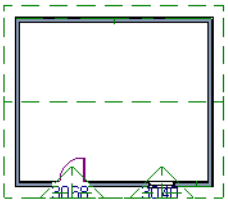
1. Select **Build> Roof> Gable/Roof Line**, then click and drag to draw a line outside of the exterior wall that you want to create a gable over.
2. Position the Gable/Roof Line within 10 feet (2260 mm) of the wall's Main Layer but not touching it. See "The Main Layer" on page 295.
   - Make sure that the Gable/Roof Line is exactly parallel to the exterior wall.
3. Resize the Gable/Roof Line so that it is the length of the desired gable.
   - The length of the Gable/Roof Line determines the gable width at the wall Main Layer, not at the overhang.
   - At the larger roof eave, a gable roof is wider than the gable line by twice the overhang distance.
4. Select **Build> Roof> Build Roof** and regenerate the roof. See "Build Roof Dialog" on page 468.



Gables produced using Gable Roof Lines

To use the Gable Over Door/Window tool

1. Select one or more doors or windows.
2. Click the **Gable Over Door/ Window** edit button.
   - **Gable Over Door/Window** is not available for openings placed in Full Gable Walls or for Bay, Box or Bow Windows. See "Bay, Box, Bow Windows and Roofs" on page 418.
3. The next time automatic roof planes are built, gables will be created over each of these doors and windows.



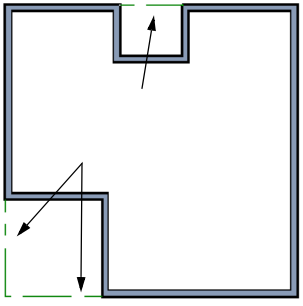
- Each gable will extend 12” (300 mm) on either side of its door or window.
- If two of these openings are within 30” (750 mm) of each other on the same wall, a single gable will be created.
- If you move or resize the door or window(s), the associated Gable/Roof Line will not update until the roof is built again.

4. To remove a Gable Over Door/Window, select the door(s) or window(s) and click the **Delete Gable Over Opening** edit button, or select the gable line and click the **Delete** edit button. The next time the roof is built, the gable will be removed.

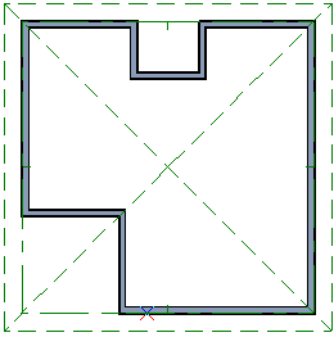
Covering an Alcove

A **Gable/Roof Line** can also be used to maintain a roof plane baseline where there is no wall below. For example, you can use it to extend a roof plane across an alcove, rather than wrap into it.

In order for a **Gable/Roof Line** to direct the roof to extend over an alcove or other area where no wall is present, it must be aligned with the exterior walls’ Main Layer.



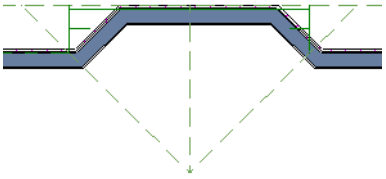
Gable/Roof Lines drawn to extend roof planes



Result, after automatic roof generation

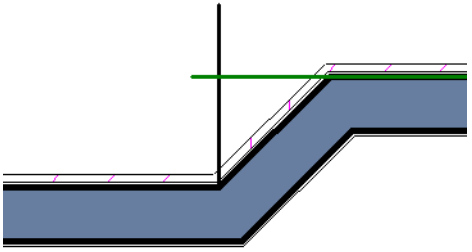
Covering a Bay

A **Gable/Roof Line** drawn across a bay causes a gable to be build above the bay when roofs are automatically generated.



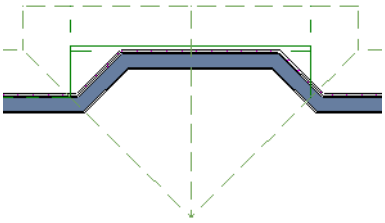
Gable/roof line used to create a gable over a bay

In order for the gable to be built, at least one end of the Gable/Roof Line must extend past the side walls of the bay.



Gable/roof line extends past end of side wall

If the Gable/Roof Line is drawn along the outer edge of the bay's outer wall's Main Layer, the resulting gable will extend only to the eave of the larger roof. Draw the Gable/ Roof Line beyond the bay's outer wall to extend out past the larger roof's eave.



Gable/roof line drawn beyond outer wall of bay results in gable extending to cover bay

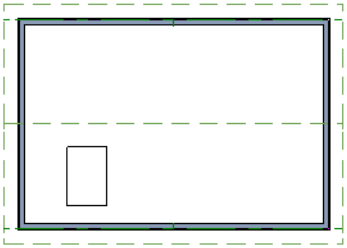
Skylights and Roof Holes

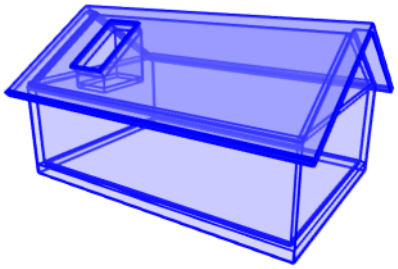
A skylight can be created by selecting **Build> Roof> Skylight** and drawing a rectangular polyline within a single roof plane. You can also simply click once within a roof plane to place a 2' x 2' skylight.

The **Skylight** tool places a flat panel skylight into a roof hole, produces a hole in the ceiling platform below, and automatically generates the skylight shaft between these two holes.

To place a skylight in a vaulted ceiling, uncheck **Ceiling Over This Room** in the **Room Specification** dialog, draw the ceiling planes to produce the vault and edit them as needed, and then draw the skylight. See "Structure Panel" on page 348.

Note: If a sloped ceiling plane is present under the skylight, a hole in this ceiling plane is automatically produced. This hole is visible, and may be located directly under the roof hole. It can be moved and edited separately.





Editing Skylights

Skylights can be selected individually or in groups and can be edited using the edit handles, edit toolbar buttons, or the **Roof Hole/Skylight Specification** dialog. See “Roof Hole/Skylight Specification Dialog” on page 507.

Skylights must always be contained by a single roof plane. If the roof plane is deleted, any skylights or holes it contains are also deleted. Aside from this restriction, skylights can be edited much like standard closed polylines. See “Editing Closed-Polyline Based Objects” on page 198.

If you clear the **Skylight** check box in the **Roof Hole/Skylight Specification** dialog, the curb and glass for the skylight is removed but the opening remains.

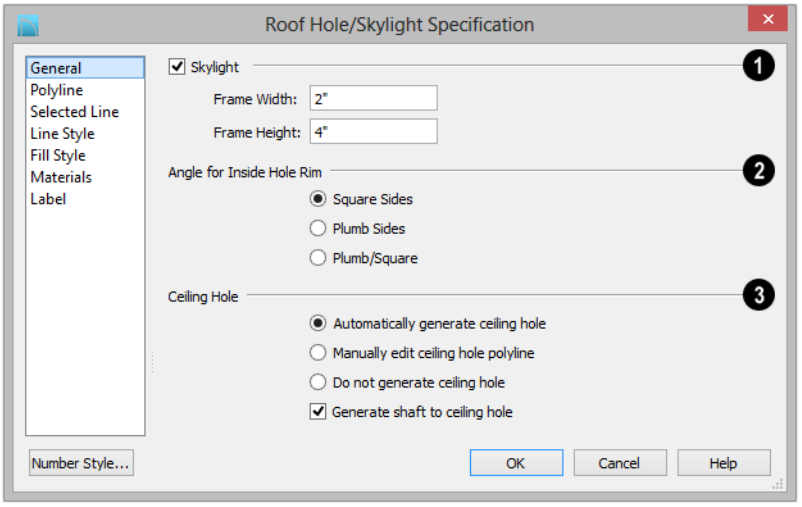
By default, the flat ceiling hole does not display separately; but it can be edited separately, and even deleted entirely. See “Roof Hole/Skylight Specification Dialog” on page 507.

A roof hole can also be created using the **Create Hole** edit tool. See “Polyline Holes” on page 203.

Roof Hole/Skylight Specification Dialog

Select a skylight and click the **Open Object** edit button to open the **Roof Hole/Skylight Specification** dialog. See “Skylights and Roof Holes” on page 506.

General Panel



1 Check **Skylight** to specify this polyline as a skylight. If unchecked, the curb and glass for the skylight are removed but the opening remains.

- Specify the **Frame Width** and **Height** of the selected skylight.

2 **Angle for Inside Hole Rim** - Defines the shape of the skylight well where it passes through the roof plane.

- **Square Sides** - The framing for the skylight is cut square to the pitch of the roof.
- **Plumb Sides** - The framing for the skylight is plumb-cut.
- **Plumb/Square** - The bottom edge is plumb-cut, the top edge square-cut.

3 Specify how the selected skylight/roof hole's **Ceiling Hole** should be built. These options are only available if the room below has a default ceiling specified in the **Room Specification** dialog. See "Structure Panel" on page 348.

- Select **Skylight Automatically Generates Ceiling Hole** to automatically generate and maintain the skylight hole in a flat ceiling. This option is the selected for skylights in vaulted ceilings.

Note: Holes automatically produced in a sloping custom ceiling plane by a new skylight must be manually maintained.

- Select **Manually Edit Ceiling Hole Polyline** to edit the flat ceiling hole polyline manually. Click OK to return to floor plan view and edit the ceiling hole polyline. When this option is selected, the ceiling hole polyline and the skylight can be selected separately in floor plan view.
- Select **Do not generate ceiling hole** to generate a hole through the roof plane but not the ceiling.
- Uncheck **Generate shaft to ceiling hole** to generate a roof hole and a ceiling hole, but no vertical surfaces connecting them.

When checked, a shaft between the two is produced. Not available if Do not generate ceiling hole is selected.

Polyline Panel

The Polyline panel indicates the roof hole/skylight's **Perimeter**, its **Framing Area**, and its **Projected Area**. See "Polyline Panel" on page 490.

Selected Line Panel

This panel is similar to the Line panel of the **Line Specification** dialog. See "Line Panel" on page 1052.

Line Style Panel

For information about the settings on this panel, see "Line Style Panel" on page 1053.

Fill Style Panel

The settings on the Fill Style panel control the appearance of the selected roof hole or skylight in floor plan view. For information about these settings, see "Fill Style Panel" on page 1067.

Materials Panel

For information about the Materials panel, see "Materials Panel" on page 831.

Label Panel

Roof hole and skylight labels display when the "Roofs, Labels" layer is turned on and use the Text Style assigned to that layer. The Automatic Label for these objects is blank, but you can specify a custom label. See "Roof Plane Labels" on page 479.

For information about the settings on this panel, see "Label Panel" on page 1243.

Dormers and Crickets

Dormers can be drawn manually or placed automatically using the **Auto Dormer** tools.

Automatic Dormers can be placed only under certain conditions:

- Automatic Dormers can only be placed entirely within a single roof plane. They cannot extend past the eaves or ridge of this roof plane.
- Automatic Dormer side walls cannot be positioned above other walls in the plan.

If you click within a roof plane to place an automatic dormer, but click too close to an eave or the ridge, a dormer will not be created; however, its outline will. Move this outline box to a location that meets the dormer's requirements and it will be created.

Automatic dormers reside by default on their own layer, "Auto Dormers". Their display cannot be turned off; however, you can lock this layer to prevent unintended editing. See "Layer Display Options Dialog" on page 148.

Auto Floating Dormer

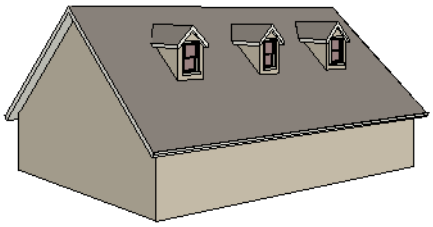
Select **Build> Roof> Auto Floating Dormer** and click the roof plane

where you would like to place the center of the dormer's front wall.

The bottom edges of all floating dormer walls are cut off by the underlying roof plane. To produce such a dormer manually, check **Roof Cuts Wall at Bottom** for the dormer walls on the Roof panel of the **Wall Specification** dialog.

Usually, no room is defined by the walls of this type of dormer.

The images below show both the outside and inside of a typical floating dormer.



A floating dormer can be placed in floor plan view on the same floor that its underlying roof plane displays on, or it can be placed on the floor above. Normally, it does not matter what floor the dormer is on; but in some cases, it may need to be on the floor above so that the dormer walls do not interfere with walls or railings in the room below.

Regardless of which floor it is placed on, a dormer must always fit within a single roof plane. When placing a dormer on the floor above, you may find it helpful to turn on the **Reference Display** . See “Reference Floor Display” on page 434.

You may also find it helpful to display the underlying roof plane on the floor above using the **Roof Plane Specification** dialog. See “Roof Plane Specification Dialog” on page 486.

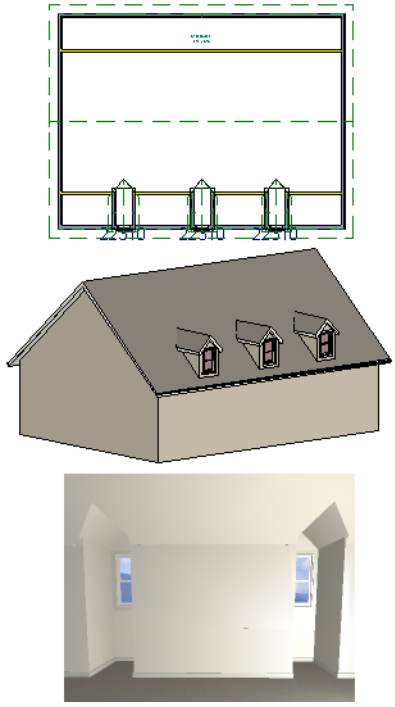
If the dormer is placed on the same floor as the underlying roof plane and the room below, and if the room has a flat ceiling, then a hole will be produced in the ceiling under the dormer.

Auto Dormer

Select **Build> Roof> Auto Dormer** and click on a roof plane where you want the center of the dormer's front wall to be.

The walls of an auto dormer go to the floor and meet a knee wall on either side on the back of the dormer. This knee wall must run parallel to the underlying roof plane’s Baseline.

- If you are creating a (non-floating) auto dormer, a knee wall must already exist. The dormer side walls run back to the knee wall and the knee wall is broken where the dormer walls meet it.
- The knee wall does not have to be designated as such in the **Wall Specification** dialog unless you are generating an automatic roof. See “Knee Walls” on page 290.
- A non-floating dormer must always be created on the same floor as the knee walls.



The initial width, height, roof style and other settings of Auto Dormers are set in the **Dormer Defaults** dialog. See “Dormer Defaults” on page 463.

Manually Drawn Dormers

Once you are familiar with Chief Architect’s roof tools, drawing dormers manually can be quite simple. There are several different ways to draw dormers; some methods work better in certain applications.

A variety of resources with information about drawing dormers manually is available at chiefarchitect.com .

See, too, “Manually Drawn Dormers” on page 74 of the User’s Guide.

There are a few things to keep in mind.

- Walls extend upward until they meet an overlying roof plane.
- A wall can also be cut by underlying roof planes if **Roof Cuts Wall at Bottom** is checked in the **Wall Specification** dialog. For this to work properly, the edge of the roof plane must extend completely through the width of the wall. See “Clerestory and Dormer Walls” on page 289.
- Polylines can be converted into a **Hole in Roof/Ceiling** that allows walls to extend above or below the roof line. See “Convert Polyline” on page 235.

Manually Drawn Crickets

The automatic roof generator will not produce crickets in a roof plan; however, you can manually draw a cricket using the **Roof Plane** tool. See “Crickets and Dormer Vents” on page 81 of the User’s Guide.

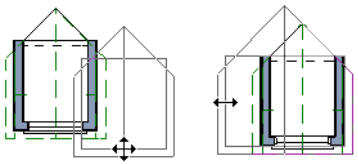
Editing Auto Dormers

Auto Dormers are a collection of objects that behave as one. When a dormer is selected, it can be edited using its edit handles, edit tools, and specification dialog. See “Dormer Specification Dialog” on page 512.

If you click the **Explode Dormer** edit button, the dormer’s individual components can be edited.

Using the Mouse

When selected, an auto dormer displays three edit handles. The Move handle displays over the front wall and allows you to relocate the dormer. Two resize handles display on the side walls and allow you to change the width of the dormer.



Move *Resize*

There are some things to keep in mind when editing auto dormers and auto floating dormers using the mouse.

- Dormers move at 90° angles unless the Ctrl key is pressed before moving them.
- The dormer must be contained within one underlying roof plane.
- Auto dormers cannot be moved beyond the required knee wall.

Editing the Window

Dormer windows can be selected, edited, deleted and replaced just like other windows. See “Editing Windows” on page 395. You can place several windows in the front wall.

Unless the dormer's window has been edited or changed in the **Window Specification** dialog, when the dormer width is changed, its width changes automatically to fill the front dormer wall. If the window has been edited, its width stays fixed. If a change to the dormer makes its front wall too short to hold the window, the window reverts to auto width.

Exploding Dormers

Click the **Explode Auto Dormer** edit button to explode the auto dormer into its component parts. The dormer walls, roof planes, window, and hole in the roof/ceiling can be edited individually.

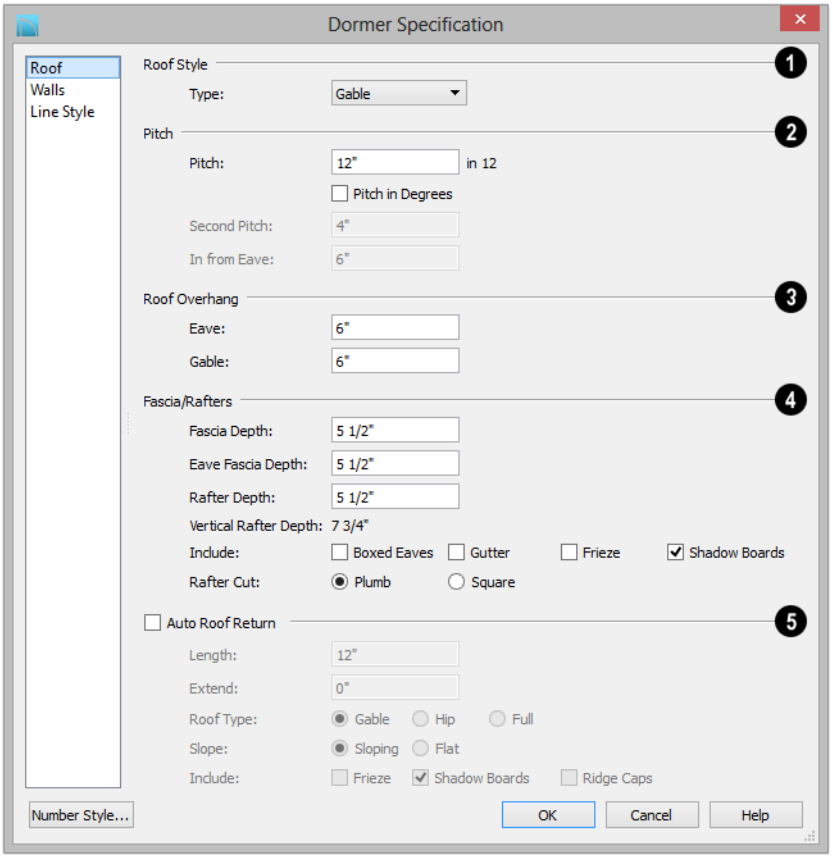
The program treats roof planes over an exploded anto dormer as though they were manually drawn, allowing you to protect them from being rebuilt in the **Build Roof** dialog. See “Roof Panel” on page 469.

Dormer Specification Dialog

Select a dormer or dormers and click the **Open Object** edit button to open the **Dormer Specification** dialog.

The settings in this dialog are also found in the **Dormer Defaults** dialog, where they apply to all dormers as they are created rather than to a selected dormer.

Roof Panel



1 Specify the selected dormer's **Roof Style**.

- Choose a roof **Type** from the drop-down list. You can choose from Hip, Gable, Shed, Gambrel, Mansard, Barrel, Curved Eave, Hip Curved Eave or Eyebrow.

Dormer Roof Types

2 Describe the **Pitch** of the dormer's roof planes.

- Specify the **Pitch** of the dormer roof planes. The default dormer pitch applies to all dormer roof types except Shed, which has a default 3 in 12 pitch. For Gambrel and Mansard types, this applies to the lowest, or eave, roof planes.
- Check **Pitch in Degrees** to display the pitch in degrees; uncheck it to display the pitch in terms of rise and run. See "Roof Pitches in Degrees" on page 519.
- The **Second Pitch** specifies the upper roof of a Gambrel, Mansard, curved eave, and hip curved eave.
- When a Second Pitch is used, specify the **In from Eave** distance, measured from the lower roof plane eave to where the upper roof plane starts.

❸ **Roof Overhang** - Specify the depth of the selected dormer's **Eave** and **Gable Overhangs**.

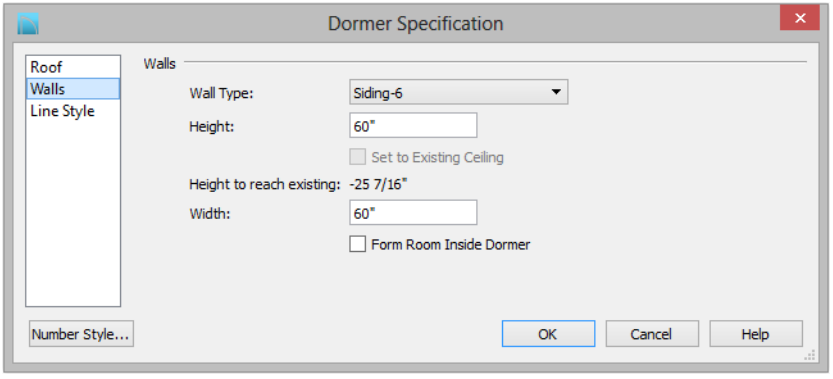
❹ Specify the characteristics of the dormer's **Fascia/Rafters**.

- Specify the **Fascia Depth** for gable fascia and the **Eave Fascia Depth**.
- Specify the **Rafter Depth**.
- The **Vertical Rafter Depth** displays for reference.
- Specify whether to Include Boxed Eaves, Gutters, Frieze, and/or Shadow Boards.
- Select either **Plumb** or **Square Rafter Cut**.

❺ Check **Auto Roof Returns** to generate roof returns on the selected dormer. Roof Returns can be only specified for Gable dormers. See "Roof Returns" on page 515.

- Specify the horizontal **Length** of the roof return in inches (mm).
- Enter a value in inches (mm) to **Extend** the roof returns past the dormer overhang.
- Specify a **Gable**, **Hip**, or **Full** roof return.
- Specify a **Sloping** or **Flat** roof return. See "Roof Tutorial" on page 57 of the User's Guide.
- Check the boxes to **Include Shadow Boards**, **Ridge Caps**, and/or **Frieze** molding on the roof returns.

Walls Panel



- Select a **Wall Type** for the dormer walls from the drop-down list.
- Specify the **Height** of the dormer, as measured from where the top of the underlying roof plane meets the dormer front wall exterior to the top plate of the dormer roof's bearing walls.

This top height is called the dormer ceiling height, even if the ceiling in the dormer is not flat. The top dormer window casing is usually close to this height.

- Check **Set to Existing Ceiling** to assign the ceiling height of the room behind the dormer to the dormer. Not available in the **Dormer Defaults** dialog.
- **Height to Reach Existing** shows the difference between the dormer height where the inside of the wall meets the underside of the roof and the ceiling of the room behind it.
- Specify the dormer's **Width**, measured from the outside surfaces of the dormer side walls.
- **Form Room Inside Dormer** is used only for floating dormers and creates a flat ceiling in the dormer. If you check this option, you should define the dormer on the floor above the room it is positioned over. If this room has a flat ceiling, checking this option makes a hole in the ceiling under the dormer. This option should normally be left unchecked.

Only available in the **Dormer Defaults** dialog, if **Set Inside Window Trim Width** is checked, the inside casing width for dormer windows defaults to the **Inside Window Trim** value entered below. Dormer windows can appear too narrow on the outside due to the space required for the inside casing to clear the inside surfaces of the side walls. This value sets the width for the inside casing of the dormer window.

Line Style Panel

For information about the settings on this panel, see "Line Style Panel" on page 1053.

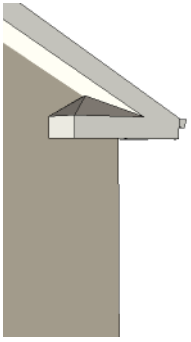
Roof Returns and Other Details

Chief Architect offers a selection of tools to add architectural details to your roof design.

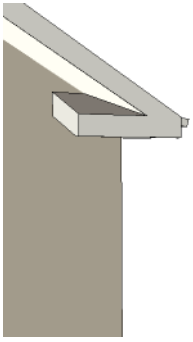
Roof Returns

A roof return is a small decorative roof plane that connects to the low side of a gable roof overhang and extends below the upper triangular portion of the gable wall. Three styles of roof returns that can be produced automatically.

The first two styles are called **Gable** and **Hip** returns since the return ends in a gable or hip.

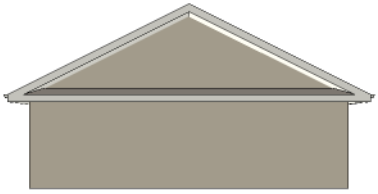


Hip Return



Gable Return

The third is called a **Full** return because it extends under the entire gable to connect both sides and is sometimes referred to as a water table. In order for a Full return to be created, the roof planes on each side must have the same Fascia Top Height.



Full Return

It is not difficult to manually draw roof returns using small roof planes, but it is quicker to produce them automatically.

Roof returns are generated automatically on a wall by wall basis using settings found in the **Wall Specification** dialog. See “Roof Panel” on page 307.

The structure of automatically generated roof returns is the same as that of the subfascia and eaves of the roof plane above. See “Roof Panel” on page 579.

These roof return settings are also found in the **Dormer Specification** dialog for gable roof dormers and function similarly. See “Roof Panel” on page 513.

Fascia and Shadow Boards

Fascia and shadow boards can be added to both automatic and manually drawn roof planes. They can be generated when the roof planes are drawn when specified in the **Build Roof** dialog, and can also be added to or removed from individual roof planes in the **Roof Plane Specification** dialog.

- Fascia and eave fascia can be specified in the **Build Framing** and **Build Roof** dialogs. See “Roof Panel” on page 579.
- One or more shadow boards profiles can be specified in the **Build Roof** dialog. See “Shadow Boards Panel” on page 476.
- Fascia and shadow boards are generated whenever **Build Fascia and Roof Trim** is checked. See “Roof Panel” on page 469.
- The materials used for fascia and shadow boards can be specified separately. See “Materials Panel” on page 476.

Fascia and shadow boards display in 3D views and are included in the materials list. You can also display them in floor plan view, if you wish. See “Layer Display Options Dialog” on page 148.

Fascia

The material specified for fascia in the **Build Roof** dialog displays as part of the roof plane rather than as a separate object.

In addition, fascia boards are generated when roof framing is generated and are placed on the “Framing, Roof” layer. The fascia material is not applied to these framing members, however.

The width and depth of fascia and eave fascia can be specified in the **Build Framing** dialog. See “Roof Panel” on page 579.

Shadow Boards

Shadow boards are added to both automatic and manually drawn roof planes when one more shadow board profile is specified in the **Build Roof** dialog. They can also be added to, removed from, or customized for individual roof planes in the **Roof Plane**

Specification dialog. See “Shadow Boards Panel” on page 476.

Automatically generated shadow boards are **3D Molding Polylines** that follow the eaves of the roof. You can specify whether each profile is applied along eaves, along gable eaves, or along both. You can also use the same shadow board profile multiple times and adjust the offsets for each to suit different conditions. See “Molding Polylines” on page 648.

Shadow boards are placed on the “Roofs, Trim” layer. By default, this layer is locked, turned on in 3D views but not in plan view.

If a shadow board polyline is edited, it will no longer be considered an Automatic shadow board, and will not be deleted and replaced if Fascia and Roof Trim is rebuilt.

You can modify individual edges of an Automatic shadow board polyline indirectly by changing settings on the Shadow Boards panel of the **Roof Plane Specification** dialog.

Note: In order to generate shadow boards, you must also specify that fascia be used.

Gutters

Gutters are added to non-sloping eaves on both automatic and manually drawn roof planes when **Gutters** is checked in the **Build Roof** dialog. They can also be added to, removed from, or customized for individual roof planes in the **Roof Plane Specification** dialog. See “Options Panel” on page 473.

Automatically generated gutters are basically **Molding Polylines** that follow the eaves of the roof but are not created on sloped gable eaves.

- Gutters are regenerated or removed whenever the roof is built. See “Roof Panel” on page 469.
- A gutter profile can be specified. See “Gutter Panel” on page 476.
- The materialsused for gutters can be specified. See “Materials Panel” on page 476.

Gutters are placed on the “Roofs, Gutters” layer. By default, this layer is turned on in 3D views but not in plan view, is included in the materials list, and is locked. See “Layer Display Options Dialog” on page 148.

Frieze Molding

Frieze moldings are added to both automatic and manually drawn roof planes when one more frieze profile is specified in the **Build Roof** dialog. They can also be added to, removed from, or customized for individual roof planes in the **Roof Plane Specification** dialog.

Automatically generated frieze boards are **3D Molding Polylines** placed along all exterior walls directly under the eaves. Frieze does not generate along railings; however, if an attic wall is built above a railing, it can generate along that wall.

- Frieze moldings are generated whenever **Build Fascia and Roof Trim** is checked. See “Roof Panel” on page 469.
- You can specify whether each profile is applied under eaves, under gable eaves, or under both. You can also use the same profile multiple times and adjust the offsets for each to suit different

conditions. See “Frieze Panel” on page 476.

- The materials used for frieze moldings can be specified. See “Materials Panel” on page 476.

Frieze moldings are placed on the “Roofs, Trim” layer. By default, this layer is turned on in 3D views but not in plan view, and is locked.

If a frieze molding polyline is edited, it will no longer be considered an Automatic freize, and will not be deleted and replaced if Fascia and Roof Trim is rebuilt.

Rafter Tails

Rafter tails are rafter ends that overhang the bearing walls and are located under the eaves. They can be the full rafter depth or trimmed to the depth of the soffits. Rafter tails can also be partially enclosed by soffits, and sometimes feature decorative profiles.

To produce a particular type of rafter tail, set the correct defaults before you build both the roof planes and the roof framing:

To create full-depth exposed rafter ends

- Uncheck **Soffits** on the Options panel of the **Build Roof** dialog. See “Options Panel” on page 473.
- Uncheck **Generate Fascia** and **Generate Eave Sub Fascia** on the Framing panel of the **Build Roof** dialog. See “Roof Panel” on page 579.

To create hidden, trimmed rafter ends

- Check **Soffits** on the Options panel of the **Build Roof** dialog.
- Check **Trim To Soffits** on the Framing panel of the **Build Roof** dialog.

To create full-depth, partially-exposed rafter ends

- Check **Soffits** on the Options panel of the **Build Roof** dialog.
- Uncheck **Trim To Soffits** on the Framing panel of the **Build Roof** dialog.
- Specify the desired **Eave Sub Fascia Depth** on the Framing panel of the **Build Roof** dialog.

Soffit height is determined by the depth of the eave subfascia, which is set in the Build Roof dialog. See “Framing Panel” on page 475.

To add a decorative profile to rafter tails

- Set soffits and fascia as needed to produce the desired rafter tail exposure, as described above.
- Select a rafter tail profile on the Rafter Tails panel of the **Build Roof** dialog. See “Rafter Tails Panel” on page 475.
- Decorative rafter tail profiles are molding profiles, which means that you can create your own custom profiles if you want. See “Molding Profiles” on page 646.

Ridge Caps

Ridge caps are roofing components that straddle the tops of roof ridges and hips. To generate ridge caps in Chief Architect, specify a ridge cap profile in the **Build Roof** dialog, and then build or rebuild the roof. Ridge caps will be produced on both automatically generated and manually drawn

roof planes. See “Ridge Caps Panel” on page 475.

The program’s default ridge cap profile has flat sides and is 1/2” (13 mm) thick and 6” (150 mm) on each side. It follows the pitch of each roof plane, and its thickness and size can be edited on the Ridge Caps panel.

Ridge cap profiles are essentially a molding profile, though, which means that you can choose a different profile or molding symbol from the library or even create and use your own custom profile. See “Molding Profiles” on page 646.

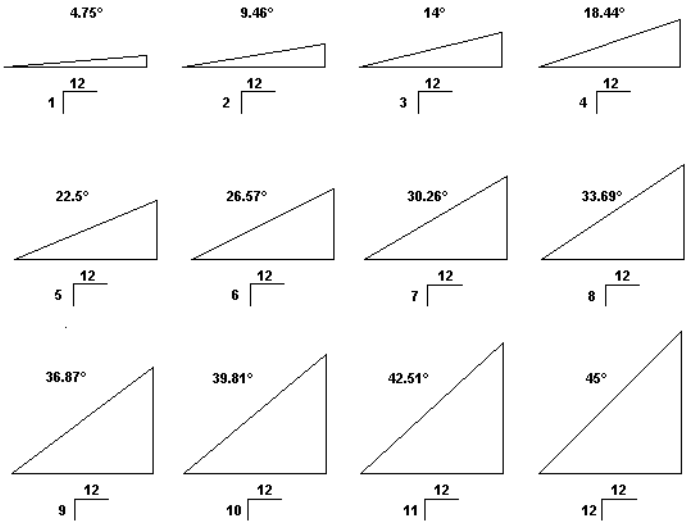
You can also use custom Symbol Moldings for ridge caps, but bear in mind that symbols cannot adjust their shape to match different pitches. As a result, different symbols will be required for different roof pitches. See “Symbol Moldings” on page 647.

Like shadow boards and frieze molding, automatically generated ridge caps are **3D Molding Polylines**  placed along the ridges and hips. Ridge Caps are created on the “Roofs, Ridge Caps” layer. By default, this layer is locked, displays in 3D views but does not display in floor plan view.

If a ridge cap polyline is edited, it will no longer be considered an Automatic ridge cap, and will not be deleted and replaced if the roof is rebuilt.

You can modify individual edges of an Automatic ridge cap polyline indirectly by changing settings on the Ridge Caps panel of the **Roof Plane Specification** dialog. Bear in mind, though, that your changes may only be reflected in the model if you make the same changes to adjacent roof planes, as well.

Roof Pitches in Degrees



Chapter 15:

Stairs, Ramps, and Landings

Staircases can be composed of one or more straight or curved stair sections, ramps, and landings. Stairs and ramps can be drawn, selected and edited in 2D and 3D views.

Stair sections can be edited individually or as a group. Starter treads can be defined, stair sections can be flared, treads can be wrapped, and curved sections can be turned into winders.

Landings can be created automatically or manually and their shape customized. You can edit an existing landing, or create a landing from a closed CAD polyline. Landing heights can be defined or you can let them automatically adjust as needed.

Stairwells can be created automatically or manually and can be seen in 3D views.

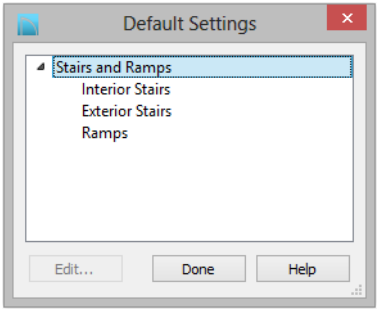
Local building and fire authorities must be consulted for specific stair construction codes and access requirements.

Chapter Contents

Stair and Ramp Defaults

Default settings for stairs and ramps determine the initial attributes of these objects when they are first created. Access the defaults by selecting **Edit> Default Settings**, then clicking the + beside **Stairs and Ramps**. Select an item and click the **Edit** button to open the defaults dialog associated with your selection. See “Default Settings vs Preferences” on page 72.

The **Stair** and **Ramp Defaults** dialogs can also be accessed by double-clicking the **Stair Tools** parent button or any child tool aside from the **Landing** tool.



Both interior and exterior stairs have default definitions for size, style, materials and much more. In fact, the default dialogs for stairs and ramps are similar to the **Staircase** and **Ramp Specification** dialogs. See “Staircase Specification Dialog” on page 547 and “Ramp Specification Dialog” on page 555.

Interior and Exterior stairs are drawn using the same tools: stairs created inside of a room are considered Interior while those drawn outside of a structure are considered Exterior.

Landings do not have a defaults dialog. Instead, they get their initial attributes from the stairs or ramps that they are connected to.

Structural Defaults

The purpose of interior stairs is to provide passage from one floor platform to another, so the attributes that influence floor heights - including ceiling heights, floor platform thicknesses, and floor finish materials - also influence the structure of stairs. When considering a staircase’s structure, bear in mind that riser height is directly dependent on the distance from one floor platform to another.

When **Automatic Heights** are used, stairs are built so that they rest on the top of the floor structure of the floor where they are

drawn, and build up to the top of the floor structure on the floor above. Risers are measured to the floor finish surfaces on both floors. See “Floor and Ceiling Platform Definitions” on page 337.

Ramps are built in a similar manner: interior ramps bear on the floor structure, and when **Automatic Heights** are used, the top surface of both interior and exterior ramps locates floor finish surfaces.

The Stair Tools

Select **Build> Stairs** to access the Stair Tools.

Straight Stairs

To draw a straight staircase select **Build> Stairs> Straight Stairs**, then click and drag in floor plan or a 3D view. You can also click once to place a staircase that extends from the current floor up to the next floor. See “Drawing Stairs and Ramps” on page 525.

Click Stairs

Select **Build> Stairs> Click Stairs** to create stairs between levels on the same floor with a single click of the mouse. Click the low side, within a few feet of where the floor changes height.

- If you click on the low side of a floor platform defined by a railing, a doorway will be created in the railing, adjacent to the stairs.
- If you click on the low side of a floor platform defined by a wall, stairs will be created but a doorway will not.
- If you click at a location that is not near the edge of a floor platform, a full height staircase will be created.

Curved Stairs

Select **Build> Stairs> Curve to Left** or **Curve to Right** and click once in floor plan view to place a curved staircase. See “Curved Stairs and Ramps” on page 526.

Landing

Select **Build> Stairs> Landing** to draw a landing, which is a platform connecting two or more stair sections. See “Landings” on page 531.

There are two ways to create a landing using this tool:

- Click once to place a landing measuring 39” (975 mm) on each side.
- Click and drag from end to end to draw a rectangular landing sized as needed. See “Polylines” on page 1065.

You can also create a landing by converting a CAD polyline. See “Convert Polyline Dialog” on page 236.

Ramp

Select **Build> Stairs> Ramp** to draw a sloped ramp. By default, ramps are drawn at a 1:12 slope to a maximum height of 30” (760 mm). See “Drawing Stairs and Ramps” on page 525.

Anatomy of a Staircase

Stairs, as well as ramps, are often described in terms of **rise** and **run**. Rise is typically between 6" and 8", and the run between 10" and 12". In metric plans, rise is 177 to 190 mm, and the run is about 250 mm.

Staircase Terminology

Balusters - The vertical members that run between the handrail and the treads or bottom rail.

Bracket - Decorative L-shaped supports on the exposed side of stairs below each tread.

Landing - A platform connecting two or more stair sections.

Newels - The end post of a stair railing located at landings and the beginnings and endings of new stair sections.

Rise - The height of a riser, measured from tread surface to tread surface, Also referred to as Unit Rise.

Rise Angle - The angle of the staircase or stair section, defined by a line drawn through the back surfaces of its treads.

Riser - The vertical stair member located between the treads. Risers may be solid or open. When open, the front surfaces of the stringers are considered the risers.

Run - The depth of a tread, measured from riser surface to riser surface. Run does not include the Tread Overhang. Also referred to as Unit Run.

Runner - The carpet that runs down the center of the staircase.

Shoe - The bottom railing, placed on the landing floor, that anchors the balusters at landings.

Stringer - The inclined support member of a staircase that supports the treads and risers.

Tread - The horizontal member of a stair that the foot is placed on.

Tread Overhang - The portion of a tread extending past the front surface of the riser and over the tread below. Also referred to as Nosing or Nosing Extension, it is not included in the Run or Tread Depth measurements.

Thread Thickness - The vertical depth of the tread material.

Winder - A wedge-shaped stair tread used where curved or angled stairways change direction.

Stair Structure and the Model

By default, stairs locate the height of the floor platform that they are drawn on, and seek the next level, which may be the floor platform of the floor above or a landing. The stringers locate the subfloor of the floor platforms and maintain consistent riser height. If the stairs are long enough to reach the next level at a reasonable rise angle, their tread depth and number of treads are automatically calculated to create a staircase with consistent tread and riser dimensions along its entire length.

You can modify this behavior or turn off it off altogether in the **Staircase Specification** dialog and specify your own rise and run

values. Bear in mind, though, that if you turn it off, you will need to specify the correct **Top** and **Bottom Heights** to make sure that the stairs actually meet both floor platforms correctly. See “General Panel” on page 547.

Stair Sections and Subsections

In Chief Architect, staircases can be composed of multiple sections and subsections. See “Merging Stair and Ramp Sections” on page 529.

- Stair sections are separated by landings.
- Subsections are considered part of the same section because they are connected to one another directly rather than separated by a landing.

Drawing Stairs and Ramps

Stairs and ramps can be drawn in floor plan and 3D views but not in cross section/elevation views. In 3D views, these objects can only be drawn in the presence of a floor platform or terrain perimeter. See “Working in 3D” on page 897.

There are a few things to keep in mind when drawing stairs:

- Before stairs are created, make sure that the heights for both the lower and upper floors are correctly defined.
- Stairs are drawn going **UP**, so they should be drawn from the lower of the two floors they connect.
- By default, stairs adjust their riser and tread dimensions to connect two floor heights if possible. The rise and run are calculated so that the steps are consistent in size.
- Stairs will snap to the **Reference Display** , if you have it turned on. See “Reference Floor Display” on page 434.
- If a stairwell room has been defined on the floor above, the top of the stairs can be dragged until it stops at the railing or wall defining the stairwell.
- When drawing stairs or a ramp up from the terrain, it is a good idea to make sure the terrain is up to date. See “Building the Terrain” on page 709.

Straight Stairs and Ramps

Straight Stairs can be created in three different ways:

- Click and drag in a straight line to draw stairs that are the length that you drag.
- Click once to place stairs that go from the current floor up to the height of the next floor level.
- Click once using the **Click Stairs** tool to create stairs between rooms on the same floor with different floor heights or between exterior rooms and the terrain.

Similarly, **Ramps** can be created by either clicking and dragging or by clicking. A ramp created with a single click will be

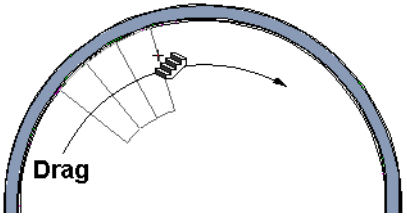
30” (760 mm) high, have a slope of 1:12, and be 360” (9120 mm) long.

An individual stair or ramp section must be between 6” (150 mm) and 100’ (30,000 mm) in length. If a greater length is needed, connect two sections using a landing.

Curved Stairs and Ramps

Curved Stairs can be created in floor plan view by selecting **Build> Stairs> Curve to Left** or **Curve to Right**. Click to place a 90º curved stair section that can then be edited. You can continue clicking to place additional curved staircases until another tool is selected.

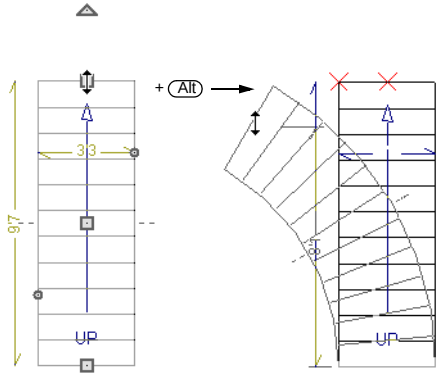
You can also curve straight stairs by drawing them against a curved wall.



Straight stairs drawn along a curved wall

In addition, you can change a straight stair section into curved stairs, or vice versa:

- Select the stairs and click the **Change Line/Arc** edit button. See “Change Line/Arc” on page 229.
- Select the stairs, hold down the Alt key (or right-click), and drag an end edit handle. See “Alternate” on page 177.



Curved **Ramps** can only be created by first creating a straight ramp and then clicking the **Change Line/Arc** edit button.

Drawing Stairs and Ramps Downward

Stairs and ramps can be drawn from the current floor level downward; however, drawing stairs or ramps between floors in this manner is not recommended. Drawing downward should only be used to create a staircase or ramp between a porch or deck and the terrain when you require the direction arrow to say “DN” instead of “UP”.

To draw stairs going downward

1. Select **Build> Stairs> Straight Stairs**.
2. Hold down the Alt key or the right mouse button.
3. Click and drag to create straight stairs.

When drawing stairs or ramps from a floor platform to the terrain, or vice versa, they

will locate the height of the terrain as long as it is lower than the floor height. You can also create a landing or "room" outside the structure and use it to establish the bottom height of the stairs or ramp. Then, draw in an upward direction from the lower platform to the upper platform.

Displaying Stairs, Ramps, and Landings

The display of stairs, ramps, and landings in all views is controlled in the **Layer Display Options** dialog. Stairs, ramps, and landings are placed on the Stairs & Ramps" layer by default but, once created, can be placed on any layer. See "Displaying Objects" on page 144.

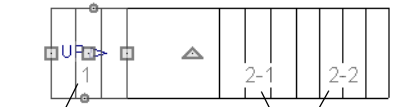
In Floor Plan View

In floor plan view, stairs, ramps and landings display on the floor they were drawn on and are only visible from the floor above if there is a stairwell.

Stairs and ramps have an arrow indicating the direction they run. Interior stairs and ramps have an **UP** arrow on the floor they were created on and a **DN** arrow when viewed from the floor above. See "Drawing Stairs and Ramps" on page 525.

The style and size of a direction arrow can be specified in the **Staircase** or **Ramp Specification** dialog. The Text Style, color and display are controlled by the "Stairs & Ramps, Up/Down Arrows" layer. See "Arrow Panel" on page 1055.

When a staircase is selected in floor plan view, the numbers associated with each of its sections and subsections display. Stair sections are assigned a single-digit number. Subsection numbers have two parts: a section number and subsection number, separated by a hyphen.



Stair section number

Stair subsection numbers

You can specify whether newels and balusters display in floor plan view in the **Staircase Specification** dialog. See "Newels/Balusters Panel" on page 552.

You can create custom labels for stairs, ramps, and landings using the Text Tools and custom text macros. See "Creating User Defined Text Macros" on page 1034.

To see the center of a stair section curve in floor plan view, click **Show Arc Centers and Ends** . See "Arc Centers and Ends" on page 192.

In 3D Views

Although stairs span between two floors, they can only belong to one floor. As a result, only multi-floor views show the upper floor with the platform opening and the lower floor with the staircase simultaneously. In **Floor Cameras** and Floor Overviews, stairwells may appear as an empty spaces. See "3D View Tools" on page 877.

Editing Stairs and Ramps

Staircases and ramps can be selected and edited in floor plan view and 3D views. See “Selecting Objects” on page 180.

Using the Mouse

When a staircase or ramp is selected, its edit handles display. These edit handles can be used to customize the object in many ways. See “Editing Objects” on page 175.

- Straight stair sections and ramps are edited like lines. They have additional edit handles for resizing the width of the section. See “Editing Line Based Objects” on page 184.
- Curved stair sections and ramps are edited like arcs and also include edit handles for resizing the stair’s width. See “Editing Arc Based Objects” on page 188.
- Ramps can be resized to a maximum top height of 30” (760 mm). If you extend a ramp’s length to greater than 360” (9120 mm), it’s slope will decrease. For a taller ramp and control over the slope, uncheck **Automatic Heights** in the **Ramp Specification** dialog and specify the values you need. See “General Panel” on page 556.
- When stair sections are merged, the edit handles display differently depending on what subsection is currently selected. See “Merging Stair and Ramp Sections” on page 529.
- When moving merged stair or ramp sections, all merged sections move as one.
- Additional edit handles display on the first two treads of a staircase if the **Starter Tread** edit button is clicked. See “Starter Treads” on page 538.
- Several additional edit handles display on a staircase if the **Flare/Curve Stairs** edit button has been clicked. See “Flared Stairs and Curved Treads” on page 535.

In the Specification Dialog

Stairs and ramps can be customized and their structure precisely defined in the **Staircase and Ramp Specification** dialogs. See “Staircase Specification Dialog” on page 547 and “Ramp Specification Dialog” on page 555.

Using the Edit Tools

A selected staircase or ramp can be edited in a variety of ways using the buttons on the edit toolbar. See “The Edit Toolbar” on page 35.

Adjusting the Radius of Curved Stairs

The easiest way to match the radius of a stair section to the radius of a curved wall is to draw a staircase near one side of the curved wall using the **Straight Stairs** tool. The stairs snap to the wall, and the radius of the new staircase is defined. See “Curved Stairs and Ramps” on page 526.

Existing curved stairs can be aligned with an existing curved wall by aligning their centers, much the same way that curved

stairs on different floors can be aligned. See “Aligning Objects” on page 220.

If there is no curved wall, the radius of a stair section can be aligned to a CAD arc or circle.

To align curved stairs to an object

1. Align the centers of the CAD object and the staircase.
2. Select the curved stairs and move the side nearest to the arc or circle edge using the **Resize** edit handle.

Finally, restore the stair width by dragging from the other side handle or using the **Stair Specification** dialog.

Merging Stair and Ramp Sections

Any combination of straight and curved stair sections or straight and curved ramps using **Automatic Heights** can be merged. The resulting staircase or ramp section is made up of subsections and, if there are no landings, functions as a single unit.

Stair and ramp subsections must be drawn in the same direction if they are to be merged:

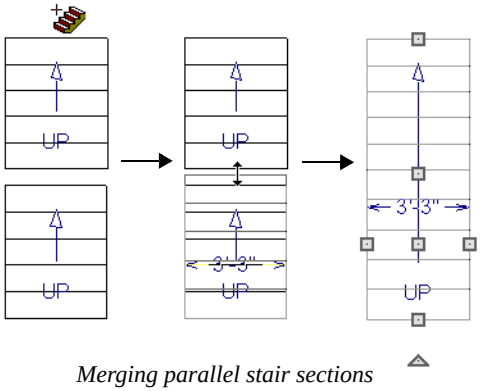
- The top edge of a stair section or ramp cannot merge with the bottom edge of another section or ramp.
- Combinations of stairs drawn in the **UP** and **DOWN** directions cannot be merged.

Stair subsections merge at the center points of their upper and lower edges.

Stair sections and ramps cannot be merged directly. If a combination of stairs and a ramp is required, connect them with a landing. See “Landings” on page 531.

To merge stair or ramp sections

1. Confirm that the stairs or ramps that you wish to merge are using **Automatic Heights**. See “General Panel” on page 547.
2. Position the sections so they are in the desired relationship to each other.
   - In order to merge stair sections correctly, they must be parallel to one another.
   - To create merged subsections that change direction, make one of the merged sections curved and then specify Winders. See “Winders” on page 539.
3. Select either stair or ramp section so that its edit handles display.
4. Click the Extend handle on the end to be merged and drag it to the point where the two stairs or ramps are to meet.



Merging parallel stair sections

A staircase consisting of merged subsections resembles a single stair section in floor plan view. The **UP** (or **DN**) arrows join, becoming a single direction arrow.

When a subsection is selected, the entire staircase is selected. Additional edit handles, indicating the presence of multiple subsections and allowing you to reposition the line along which they join. See "Using the Mouse" on page 528.

Lock Tread Depth

If a staircase with **Lock Tread Depth** selected in the **Staircase Specification** dialog is resized, its length increases or decreases one full tread at a time. See "General Panel" on page 547.

When **Lock Tread Depth** is checked, it can be difficult to merge the section with another section or landing. If this is a problem, you can temporarily uncheck **Lock Tread Depth**.

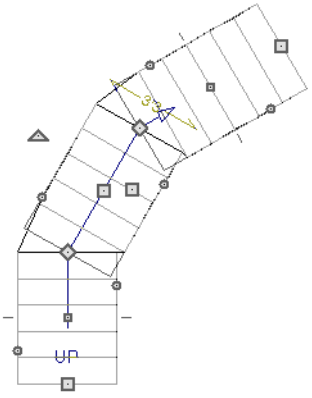
After the stairs are merged, the tread depth can be locked again.

Curved Subsections

Stair subsections attached at both ends by other sections do not have a free end that can be dragged into a curve. In this situation, change the middle sub-section to a curve using the **Change Line/Arc** edit button. See "Change Line/Arc" on page 229.

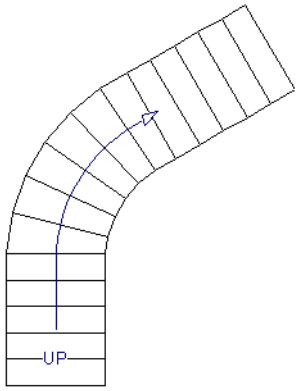
To curve an enclosed stair subsection

1. Draw three straight stair sections and connect them end to end.
2. Select the middle subsection.



The middle stair subsection is selected

3. Click the **Change Line/Arc** edit button. The center section turns into a curved stair section.



After using Change Line/Arc

4. Use the triangular Change Curve edit handle to adjust the curvature of the middle section as needed.

Stairs joined in this manner can easily be turned into winders. See “Winders” on page 539.

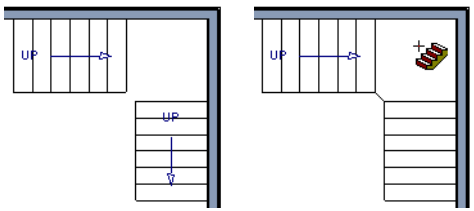
Landings

Stair landings are platforms between stair sections and/or ramps, and can be created in either of three ways:

- Using the **Landing** tool.
- By clicking between two stair sections using the **Straight Stairs** tool.
- By converting a closed CAD polyline into a landing. See “Convert Polyline” on page 235.

To create a landing between stair sections:

1. Draw two stair sections going UP. They can be at any angle.
2. Click between the two sections using the **Straight Stairs** tool to create a landing. Notice that only one direction arrow displays after the sections are joined by a landing.



Creating a stair landing

Similarly, a landing can be created between two ramps by clicking between them with the **Ramp** tool active.

Multiple stair sections and/or ramps can be connected to one landing. For example, two or three stair sections might meet at a landing with a single stair section continuing to the next level.

To be linked by a landing, all sections must be drawn in the same **UP** direction and the top of one section should be near the bottom of the next.

Stair sections connected with a landing will move together as a single unit unless **Stair Sections Move Independently** is checked in the **Preferences** dialog. See “Architectural Panel” on page 107.

A landing formed between two stair sections having less than a 90º angle between them are created with a short edge not less than 6” (150 mm). This is because most building codes require the shortest tread to be at least 6” wide. This edge can be manually edited to less than 6” if needed.

Editing Landings

Landings can be selected in 2D and 3D views, both individually and in groups, and edited using the edit handles, the edit toolbar, and the **Landing Specification** dialog. See “Stair Landing Specification Dialog” on page 558.

Landings derive their initial materials and railing characteristics from the stairs and/or ramps attached to them. You can assign a unique material to a landing in its specification dialog or using the **Material Painter**; however, the railing style is always defined by the attached stairs or ramps.

Custom Shaped Landings

Landings can be edited like other closed polyline-based objects. You can add or remove edges, convert an edge from straight to curved, or vice versa. A curved landing creates curved railings. See “Editing Closed-Polyline Based Objects” on page 198.

You can also create a stair landing out of closed polyline created with the CAD tools using the **Convert Polyline** edit button. See “Convert Polyline” on page 235.

You can edit the shape of a landing into a wide variety of shapes. So that the railings of stair sections connect properly to the landing railings, make sure that each stair section end is snapped to a landing edge with the same length as the stair’s width. If necessary, use the **Break Line** tool to create a break in a landing edge if it is longer than the connecting stairs are wide. See “Break Line” on page 228.

Landing Height

A landing’s height can be either user-defined or controlled by the program.

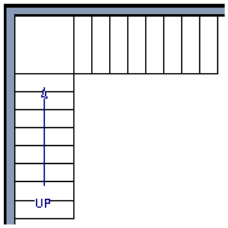
A landing with a height that has not been specified by the user is considered unlocked, and its height will adjust automatically as the stairs attached to it are modified so that the stairs maintain a consistent rise angle.

If you specify a landing’s height, that landing becomes locked and will maintain that height no matter how the stairs connected to it are adjusted.

Unlocked Landings

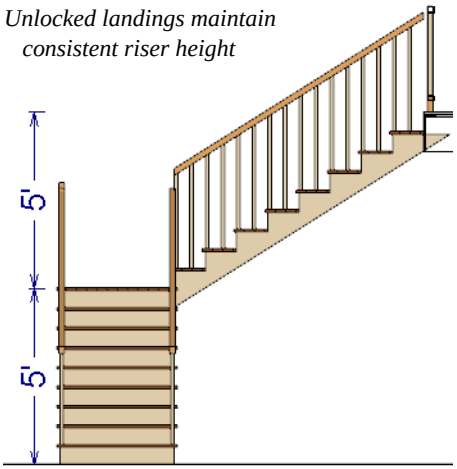
By default, new landings are unlocked, which means that their height is determined by the stair or ramp sections attached to it. An unlocked landing will automatically adjust its height as necessary to maintain the same riser height and rise angle for all attached sections.

In this example, two stair sections with eight treads each are connected by a landing.



Because the sections have the same number of treads, the landing height is one half of the distance between the two connected floors.

Unlocked landings maintain consistent riser height



If a change is made to either stair section, the program will maintain the stairs' connection to the floors above and below, and will instead modify the height of the landing and the other stair section so that a consistent riser height is maintained.

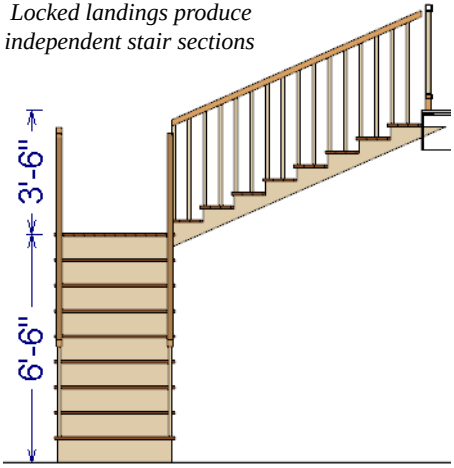
As long as a stair or ramp system consists of a landing connecting only two stair sections, the program can easily set landing heights and produce consistent a rise angle. If more than two stair sections meet at a landing, the relationship between them becomes more complex. In this situation, you may want to define the exact height of the landing instead of letting the program define it for you.

Locked Landings

A locked landing has a specifically defined height that does not adjust automatically when there are changes in the attached stairs. Instead, the stairs adjust to the landing.

For example, start with the same staircase used to illustrate unlocked landings, with one change: the landing height is now defined at 78 inches (1980 mm).

Locked landings produce independent stair sections



Since the landing height is now closer to the upper floor than to the lower floor, the upper stair section has a very shallow riser height and the lower section has a tall riser height.

Stair and ramp sections attached to a locked landing no longer relate to one another:

- Changes to one section do not affect the other.
- The **Staircase** and **Ramp Specification** dialogs show only the selected section

and those connected to it by unlocked landings, rather than the entire system.

- Locked landings do not move when attached stair or ramp sections are moved. Only unlocked landings and the sections attached to them will move.

Locked landing can be used to break up a complex network of stairs and landings into smaller pieces with known bottom and top heights.

To lock a landing

1. Select the landing and click the **Open Object** edit button to open the **Stair Landing Specification** dialog. See “General Panel” on page 559.
2. On the General panel, uncheck **Auto Adjust Height When Connected to Stairs**.
3. Specify the desired **Top Height** and click OK.
4. The landing moves to the specified height and all stairs that connect to that landing are redefined.

To unlock a landing, open its specification dialog, check **Auto Adjust Height When Connected to Stairs**, and click OK. The Top Height will automatically adjust to any stair or ramp sections attached to it and will try to produce a staircase with a single riser height.

To move stair sections independently regardless of whether attached landings are locked or unlocked, select **Stair Sections Move Independently** in the **Preferences** dialog. See “Architectural Panel” on page 107.

Maintaining Tread Depth

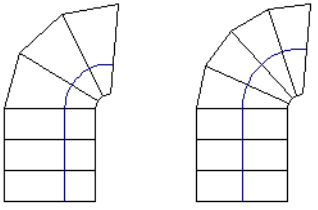
Most building codes require staircases to maintain a consistent tread depth.

Walk Line

By default, Chief Architect measures a stair section’s length and tread depth along a Walk Line located 12" (30 cm) from the right edge of the stair section by default. On curved stairs, it is located 12” (30 cm) from the inside edge of the curve.

The distance of the Walk Line from the staircase edge can be specified in the **Staircase Specification** dialog. See “Style Panel” on page 550.

Alternatively, you can turn the Walk Line feature off and tread depth will be measured at the tread center.



Walk Line at 12" *Center Line*

When a curved stair section has **Automatic Treads** specified in the **Staircase Specification** dialog and the Walk Line is used, the number and/or width of treads in a

section or subsection changes when the inner edge is moved. For this reason, it is best to finalize stair section width as early as possible.

There are two ways to keep tread depth even throughout a stair section made of multiple subsections.

Lock Tread Depth

The first way to maintain tread depth is to **Lock Tread Depth** to a specified value in the **Staircase Specification** dialog. See “General Panel” on page 547.

Once locked, any changes to the length of the stair section are achieved by keeping the specified tread depth and changing the number of treads.

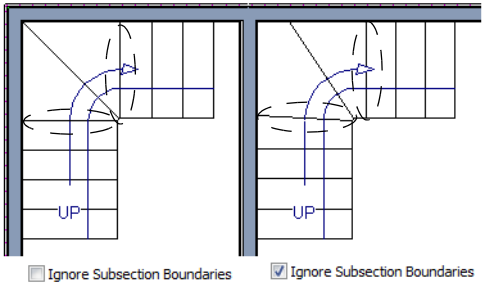
Ignore Subsection Boundaries

Curved stair sections typically have treads that are wider on one side than on the other. When they are connected to other stair sections, as with winders, it is possible to have treads that are too narrow at the Walk Line. See “Winders” on page 539.

Uniform tread depth in a stair section with subsections can be maintained by checking **Ignore Subsection Boundaries** in the **Staircase Specification** dialog. See “General Panel” on page 547.

When **Ignore Subsection Boundaries** is checked, the Tread Depth value may change when the stair section is edited, but will remain consistent throughout all subsections.

Because the boundaries between stair sections are being ignored, the treads where a straight section joins a curved section may shift position or change angle to accomodate the adjustment.



Flared Stairs and Curved Treads

Any stair section can be flared and/or its treads curved using the **Flare/ Curve Stairs** edit button.

Only exposed sides of a stair section can be flared. If one side of a stair section is against a wall or wrapped (see “Wrapped Stairs” on page 540), only the exposed end can be flared.

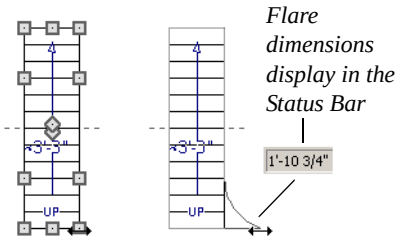
Flaring, curved treads, and special treads should be the last changes that you make to any stairs.

Creating a Flared Stair

Flared stairs grow wider near one end, typically sweeping outward at the bottom. Stairs can also be flared at the top or on both ends.

To create flared stairs

1. Create the stairs and connect them to a landing, floor platform edge, or another stair section.
2. Specify the section width, tread depth, and any other needed information.
3. Select the stairs and click the **Flare/ Curve Stairs** edit button. New **Flare** edit handles display on all four corners of the stairs.
4. Drag one of the corner handles to flare that corner. As you drag the flare, the Status Bar shows the distance the side handle moves. This allows you to move the opposite handle the same amount.

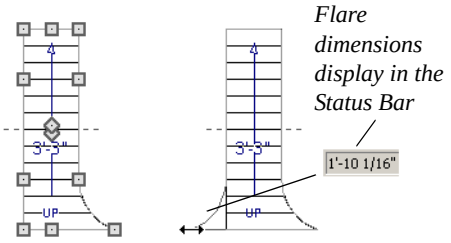


Creating flared stairs

5. When you are finished editing the flare, click the **Main Edit Mode** to restore the stairs' regular edit handles and tool-bar buttons.

Symmetrically Flared Stairs

Use the dimension information that displays in the Status Bar as a reference to create symmetric flares on both sides.



Creating symmetrically flared stairs

Adjusting the Flare Radius

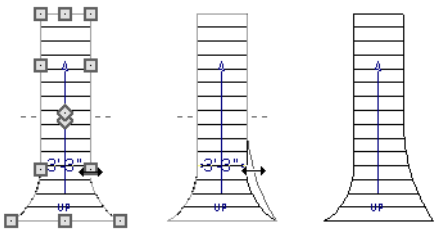
After a flared staircase has been created, you may want to soften the radius of the flare.

The four handles at the sides and the four handles at the corners flare the stair section when dragged outward. The two handles in the center of the section move the starting point for flaring along the stair section.

To adjust the flare radius

First, adjust the curvature of the flared section.

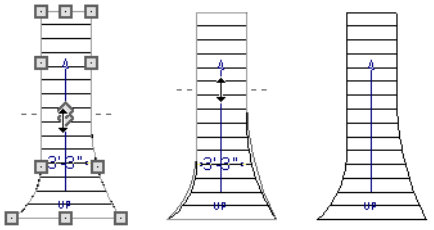
1. Select the flared stair and click the **Flare/Curve Stairs** edit button to access the flare handles again.
2. Select the handle along the flared edge of the stair. Drag this handle outward very slightly. This forms a more gradual flare.



Adjusting the flare curvature

Then, adjust the starting point of the flare:

1. Select the flared stair and click the **Flare/Curve Stairs** edit button to access the flare handles again.
2. This time, drag the lower of the two central handles upward. The handle above it moves with it. This moves the start point for the bottom flare from the middle of the section toward its top, making the flare even more gradual.



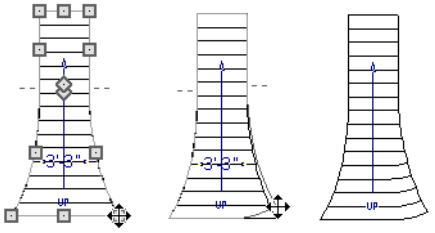
Adjusting the flare's starting point

Treads Perpendicular to Flare

Flared stairs often look best when the treads curve to meet the flared side perpendicular to the radius.

To curve the edges of flared treads

1. Select the flared stair and click the **Flare/Curve Stairs** edit button to access the flare handles again.
2. Drag a corner edit handle upward one tread depth or less.



Curving the edges of flared treads

3. When you are finished editing the curve, click the **Main Edit Mode** to restore the stairs' regular edit handles and toolbar buttons.

This type of tread curving works only on flared edges and concentrates the curvature at that edge.

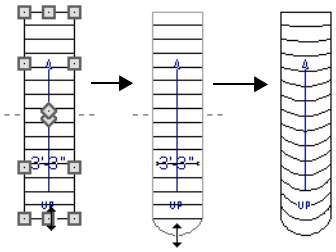
Flared treads can also be curved using the Curve edit handle, which curves the treads more uniformly.

Curving the Treads

When treads are curved, all treads in the section show some degree of curvature. Treads close to the curved end have a greater curve than those at the opposite end, but both ends can be curved.

To curve stair treads

1. Select the staircase, then click the **Flare/ Curve Stairs** edit button.
2. Drag the edit handle at the center of the bottom edge a small distance to curve the treads.



Creating curved stair treads

3. When you are finished editing the curve, click the **Main Edit Mode** to restore the stairs' regular edit handles and tool-bar buttons.

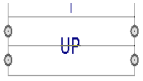
Starter Treads

The first and second treads of a staircase can be turned into starter treads by clicking the **Starter Tread** edit button. Starter treads extend to the side of the staircase, have rounded edges and are common on traditional staircases.

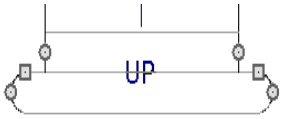
A starter tread can be added only to open sides of a stair section. If one side of a stair section is against a wall or wrapped (see "Wrapped Stairs" on page 540), only the exposed tread end can become a starter tread.

To create starter treads

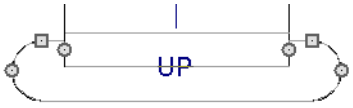
1. Click on a staircase to select it.
2. Click the **Starter Tread** edit button. An edit handle displays on each end of both the first and second treads.



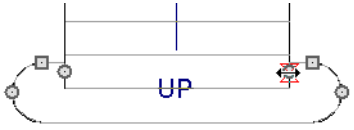
3. Drag either of the handles on the first tread outward from the stair section. If the stair section is against a wall, only one handle displays on the side opposite the wall.
4. As you drag, the ends of the tread become rounded.



5. Two additional edit handles display on each side of the tread, along the back edge.
6. Drag either of the two square handles upward to increase the width of the rounded ends of the tread.



7. Drag the edit handle on the second tread outward from the stair section to create a second starter tread.



8. To make changes to existing starter treads, select the stairs, click the **Starter Tread** edit button and repeat the above steps as needed.
9. When you are finished editing the starter treads, click the **Main Edit Mode** to restore the stairs' regular edit handles and toolbar buttons.

Winders

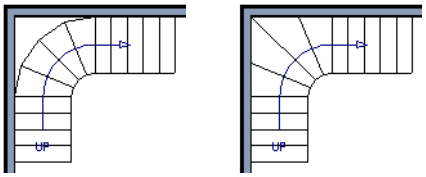
Winders are steps located where a staircase turns and are narrower on the inside of the turn than they are on the outside. A staircase defined as a winder expands to fill in any

gaps between the side of the stairs and nearby walls.

Curved stair sections are typically used to create winders, although straight stairs can also be used. See “Curved Stairs and Ramps” on page 526.

To create winders

1. In an enclosed room area, place and connect the stair sections that you want to be winders. For best results:
   - The stairs should be two straight sections connected by a curved section between them;
   - The curved section should be adjacent to a 90° corner, as illustrated.
2. Select any subsection of the stairs and click the **Open Object** edit button to open the **Staircase Specification** dialog.
3. On the General panel, place a check in the box beside **Winder** and click **OK**.



Winders extend to nearby walls

4. The steps nearest the wall corner adjust their shapes and extend into the corner after the stair is changed to a winder.

> Winders must be in a room with valid room definition. You cannot create winders in an area composed of only 2 corner walls. If this configuration is needed, enclose the area in with Invisible walls so that a room area is defined.

The Winders attribute directs the stair section to expand or contract to meet nearby walls, and can also be used to create a partial railing. See “Partial Railings” on page 541.

Winders sometimes have treads that are too narrow at the inside curve. The **Ignore Subsection Boundaries** option can address this issue. See “Ignore Subsection Boundaries” on page 535.

Wrapped Stairs

Check **Allow Wrap** on the Style panel of the **Staircase Specification** dialog and the selected stairs can be wrapped around the corner of a deck or landing. Curved stairs and stairs with multiple subsections cannot be wrapped. See “Style Panel” on page 550.

Stair sections that wrap around a corner to meet one another must have identical attributes. As a result, edits made to one wrapped stair section apply to all adjacent, wrapped sections.

To wrap stairs around a deck

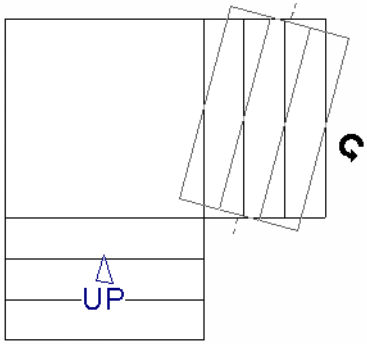
1. Begin by drawing a deck. See “Decks” on page 334.

2. Use the **Click Stairs** tool to place a stair section on each side of the corner around which you want them to wrap.
3. Move the stair sections toward the corner of the deck. When the two sections are sufficiently close to the corner, they will merge to form wrapped steps.

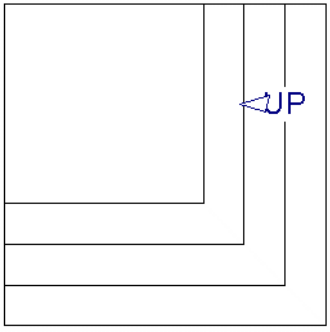
You can also draw stairs down from a deck by right-clicking to draw them or by pressing the Alt key while you drag. See “To draw stairs going downward” on page 526.

To wrap stairs around a landing

1. Draw two perpendicular **Straight Stair** sections.
2. Click between them to create a landing.
3. Rotate one stair section 180°.



4. The stairs wrap around the corner. Notice that the Up arrow displays on the most recently edited stair section.



Other Special Railings and Stairs

Stairs can be customized to meet a variety of needs.

Partial Railings

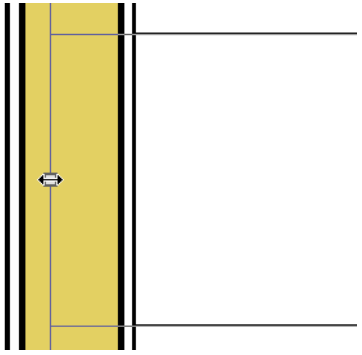
A staircase can be enclosed on one side by a combination of wall and railing.

Partial railings can be created by specifying the stairs as winders and increasing the **Max Tread Contraction** in the **Staircase Specification** dialog. See “Style Panel” on page 550.

The **Max Tread Contraction** defines the largest distance that any section of the stair system is allowed to move *inward* when the stairs are turned into winders. If any point on the edge of the stairs would have to move inward more than this defined amount in order to locate the surface of the wall, the stairs do *not* contract and snap to that wall.

To create a partial stair railing

1. Create a staircase and draw an **Interior Wall** against, but not underneath, the stairs.
2. Select the stairs and click the **Auto Stairwell** edit button to create a stairwell.
3. On the General panel of the **Staircase Specification** dialog, check **Winders**.
4. On the Style panel, define the **Max Tread Contraction (for Winder)**. If the interior wall is 4" thick, setting this value to 4" should be sufficient.
5. On the Style panel, increase the **Stringer Bottom** value to enclose the area under the stairs with railings. The best value depends on the design of your stairs.
6. On the Newels/Balusters panel, remove the check from either **Right** or **Left Railing at Wall**, depending on the position of the stairs and wall in your plan.
7. Click the **Object Snaps** toggle button to temporarily turn off Object Snaps. See “Object Snaps” on page 160.
8. Select the stairs and use the side edit handle to move the edge of the stairs to approximately the middle of the wall.

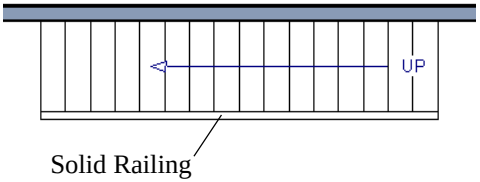


Resizing stairs to the middle of the wall

9. You may need to **Zoom** in on the stairs and wall to move the stair edge.

Solid Railings

To create a solid rail along a staircase, create the Railing against, but not underneath, the stairs and specify it as Solid. See “Rail Style Panel” on page 316.



The solid railing recognizes the adjacent stairs and climbs alongside them.

If any balusters show beyond the railing, eliminate them by unchecking **Left railing** or **Right railing** in the **Staircase Specification** dialog. See “Style Panel” on page 550.

Railing Panels

You can use railing panels, including glass panels or cable, as stair railing instead of newels and balusters by drawing a **Railing** under the stairs or ramp.

To use railing panels with stairs

1. Create a staircase and draw a **Railing** under the stairs.
   - Make sure that the railing is located entirely within a single stair section.
   - Position it so that it is aligned with the left edge.
2. Select the railing and click the **Open Object** edit button. See “Wall Specification Dialog” on page 301.
3. On the Rail Style panel of the **Railing Specification** dialog,
   - Select the **Panels** radio button.
   - Check **Follow Stairs**.
4. On the Newels/Balusters panel, click the **Browse** button to the right of **Panel Type** and select the railing panel you want to use on the stairs, then click OK.
5. Select the staircase and click the **Open Object** edit button.
6. On the Newels/Balusters panel of the **Railing Specification** dialog, uncheck **Left Railing** to prevent the default stair railing from generating in addition to the railing panel.
7. Repeat these steps if you want railing panels under the right side of the stairs, as well.

Inset or Middle Railing

Just as you can use a **Railing** to place railing panels as stair or ramp railing, you can also use the same technique to create inset stair railings or a middle railing.

Concrete Stairs

To make a solid concrete staircase

1. On the Style panel of the **Staircase Specification** dialog:
   - Set the **Tread Overhang** to zero.
   - Set the **Tread Thickness** to zero.
   - Uncheck **Open Risers**.
   - If you want, you can also uncheck **Open Underneath** and check **Large Stringer Base**.
2. On the Materials panel, specify the "Riser/Trim", "Support Wall", and "Tread" materials as concrete.

Masonry Stairs

To make a set of masonry stairs

1. On the Style panel of the **Staircase Specification** dialog:
   - Set the **Tread Overhang** to zero.
   - Set the **Tread Thickness** to the thickness of the masonry material.
2. On the Materials panel, assign the desired masonry material to the "Tread" component and specify the "Riser/Trim" material as concrete.

Steel Stringer

To make a steel stringer with concrete treads

1. On the Style panel of the **Staircase Specification** dialog,
   - Check **Open Underneath**.
   - Select the **Single Stringer** checkbox.
   - Set the **Tread Thickness** to 2 inches or more.
   - Select the **Single Stringer** checkbox.
2. On the Materials panel, specify the "Tread" material as concrete and the "Riser/Trim" material as steel.

Creating a Stairwell

An interior staircase must be located in a stairwell, an opening to the floor above. A stairwell is an Open Below room type on the floor above. See "Room Types" on page 329.

If you create a stairwell away from other walls so the Open Below is created in the center of another room, connect a wall of the Open Below room to another wall using an invisible wall.

Creating a Stairwell Automatically

To create a stairwell that matches the perimeter of a selected staircase, click the **Auto Stairwell** edit button. This button is only available when a living space exists above the staircase. It will not be available if the space above is Open Below or on the Attic Floor.

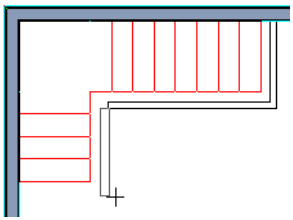
Auto Stairwell automatically creates a room on the floor above enclosed by railings, defined as **Open Below** in the **Room Specification** dialog, and given a **Stairwell** room label. This room can be selected and edited like any other room.

Creating a Stairwell Manually

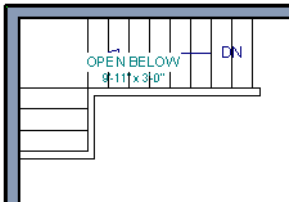
Stairwells can also be created manually.

To create a manual stairwell

1. Draw a two-story building. Create the staircase on the first floor.
2. Make the second floor the **Current Floor** and the first floor the **Reference Floor**. See “The Reference Floor” on page 434.
3. Select **Tools> Reference Floors> Reference Display** to show the Reference Floor, including the stairs.
4. On the upper floor, use the **Railing** tool to create a room around the stairs. Use the edit handles to position the railings as needed.

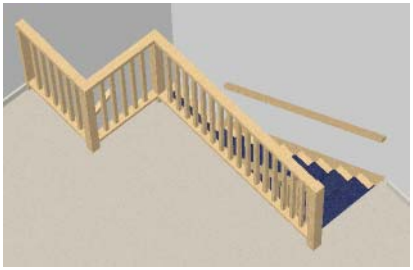


5. Select the railings one at a time and move them into position.
   - When a railing is selected, its bounding box shows the location of the outer surface of the railing’s drywall layer. For best results, this outer surface (which does not display when the railing is not selected) should meet the top edge of the stairs. See “Wall Types and Railings” on page 262.
   - If you prefer, you can also go **Down One Floor** and adjust the top edge of the staircase to snap it to the surface of the railing on the floor above.
6. When the railings are positioned properly, select **Tools> Reference Floors> Reference Display** to turn off the display of the Reference Floor.
7. Click inside the room using the **Select Objects** tool to select it, then click the **Open Object** edit button.
8. On the General panel of the **Room Specification** dialog, select “Open Below” from the **Room Type** list. Click **OK** to close the dialog.



9. Place a **Doorway** in the railing at the top step for an opening.
10. Select the doorway and define a large width in the **Door Specification** dialog.

If the doorway is specified wider than the railing, its width maximizes to fit the space available.

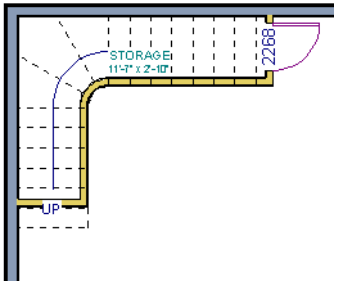


Rooms Below Staircases

Rooms such as closets or storage areas are commonly located beneath staircases.

To create a room below a staircase

1. Draw a staircase, select it, and click the **Open Object** edit button to open the **Staircase Specification** dialog.
   - If Winders are specified for this staircase, set **Max Tread Contraction** to 2" on the Style panel to allow walls to be built entirely under the staircase.
   - On the Fill Style panel, select None (Transparent) so the walls and other objects under the stairs can be seen.
2. On the same floor as the staircase, draw the **Interior Walls** under them, following their shape.
3. Reposition the walls as needed, making sure that each is entirely under the stairs.
4. The wall at the foot of the stairs should be placed no closer to the bottom than the second step.
5. Add a door and specify the Room Type.



Staircase Specification Dialog

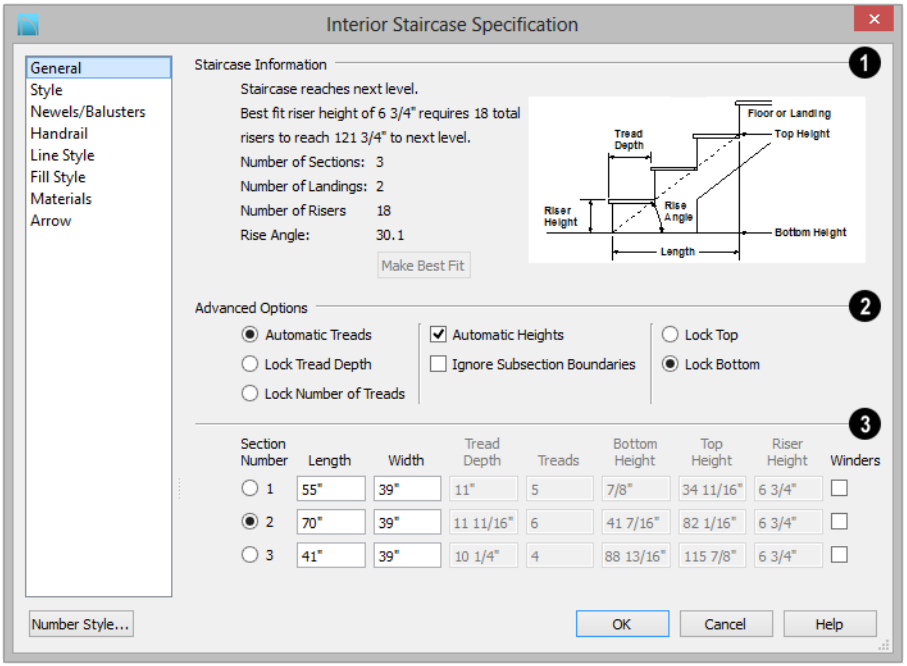
Staircases can be defined with the greatest accuracy in the **Staircase Specification** dialog. To open this dialog, select one or more stair sections and click the **Open Object** edit button or double-click a stair section using the **Straight Stairs** or **Select Objects** tool.

If a staircase is composed of multiple stair sections, the section that you clicked on to select the staircase is the Selected Section; however, information about all the sections is available and can be edited in the dialog.

The settings in the **Staircase Specification** dialog are similar to those in the **Interior** and **Exterior Stair Defaults** dialogs, but affect the selected staircase only. See “Stair and Ramp Defaults” on page 522.

> It is recommended that all floor heights, ceiling heights and platform thicknesses be established before using the Staircase Specification dialog.

General Panel



1 **Staircase Information** - Structural information about the selected staircase displays here for reference and updates as changes are made on the General panel.

- The first comment tells whether or not the staircase reaches the next level, which may be a floor platform or locked landing. It also indicates whether its rise angle is either steeper or more shallow than the Best Fit, described below. If **Automatic Heights** is unchecked, this comment instead says "Start and end heights are set manually".
- The second comment, **Best fit riser height of ___ requires ___ total risers to reach ___ to next level**, describes the ideal rise and run for the selected staircase. The program defines the Best Fit Riser Height as the riser height closest to 6 3/4" (168.75 mm) that allows the selected staircase to meet the next level precisely. This comment is only active if **Automatic Heights** is checked, below.

If the staircase includes a locked landing, its height is used to calculate this information. See "Locked Landings" on page 533.

- The total number of stair **Sections**, **Landings**, and **Risers** associated with the selected staircase also display here.
- The **Rise Angle** of the currently active stair section also displays here.
- Click the **Make Best Fit** button to add or remove risers to the Selected Section. Only available when **Automatic Heights** is checked and the staircase does not currently use the Best Fit Riser Height.

Make Best Fit will also extend stairs drawn in a downward direction until they reach the terrain. See "Terrain Perimeter" on page 696.

A diagram of a sample staircase's structure displays here for reference, as well.

❷ The **Advanced Options** apply to all sections and subsections.

- Select **Automatic Treads** to have the program define the depth and number of stair treads. If the staircase has multiple sections, each may have different tread depths.
- Select **Lock Tread Depth** to specify the Tread Depth for each stair section, below, and prevent them from changing. When Lock Tread Depth is selected and the length of the stairs is changed, the number of treads will change.
- Select **Lock Number of Treads** to specify the number of treads in each stair section and prevent it from changing. When Lock Number of Treads is selected and the length of the stairs is changed, the tread depths will change.
- Uncheck **Automatic Heights** if you would like to specify the bottom and top heights of each stair section, as measured from the default floor height of Floor 1, 0" (mm). When checked, the program automatically defines the top and bottom heights by precisely locating floor platforms and landings. This option cannot be disabled in the **Interior** and **Exterior Stair Defaults** dialogs.
- Check **Ignore Subsection Boundaries** to maintain tread depth throughout a stair section composed of merged subsections, regardless of whether the subsections have different tread depths assigned to them. See "Ignore Subsection Boundaries" on page 535.
- Select **Lock Bottom** to lock the position of the selected stair section's bottom end to prevent it from moving. Sections and landings below the selected section do

not move when you click OK, while those above do move.

- Select **Lock Top** to lock the position of the selected stair section's top end to prevent it from moving. Sections and landings above the selected section do not move when you click OK, while those below do move.

Lock Bottom and **Lock Top** are actions rather than settings and are not available in the Stair Defaults dialogs. If you make changes to a staircase that will affect its length, first lock either the bottom or top end of the Selected Section to prevent it from moving. The height of the Selected Section's locked end is not affected by these settings - only its position on the X/Y axis.

If you select a staircase by clicking near its bottom end, Lock Top will be selected; if you select it near its top end, Lock Bottom will be selected.

❸ The specifications for each stair section and subsection are listed and can be edited here. A maximum of ten items can display.

A change in one value usually affects other values. You may need to reposition the staircase after making changes.

- The **Section Number** column identifies the Selected Section and the number of each section of the selected staircase. If **Ignore Subsection Boundaries** is unchecked, subsection numbers are also identified. The radio button to the left indicates which section or subsection is selected. See "Displaying Stairs, Ramps, and Landings" on page 527.
- Define the **Length**, or run, of each section or subsection measured along the Walk Line. The length is equal to the number of treads multiplied by the tread depth. See "Walk Line" on page 534.

  When the length of a section changes, other sections and landings in the staircase unit move in response. You can specify whether the bottom or top edge of the Selected Section moves when you resize it by selecting either the Lock Bottom or Lock Top radio button, above.
- Define the **Width** of each section. Only one width can be defined for a section, so all subsections in the same section have the same width. If a section is connected to a landing, its width should equal the length of the landing edge that it connects to. See "Landings" on page 531.
- Specify the **Tread Depth**, or run, of each stair tread in the selected section. To lock this value, check **Lock Tread Depth**, above.

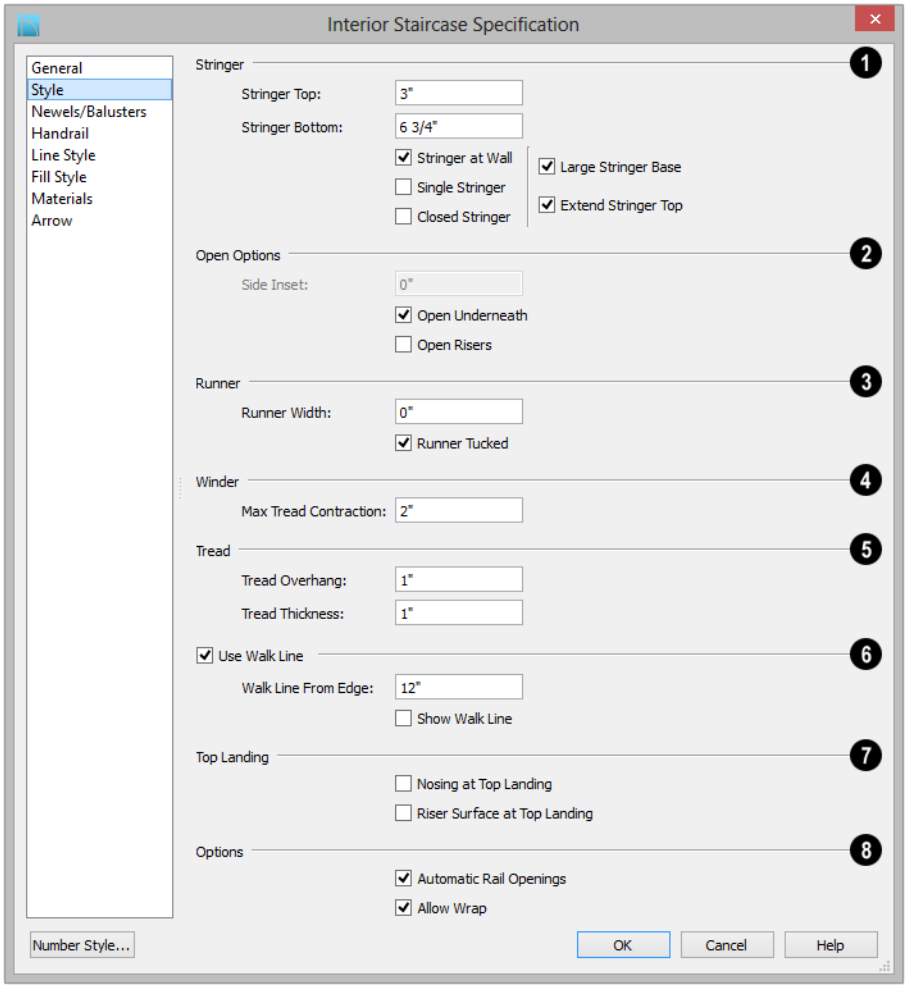
If a landing is created between two stair sections and one of them has locked tread depth, the resulting staircase also has locked tread depth. Any landings or sections connected to this new staircase adjust to meet it and then have locked tread depth as well.

- Define the number of **Treads** in a stair section or subsection. To lock this value, select Lock Number of Treads, above.
- Define the **Bottom Height**, the height of the stair section's bottom edge. To lock this value, click the radio button to the left of the section's number, then click the Lock Bottom radio button, above, and click OK.

- Define the **Top Height**, the height of the stair section's top edge. To lock this value, click the radio button to the left of the section's number, then click the Lock Top radio button, above, and click OK.
- Define the **Riser Height**, the height of the risers in each stair section.
- Check **Winders** to specify the Selected Section, including subsections, as winders. See "Winders" on page 539.

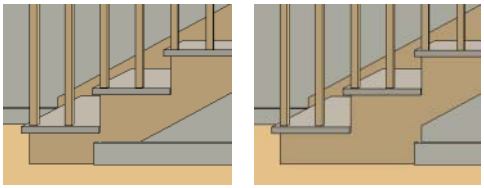
Style Panel

The settings on the Style panel affect all stair sections and subsections.



❶ Specify the attributes of the selected staircase's **Stringers**, which are the angled support members that support the treads. See "Anatomy of a Staircase" on page 524.

- Specify the height of the **Stringer Top** when **Stringer at Wall** or **Closed Stringer** is selected. This is measured along the plane of the riser face from the top of a tread to the top of the stringer. It cannot be less than 2 inches (5 cm).
- Specify the height of the **Stringer Bottom**, as measured from the top back corner of a tread down to the bottom edge of the stringer. It must be equal to or greater than the riser height.
- Check **Stringer at Wall** to produce a raised stringer top baseboard at the sides of the stair sections against walls. This baseboard follows the slope of the stair.
- Check **Single Stringer** to form a single 5-inch (125 mm) thick stringer in the center of the staircase. Checking **Single Stringer** automatically checks **Open Risers** and unchecks **Stringer at Wall** and **Closed Stringer**.
- Check **Closed Stringer** to raise the tops of the exposed stringers to cover the sides of the treads. If this is checked, no central stringer is applied to open riser stairs. This setting only affects those stringers that are not against a wall.
- Check **Large Stringer Base** to widen the stringers at the foot of the staircase. This is helpful when walls are created below the stairs.



Large Stringer Base shown at right

- **Extend Stringer Top** is checked by default and extends a triangular portion of the stringer under the landing or platform at the top of the stairs.

❷ **The Open Options** control whether the selected stairs have open risers or an open underside. They are not available when Single Stringer is checked, above.

- Specify the **Side Inset** of the skirt below the staircase. The default value of 0 aligns the skirt with the outside of the surface of the stringers. Only available when **Open Underneath** is unchecked.
- Uncheck **Open Underneath** to add a skirt below the staircase along the two sides. It looks like a wall in 3D, but only has a single face. Base molding does not generate along the bottom of the skirt, and doors cannot be placed in it. In most cases, the recommended way to enclose the area beneath stairs is to use walls. See "Rooms Below Staircases" on page 546.
- Check **Open Risers** to eliminate the riser face under each tread and expose the stringers. If **Closed Sides** is also selected, no central stringer is supplied.

❸ Specify the attributes of the staircase's carpet **Runner**. A runner is added to all sections connected by unlocked landings. Only available when **Open Risers** is unchecked, above.

- Specify the **Runner Width**. The default value of 0 does not create a runner.
- Uncheck **Runner Tucked** to have the runner drop straight down from the tread front to the riser below. This is checked by default.

❹ **Winder** - Define the **Max Tread Contraction**, which is the amount a tread's width may be reduced when it meets a wall. See "Partial Railings" on page 541. This option only takes effect when the stairs are specified as **Winders** on the General panel.

❺ Specify the characteristics of the staircase **Treads**. See "Anatomy of a Staircase" on page 524.

- Specify the **Tread Overhang**, which is the distance that each tread overhangs the riser.
- Specify the **Tread Thickness**.

❻ Check **Use Walk Line** to have the program calculate the tread depth based on a Walk Line. Uncheck the box to disable this function. See "Walk Line" on page 534.

- Specify the distance of the **Walk Line from Edge**. The default value is 12" (300 mm).
- Check **Show Walk Line** to show the Walk Line in floor plan view.

❼ Specify the appearance of the staircase where it meets the **Top Landing**. These options do not affect the edges of landings.

- Check **Nosing at Top Landing** to produce tread nosing attached to platform edge at the top of stairs.
- Check **Riser Surface at Top Landing** to produce a riser surface against the platform edge at the top of the stairs. This allows stair risers to match all the way to the top of the platform.

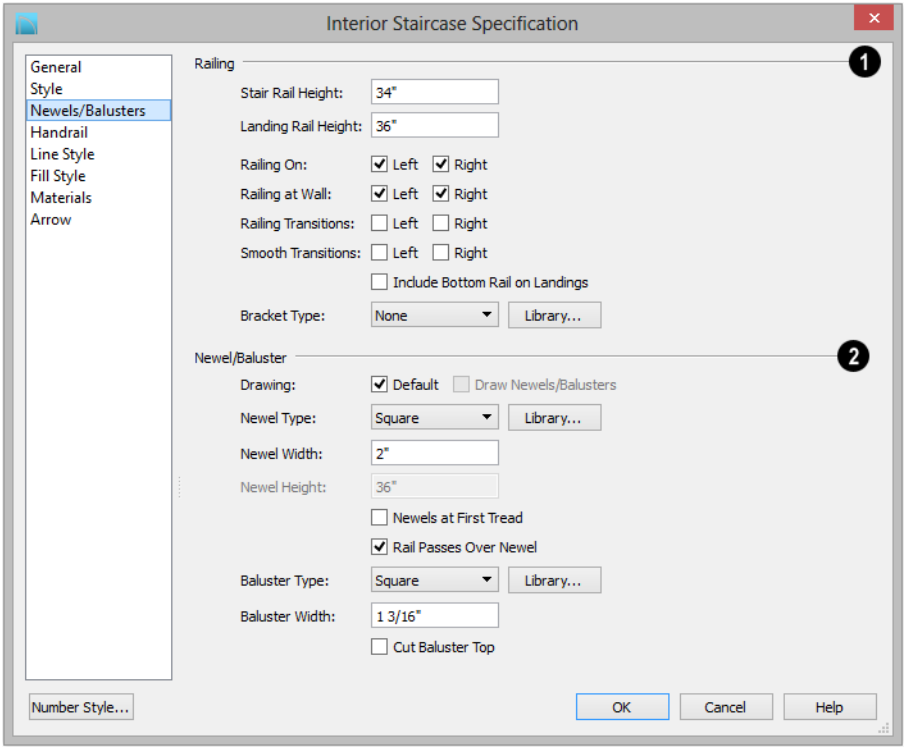
❽ **Options** -

- Check **Automatic Railing Openings** to automatically create a doorway opening when the selected stairs are snapped to a railing drawn on the same floor as the stairs. This is checked by default.
- Check **Allow Wrap** to wrap the selected stairs around the corner of a deck or landing where another, identical stair section is present. See "Wrapped Stairs" on page 540.

Newels/Balusters Panel

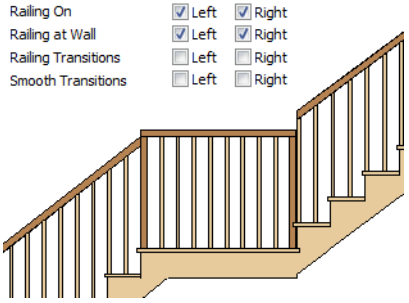
The settings on the Newels/Balusters panel will also affect the appearance of railings on any landings attached to the selected staircase. See "Landings" on page 531.

These settings are similar to those found on the same panel of the **Ramp Specification** and **Defaults** dialogs. See "Ramp Specification Dialog" on page 555.

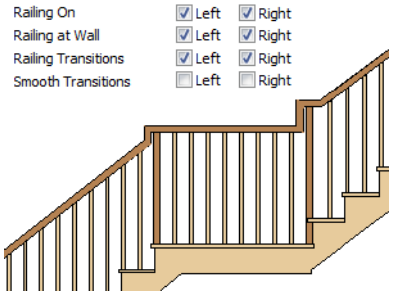


1 Specify how the **Railing** is applied to the selected staircase.

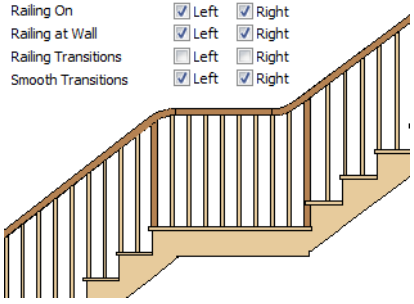
- **Stair Rail Height** defines the height from tread surface directly over the riser to railing top.
- **Landing Rail Height** defines the height of the landing rail top from the landing surface.
- **Railing On** - Select **Left** and/or **Right** to specify placement of railings on stair sections.
- **Railing at Wall** - Select **Left** and/or **Right** to specify the placement of wall railings. Not available for ramps.



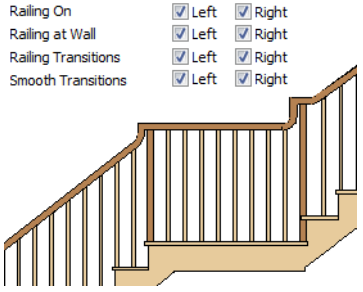
- Check **Railing Transitions** on **Left** and/or **Right** to create “gooseneck” connections between stair and landing railings. This option only has an effect when **Rail Passes Over Newel** is checked. Not available for ramps.



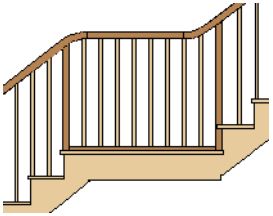
- Check **Smooth Transitions** on **Left** and/or **Right** to specify the placement of smooth connections between stair and landing railings. Not available for ramps.



Check both **Railing Transitions** and **Smooth Transitions** to produce a handrail like this:



- Check **Include Bottom Rail on Landings** to place a low rail on the landing surface that receives the balusters ends.



- **Bracket Type** - Click the **Library** button to apply a 1/4" (2 mm) thick decorative bracket to the exposed sides of the stringers, under each riser. A side stringer with brackets will be moved in moved in 1/4" (2 mm) to accommodate the bracket.

❷ **Newel/Baluster** specifications -.

- Uncheck **Default**, then either check **Draw Newels/Balusters** to display newels and balusters in floor plan view or uncheck it to suppress their display. See "Displaying Stairs, Ramps, and Landings" on page 527.
- **Newel Type** - Select **Square**, **Round**, or **Library** newels. Selecting **Library** from the drop-down list is the same as clicking the **Library** button to the right and allows selection of a newel from the library.
- Specify the **Newel Width**, which is the width or diameter of each newel. For Library newels, this is the width at its widest point.
- Specify the **Newel Height**, which is the height from the landing surface to the top of the newel. This is used only when **Rail passes over Newel** is unchecked.
- Check **Newels at First Tread** to place a newel where the rail starts at the base of

the stairs. A newel is placed only on a side of the stairs not against a wall.

- Uncheck **Rail Passes Over Newel**, then adjust the Newel Height to as needed. When this is checked, the **Newel Height** setting is ignored.
- **Baluster Type** - Select **Square**, **Round**, or **Library** balusters. Selecting **Library** from the drop-down list is the same as clicking the **Library** button to the right and allows selection of a baluster from the library.
- Specify the **Baluster Width**, which is the width or diameter of each baluster. For Library balusters, this is the width at its widest point.
- **Cut Baluster Top** - Each tread normally has two to three balusters, growing longer toward its back. The default is to use the same baluster and cut it off at the bottom to shorten it toward the tread front. Check this box to cut the balusters at the top instead.

Handrail Panel

The settings on the Handrail panel are similar to those on the Rails panel of the **Wall Specification** dialog. See “Rails Panel” on page 319.

The settings on the Handrail panel will also affect the appearance of railings on any landings attached to the selected staircase. See “Landings” on page 531.

Line Style Panel

The settings on the Line Style panel are available for a variety of other objects in the program. For information about these settings, see “Line Style Panel” on page 1053.

Fill Style Panel

The settings on the Fill Style panel affect the appearance of the selected staircase in floor plan view. For information about these settings, see “Fill Style Panel” on page 1067.

Materials Panel

The settings on the Materials panel affect the appearance of the selected staircase in 3D views and are available for a variety of objects throughout the program. For information about these settings, see “Materials Panel” on page 831.

The settings on this panel will also affect the materials applied to any landings attached to the selected staircase. See “Landings” on page 531.

Arrow Panel

The settings on the Arrow panel control the appearance of the selected staircase’s direction arrow in floor plan view. See “In Floor Plan View” on page 527.

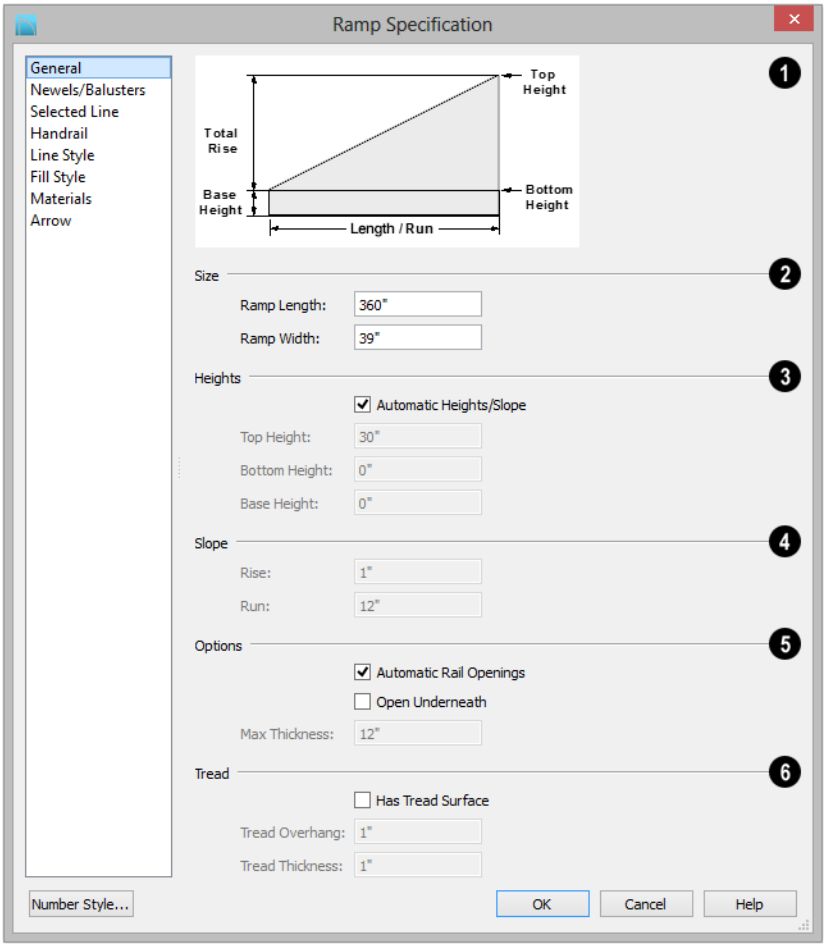
For information about these settings, see “Arrow Panel” on page 1055.

Ramp Specification Dialog

Ramps can be defined with the greatest accuracy using the **Ramp Specification** dialog. To open this dialog, select one or more ramps and click the **Open**

Object edit button or double-click a ramp section using the **Ramp** or **Select Objects** tool.

General Panel



1. A diagram of a sample ramp's structure displays here for reference.
2. **Size** - Specify the **Ramp Length** and **Width**.
3. Specify the **Heights** of various key locations on the selected ramp.

- Uncheck **Automatic Heights/Slope** to activate the settings below, then specify the height and slope of the ramp.
- Specify the **Top Height**, which is the height of the ramp at its high end.
- Specify the **Bottom Height**, which is the height of the ramp at its low end.
- Specify the **Base Height**, which is the height of the bottom surface of the ramp.

❹ Specify the ramp's **Slope** by typing its **Rise** value in the first field, and the **Run** value in the second field. See "Anatomy of a Staircase" on page 524.

❺ **Options** -

- Check **Automatic Railing Openings** to automatically create a doorway opening when the selected ramp is snapped to a railing drawn on the same floor as the ramp. This is checked by default.
- Check **Open Underneath** to remove the skirt around the bottom of the ramp so that it has a uniform, sloped thickness that may not reach the floor or terrain at the high end. This is unchecked by default.
- Specify the **Max Thickness**, which is the ramp's maximum thickness. At the low end of the ramp, where it meets the floor or terrain, its thickness may be less than this value.

❻ Specify the structure of the ramp's **Tread**, which an optional surface layer placed over the top of the ramp.

- Check **Has Tread Surface** to apply a top tread surface to the ramp and enable the settings below.
- Specify the **Tread Overhang**, which is the distance the tread surface extends past the ramp's edges.
- Specify the **Tread Thickness**, which is the tread surface's vertical depth.

Newels/Balusters Panel

The settings on the Newels/Balusters panel will also affect the appearance of railings on any landings attached to the selected ramp. See "Landings" on page 531.

The settings on the Newels/Balusters panel are similar to those on the same panel in the **Staircase Specification** dialog. For more information, see "Newels/Balusters Panel" on page 552.

Selected Line Panel

The Selected Line panel is available when the selected ramp section is straight as opposed to curved. See "Selected Edge" on page 181.

The settings on this panel are available for a variety of other objects in the program. For information about the settings on this panel, see "Line Panel" on page 1052.

Selected Arc Panel

The Selected Arc panel is available only when the selected ramp section has been converted to an arc. See "Change Line/Arc" on page 229.

The settings on this panel are available for a variety of other objects in the program. For information about these settings, see "Arc Panel" on page 1061.

Handrail Panel

The settings on the Handrail panel are similar to those on the same panel of the **Wall Specification** dialog. See “Rails Panel” on page 319.

The settings on the Handrail panel will also affect the appearance of railings on any landings attached to the selected ramp. See “Landings” on page 531.

Line Style Panel

The settings on the Line Style panel are available for a variety of other objects in the program. For information about these settings, see “Line Style Panel” on page 1053.

Fill Style Panel

The settings on the Fill Style panel affect the appearance of the selected ramp in floor plan view. For information about these settings, see “Fill Style Panel” on page 1067.

Materials Panel

The settings on the Materials panel affect the appearance of the selected ramp in 3D views and are available for a variety of objects throughout the program. For information about these settings, see “Materials Panel” on page 831.

The settings on this panel will also affect the materials applied to any landings attached to the selected ramp. See “Landings” on page 531.

Arrow Panel

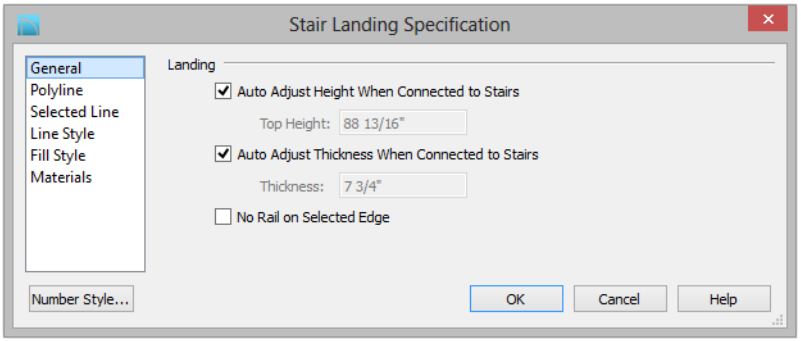
The settings on the Arrow panel control the appearance of the selected ramp’s direction arrow in floor plan view. See “In Floor Plan View” on page 527.

For information about these settings, see “Arrow Panel” on page 1055.

Stair Landing Specification Dialog

Select a landing and click the **Open Object** edit button to open the **Stair Landing Specification** dialog. See “Landings” on page 531.

General Panel



Uncheck **Auto Adjust Height When Connected to Stairs** to specify the selected landing's Top Height.

- A free-standing interior landing will have a default Top Height of 6 3/4" (169 mm) plus the thickness of the default floor finish. A free-standing exterior landing will have a default top height equal to its thickness. When this box is checked, the landing height may adjust as needed to maintain consistent riser height in all connected stair sections.
- The **Top Height** field is only active when Auto Adjust Height When Connected to Stairs is unchecked. See "Locked Landings" on page 533.

Uncheck **Auto Adjust Thickness When Connected to Stairs** to specify the selected landing's **Thickness**.

- A free-standing landing will have a default thickness of 6 3/4" (169 mm). When checked, the thickness is based on the riser height of the stair sections it is attached to, or the thickness of the ramps it is attached to.
- The **Thickness** field is only active when Auto Adjust Thickness When Connected to Stairs is unchecked.

Check **No Rail on Selected Edge** to suppress the railing on the selected edge of this landing. See "Selected Edge" on page 181.

Polyline Panel

The Polyline panel indicates the length of the landing's **Perimeter**, its enclosed **Area**, and its **Volume**.

The settings on the this panel are available for a variety of other objects in the program. See "Polyline Panel" on page 1066.

Selected Line Panel

The Selected Line panel is available when the selected edge is a line as opposed to an arc. See "Selected Edge" on page 181.

The settings on this panel are available for a variety of other objects in the program. See "Line Panel" on page 1052.

Moving the Start of a line segment moves the end of the previous connected line. Similarly,

moving the End of a line segment moves the start of the next connected line.

Selected Arc Panel

The Selected Arc panel is available only when the selected edge has been converted to an arc. See “Change Line/Arc” on page 229.

The settings on this panel are available for a variety of other objects in the program. See “Arc Panel” on page 1061.

Line Style Panel

The settings on the Line Style panel are available for a variety of objects throughout the program. See “Line Style Panel” on page 1053.

Fill Style Panel

The settings on the Fill Style panel affect the appearance of the selected landing in floor plan view. See “Fill Style Panel” on page 1067.

Materials Panel

When a landing is attached to stairs or a ramp, its initial materials are derived from the stairs or ramp. When the landing is attached to a ramp, its top surface material is defined by the Landing Sides component unless the ramp is using a Tread material.

The settings on this are available for a variety of objects throughout the program. For information about these settings, see “Materials Panel” on page 831.

Chapter 16:

Framing

In Chief Architect, framing can be produced both manually and automatically, and can be calculated in the Materials List.

Manual framing members are drawn by clicking and dragging, like drawing a CAD line. Automatic framing for the major components of a 3D model (floors, ceilings, walls and roofs) can be generated using the **Build Framing** dialog.

Both manually drawn and automatically generated framing members can be selected and edited in 2D and 3D views.

Trusses are covered in their own chapter, “Trusses” on page 601.

Chapter Contents

Framing Defaults

Select **Edit> Default Settings** to open the **Default Settings** dialog. Select Framing from the list, then click the **Edit** button to open the **Framing Defaults** dialog.

Both automatic and manually-drawn framing are generated according to the settings in the **Framing Defaults** dialog.

This dialog is nearly identical to the **Build Framing** dialog in both appearance and function. The only difference is that the **Build Framing** dialog has checkboxes that allow you to automatically generate different types of framing in your plan. See “Build Framing Dialog” on page 569.

Any changes made in the **Framing Defaults** or **Build Framing** dialogs will affect subsequently drawn or generated framing, but not framing already present in the plan.

The settings in the Framing Defaults dialog directly affect a variety of important structural elements in each plan which determine floor, ceiling and roof heights; so it is best to set your Framing Defaults before building your model. See “Drawing a Plan” on page 42.

Floor and Ceiling Framing

Floor and ceiling platform depths contribute to the overall height of a structure, so their default values should be set as early as possible. See “Floor Panels” on page 570.

If you plan to draw floor trusses, also see “Trusses Panel” on page 582.

The default floor and ceiling platform settings for a given floor can be overridden on a room by room basis in the **Room Specification** dialog, or for individual platforms using **Joist Direction** lines. See “Structure Panel” on page 348 and “Joist Direction Lines” on page 586.

Deck rooms have special automatically generated framing and are not affected by the settings in the **Framing Defaults** or **Build Framing** dialogs. See “Decks” on page 334.

Wall Framing

Like other types of framing, wall framing is generated based on settings in the **Framing Defaults** dialog. See “Wall Panel” on page 573 and “Openings Panel” on page 574.

In addition, wall framing is dependent on settings from other sources:

- The wall type definition settings used by each wall type in the plan - particularly, the Layer Thickness and Layer Material assigned to the Main Layer. See “Wall Type Definitions Dialog” on page 298.
- The Thickness and O.C. Spacing of the framing material assigned to each wall type used in a plan. See “Material Types” on page 837.
- The structural specifications for individual walls in the plan. See “General Panel” on page 302.

In order for wall framing to automatically generate, a wall’s framing layer must be set as its Main Layer and its framing material must be a Framing type. See “The Main Layer” on page 295.

Rough Openings

The rough openings, headers, trimmers, and sills for doors, windows, and fireplaces are set in their respective defaults and specification dialogs. See:

- “Door Specification Dialog” on page 368
- “Window Specification Dialog” on page 398
- “Fireplace Specification Dialog” on page 456

Note: Door and window bucks do not automatically generate in concrete or block walls.

Treated Sill Plates

Treated sill plates automatically generate over all exterior walls that have either Concrete or Brick material type as their Main Layer material and support a floor platform or a framed wall directly above. See “The Main Layer” on page 295 and “Material Types” on page 837.

These sill plates are placed on the “Framing, Floor” layer by default and are specified as **Treated**. See “Displaying Framing” on page 588.

When a monolithic slab foundation is created, the bottom plates of framed walls built on the slab are specified as **Treated** and are placed on the “Framing, Wall” layer by default.

Multiple bottom plates can be specified in the **Framing Defaults** dialog, but only the bottommost plate is specified as **Treated**. See “Wall Panel” on page 573.

The default size of treated sill plates is specified in the **Foundation Defaults** dialog. See “Foundation Panel” on page 439.

Roof Framing

Settings on the Roof and Trusses panels of the **Framing Defaults** dialog determine the structure of roof planes and manually drawn ceiling planes as well as how they rest on bearing walls, so it is important that their default values be set before building the roof. See “Roof Panel” on page 579 and “Trusses Panel” on page 582.

If changes are made to these defaults that you need to apply to the entire roof plan, you will need to rebuild the entire roof - not just the roof framing. See “Roofs” on page 461.

Framing Types

By default, all framing is set to use “Lumber” as the material type. You can select from a number of other types, however, including Glulam and steel. See “Framing Member Types” on page 593.

Manual vs. Automatic Framing

Platform, roof, and wall framing can be produced manually or automatically. In most cases, automatically-generated framing is preferable because it is faster than manually placing, replicating and editing numerous individual framing members.

In many plans, though, framing is drawn using both approaches. For example, a combination of automatically generated

rafters and manually drawn trusses can be used to model a roof framing plan. See “Mixing Trusses with Stick Framing” on page 608.

Regardless of how it is created, individual framing members can be selected and edited. See “Editing Framing” on page 591.

Automatic Framing

Automatic framing of floor and ceiling platforms, walls and roofs can be generated using the **Build Framing** dialog. The settings in this dialog control the size, spacing, and type of framing drawn in a plan, and related structural information for the major components of the 3D model. See “Build Framing Dialog” on page 569.

Automatic framing of a particular structural component is not generated until the **Build Framing** dialog is opened to the appropriate panel and one of two checkboxes selected:

- Select the **Build** checkbox to build automatic framing once. For example, check **Build Wall Framing** on the Wall panel, then click OK to build wall framing once based on the current state of the model.
- Select the **Automatic** checkbox, then click OK to build automatic framing every time a change is made to that structural component in the plan. For example, check **Automatic Wall Framing** on the Wall panel to rebuild all wall framing any time a wall is affected by changes to the model.

Note: When Automatic framing of a particular type is enabled, framing of that type cannot be manually edited or deleted.

By default, joists automatically generate in the direction that results in the shortest span; however, you can produce different results using **Bearing Lines**  , **Floor/Ceiling Beams**  , and/or **Joist Direction**  lines. See “Bearing Lines” on page 587 and “Joist Direction Lines” on page 586.

Manual Framing

Framing objects can also be drawn manually. With the exception of Posts, framing objects are drawn by clicking and dragging in a straight line, the way other line-based objects are. See “Draw Line” on page 1048.

The manual framing tools are organized into families: general framing, floor and ceiling framing and roof framing. The family that a drawing tool belongs to determines where it can be used:

- Roof framing objects can only be drawn within the area of one or more roof planes.
- Floor and ceiling framing objects can only be drawn within one or more floor or ceiling platforms.
- **General Framing**  objects and **Posts**  can be drawn anywhere in a model.
- **General Framing**  objects can also be drawn in CAD Details. See “CAD Details” on page 1085.
- **Wall Bridging**  can only be drawn in a Wall Detail window. See “In Wall Detail Views” on page 589.

Rebuilding and Retaining Framing

It is important to remember that by default, framing does not update automatically when changes are made to the model. For example, if a door is moved or resized, wall framing must be rebuilt. If the footprint is enlarged, the wall framing and any roof or platform framing that is affected must be rebuilt.

You can direct the program to rebuild the automatic framing of floors/ceilings, walls and/or roofs every time a change to the model affects one of these components. To do this, select the **Automatic** checkbox on the Floor, Wall and/or Roof panels of the **Build Framing** dialog.

You can also rebuild the framing of a single wall, roof plane, or ceiling plane by clicking the **Build Framing for Selected Object** edit button.

To learn more, see “Keeping Framing Current” on page 592.

When automatic framing associated with a particular panel in the **Build Framing** dialog is generated, any existing automatically produced framing of that type is deleted and replaced. You can prevent this from happening to a selected wall or roof plane by checking **Retain Wall Framing** or **Retain Roof Framing** in the object’s specification dialog. See “Structure Panel” on page 304 or “Framing Panel” on page 489.

Manually drawn floor, ceiling, and roof framing is unaffected when automatic framing is rebuilt and remains along with the newly produced automatic framing. In contrast, manually drawn wall framing is deleted when automatic framing is rebuilt.

You can, however, prevent this from happening by checking **Retain Wall Framing** in the **Wall Specification** dialog.

Mixing Rafters and Trusses

Roofs can be framed with rafters, trusses, or a combination of the two. If you plan to combine roof trusses with rafters and/or ceiling joists, you can save time by:

- Check **Trusses (No birdsmouth)** in the **Build Roof** dialog before automatically building or manually drawing a roof. See “Build Roof Dialog” on page 468.
- Draw and position all roof trusses before automatically generating framing to produce rafters and ceiling joists. See “Roof Trusses” on page 602.

For more information, see “Mixing Trusses with Stick Framing” on page 608.

Framing with Beams

Floor/Ceiling Beams can be drawn in a plan either before or after automatic framing has been generated. If a beam is created before automatic framing, you can specify whether joists bear on the beam or hang on its sides.

To build joists that bear on a beam

1. Draw a **Floor/Ceiling Beam** at the desired location in your plan.
2. Select the beam and click the **Open Object** edit button. On the General panel of the **Beam Specification** dialog, confirm that:

- The **Top Height** value is equal to the Ceiling Height of the room(s) over which the beam is placed.
- **Bearing Beam** is checked.

3. Click OK, then select **Build> Framing> Build Framing** and build the appropriate floor or ceiling framing. See “Floor Panels” on page 570.

To build joists that butt against a beam

1. Draw a **Floor/Ceiling Beam** at the desired location in your plan.
2. Select the beam and click the **Open Object** edit button. On the General panel of the **Beam Specification** dialog:
   - Specify the desired Depth value and then lock it.
   - Specify the **Bottom Height** value so that it is equal to the Ceiling Height of the room(s) over which the beam is placed.
   - Uncheck **Bearing Beam**.
3. If necessary, select **Build> Framing> Joist Direction** and draw a line perpendicular to the beam and within the floor or ceiling platform.
4. Click OK, then select **Build> Framing> Build Framing** and build the appropriate floor or ceiling framing. See “Floor Panels” on page 570.

The Framing Tools

Select **Build> Framing** to access the automatic and manual Framing Tools.

The Framing Tools family has three separate parent buttons: **General Framing Tools**, **Floor/Ceiling Framing Tools**, and **Roof Framing Tools**.

The default settings for framing members are derived from their respective panels in the **Framing Defaults** dialog.

Most types of framing can be created both manually and automatically. Once created, both automatically generated and manually drawn framing members can be selected and edited. See “Editing Framing” on page 591.

Horizontal floor/ceiling platform framing members are referred to as "joists"; vertical wall framing members are referred to as "studs"; and sloped roof framing members are referred to as “rafters”.

Build Framing

Select **Build> Framing> Build Framing** to open the **Build Framing** dialog. Here, you can define settings that control how framing is drawn and generate automatic framing. See “Build Framing Dialog” on page 569.

General Framing

General Framing objects are generic, framing members that can be drawn outside of a floor or ceiling platform or roof

plane. Select **Build> Framing> General Framing**, then click and drag in a straight line to create one of these objects. In floor plan view, a horizontal framing member is created; in a Wall Detail, vertical members can also be drawn. See “In Wall Detail Views” on page 589.

Wall Bridging

Wall Bridging, or blocking, can be created both automatically and manually, but can only be drawn manually in a Wall Detail. To do so, open a Wall Detail and select **Build> Framing> Wall Bridging**, then click and drag in a straight line across the wall in the view. See “In Wall Detail Views” on page 589.

Each run of bridging has gaps where it crosses studs, but behaves as a single object.

Automatic wall bridging can be created when wall framing is built or rebuilt. See “Wall Panel” on page 573.

Post

Posts can only be placed manually. To do so, select **Build> Framing> Post** and click in floor plan view. Placing a post on the lowest level of a plan also creates a footing.

Rafter

Rafters can be drawn both manually and automatically. To draw a rafter manually, select **Build> Framing> Rafter** in floor plan view, then click and drag in a straight line within a roof plane.

Rafters are edited like other framing members, except that you cannot set the height. If a rafter is moved, its height and slope are automatically reset to fit under the roof plane at its new position.

Roof Blocking

Roof blocking can only be drawn manually. To do so, select **Build> Framing> Roof Blocking** in floor plan view and click and drag in a straight line within a roof plane. Blocking is typically drawn perpendicular to the rafters, but at the same pitch.

Each run of blocking behaves as a single object but has gaps where it crosses rafters, trusses or other blocking.

Before drawing Roof Blocking:

- Specify whether you want **In Line**, **Stagger** blocking, or **Cross** bridging in the **Framing Defaults** dialog.
- Build the roof framing. See “Roof Panel” on page 579.

In 3D, roof blocking is tilted to follow the pitch of the roof plane in which it is drawn.

Roof Truss

Roof trusses can only be drawn manually. To do so, select **Build> Framing> Roof Truss** in floor plan view and click and drag in a straight line within one or more roof planes. Roof planes and either a default or manually drawn ceiling must be present before a roof truss can be drawn. See “Roof Trusses” on page 602.

Roof Beam

Roof beams can only be drawn manually. To do so, select **Build> Framing> Roof Beam** in floor plan view

and click and drag in a straight line. Roof beams are normally be drawn across rafters and placed directly under them.

Joist

Floor and ceiling joists can be drawn both manually and automatically. To draw a joist, select **Build> Framing> Joist** in floor plan view, then click and drag in a straight line within a floor or ceiling platform.

Joists are always drawn as the ceiling framing for the current floor. See "The Current Floor" on page 433. Whether a floor or ceiling joist is drawn is determined by the presence of a floor platform above.

- If there is no floor platform above, a ceiling joist is drawn.
- If there is a floor platform above, a floor joist is drawn.

If you want to draw floor joists for Floor 1, for example, you must do so on Floor 0. See "Foundations" on page 437.

Joists can be automatically generated for multiple floors in the **Build Framing** dialog. See "Floor Panels" on page 570.

Ceiling joists, floor joists and rafters have their own layers. Proper layer assignment maximizes display and materials flexibility.

Joist Blocking

Joist blocking can only be drawn manually. To do so, select **Build> Framing> Joist Blocking** in floor plan view and click and drag in a straight line within a floor or ceiling platform.

Each run of blocking behaves as a single object.

Before drawing Joist Blocking:

- Specify whether you want **In Line**, **Stagger** blocking, or **Cross** bridging in the **Framing Defaults** dialog.
- Build the floor and/or ceiling platform. See "Floor Panels" on page 570.

Floor/Ceiling Truss

Floor and ceiling trusses can only be drawn manually. To do so, select **Build> Framing> Floor/Ceiling Truss** in floor plan view and click and drag in a straight line within a floor or ceiling platform. See "Floor and Ceiling Trusses" on page 602.

Floor/Ceiling Beam

Floor and ceiling beams can only be drawn manually. To draw one, select **Build> Framing> Floor/Ceiling Beam** in floor plan view and click and drag in a straight line within a floor or ceiling platform.

Beams can be drawn in two different ways:

- **Under Joists** places the beam underneath the joists so the joists can bear on it.
- **With Joists** places the top of the beam even with the tops of the joists it supports. The joist then butts against it. See "Beams Panel" on page 576.

Beams should be placed before joists are automatically generated.

Framing Reference Marker

Framing Reference Markers are manually-placed reference points that specify how to lay out automatically-produced framing. To place one, select **Build> Framing> Framing Reference Marker** in floor plan view and click to place a Framing Reference Marker.

A Framing Reference Marker can also be created by placing a **Marker**  and then specifing its type. See “Markers” on page 1028 and “Framing Reference Markers” on page 583.

Bearing Line

Bearing Lines direct the program to lap or butt joists and/or rafters where they cross the line instead of framing across it to the next wall and can only be drawn in floor plan view. To draw one, select **Build> Framing> Bearing Line** and click and drag in a straight line. See “Bearing Lines” on page 587.

Joist Direction

Joist Direction lines define the direction in which joists run in a floor or ceiling platform and can only be drawn in floor plan view. To draw one, select **Build> Framing> Joist Direction** and click and drag within a floor or ceiling platform. See “Joist Direction Lines” on page 586.

Build Framing Dialog

Automatic framing can be generated by selecting **Build> Framing> Build Framing** to open the **Build Framing** dialog. This dialog can also be accessed by double-clicking any of the **Framing Tools**  buttons.

The settings in this dialog are similar to those found in the **Framing Defaults** dialog.

Each major structural component of the model has its own panel or panels in the **Build Roof** dialog. The number of panels in the dialog varies depending on how many floors are in your model. There will be a panel called “1st” for the first floor, “2nd” for the second floor, and so on.

- Floor and ceiling framing settings are found on the Floor Panels.
- Wall framing settings are located on the Wall Panel, Openings Panel, and Fireplaces Panel.
- Floor/Ceiling Beam and Roof Beam settings are found on the Beams Panel.
- Post, floor/ceiling beam and roof beam settings are found on the Posts Panel.
- Roof framing settings are located on the Roof Panel and Trusses Panel.
- The settings on the Roof Panel are the same as those on the Framing panel of the Build Roof Dialog.
- You can set the default materials used for framing on the Materials Panel.

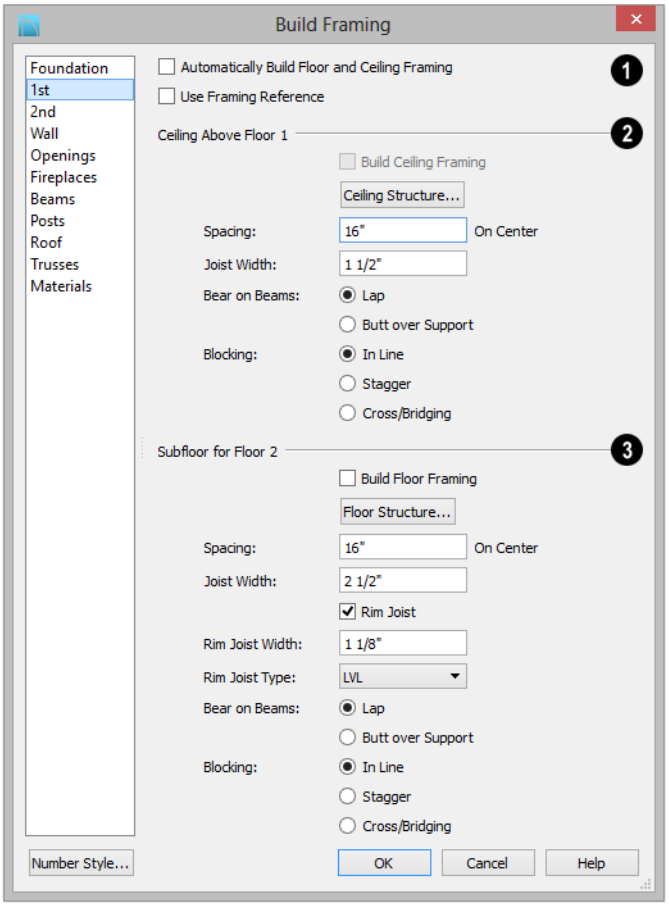

For best results, create roof framing before or at the same time that ceiling joists are generated.

The **Build Framing** dialog opens to the panel for the current floor, for example: 1st, 2nd, or Foundation.

Floor Panels

The floor framing for a given floor is always created on the floor below. As such, the floor framing settings for a given floor are found on the Floor panel for the floor below it. For example, the floor framing settings for Floor 2 are found on the 1st panel, while the floor framing settings for Floor 1 are found on the Foundation panel. See “Floor and Ceiling Platforms” on page 337.

In order to create the floor framing for Floor 1, a Floor 0 must be present. If a Floor 0 has not been built, the **Build Floor Framing** checkbox on the Foundation panel will not be available. See “Foundations” on page 437.



1 Check **Automatic Floor/Ceiling Framing** to regenerate floor and ceiling framing whenever changes are made to the model. See “Automatic Framing” on page 564.

- Check **Use Framing Reference** to build ceiling framing to a Framing Reference Marker. If a reference is present, the center of the first joist is placed at this point and spacing goes from there. If joists are lapped, the surface is placed at this point. When this is unchecked, the program tries to position ceiling joists so that they coincide with rafters. See “Framing Reference Markers” on page 583.

2 Specify how the **Ceiling Above Floor X** is built. These settings are relevant only for rooms that do not have living space above them.

- Check **Build Ceiling Framing** to generate or regenerate ceiling framing when the **OK** button is clicked. Only available when there is no living space above at

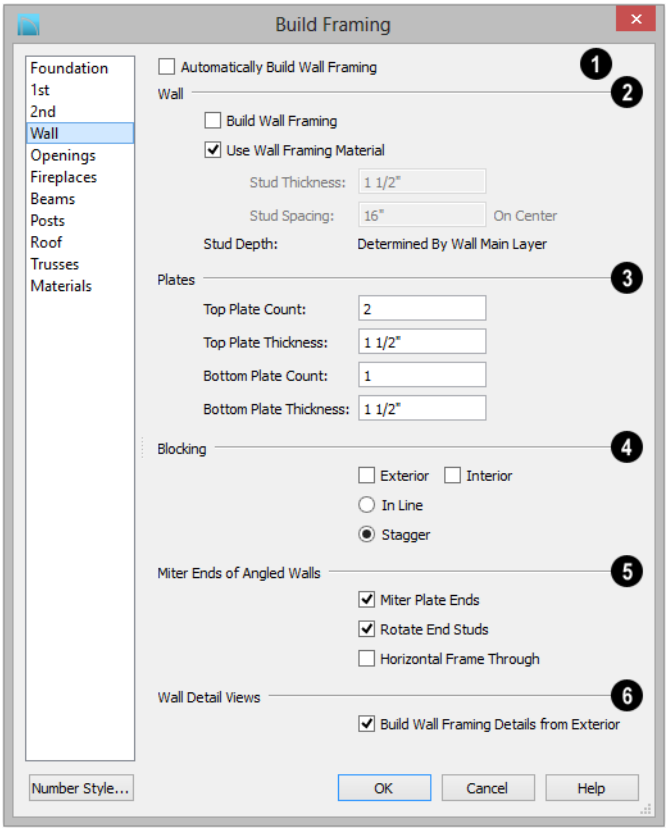
least part of the current floor. Not available in the **Framing Defaults** dialog.

- Click the **Ceiling Structure** button to open the **Ceiling Structure Definition** dialog and define the layers of materials that form the ceiling platform. See “Floor/Ceiling Structure Definition Dialogs” on page 339.
- Enter a value for the On Center **Spacing** of ceiling joists above the current floor.
- Specify the **Joist Width**, which is their horizontal thickness.
- Specify how the ceiling framing members **Bear on Beams**: they can either **Lap** or **Butt** over beams and bearing walls. The lap is 8” (200 mm) and centered over the support.
- Specify what style of **Blocking / Bridging** is produced for the ceiling when **Joist Blocking** is manually drawn after joists are in place. See “Joist Blocking” on page 568.
- **In Line** produces blocking pieces that align with each other.
- **Stagger** produces blocking that alternates on either side of the line you draw.
- **Cross** produces cross bridging that looks like in line blocking in floor plan view, but shows as cross bridging in 3D views and the materials list.

3 Specify how the **Subfloor for Floor X** is built. These settings are relevant only for rooms that have living space above them.

- Check **Build Floor Framing** to generate or regenerate floor framing when the **OK** button is clicked. Not available in the **Framing Defaults** dialog or if there is no floor located below the floor in question.
- Click the **Floor Structure** button to open the **Floor Structure Definition** dialog and define the layers of materials that form the floor platform. Only available if there is living space above at least part of the current floor. See “Floor/Ceiling Structure Definition Dialogs” on page 339.
- Enter a value for the on center **Spacing** of floor joists above the current floor.
- Specify the **Joist Width**, which is their horizontal thickness.
- Check **Rim Joist** to create rim joists across the ends of the floor joists when floor framing is generated. If this is unchecked, line blocking across the ends of the floor joists is usually drawn in later.
- Specify the **Rim Joist Width**, which is the horizontal thickness.
- Select the **Rim Joist Type** from the drop-down list.
- Specify how the floor framing members **Bear on Beams**: they can either **Lap** or **Butt** over beams and bearing walls. The lap is 8” (200 mm) and centered over the support.
- Specify what style of **Blocking / Bridging** is produced for the floor when **Joist Blocking** is manually drawn after joists are in place. See #2, above.

Wall Panel



1 Check **Automatic Wall Framing** to regenerate wall framing whenever changes are made to the model. See “Automatic Framing” on page 564.

2 Specify how **Wall** studs are created.

- Check **Build Wall Framing** to build wall framing for the entire model. Framing is built in walls whose Main Layer material type is “framing”. Not available in the **Framing Defaults** dialog. See “Wall Type Definitions” on page 295.
- Check **Use Wall Framing Material** to use the stud thickness and spacing defined for the framing material used by each wall type. See “Define Material Dialog” on page 841. Uncheck this box to use the thickness and spacing values below for all wall types.
- Specify the **Stud Thickness** for all walls in the plan. Stud depth is set by each wall's Main Layer thickness. Not available when Use Wall Framing Material is checked.

- Specify the **Stud Spacing** for all walls in the plan, starting from the Framing Reference Marker, if one is present. See “Framing Reference Markers” on page 583. Not available when Use Wall Framing Material is checked.

❸ Define how top and bottom **Plates** are generated.

- Specify the **Top Plate Count**, as well as their **Thickness**.
- Specify the **Bottom Plate Count**, as well as their **Thickness**.

❹ Specify where and how **Blocking** is drawn. Each run of blocking behaves as a single object but has gaps where it crosses studs. See “Wall Bridging” on page 567.

- Check **Exterior** to automatically produce blocking on exterior walls when wall framing is built.
- Check **Interior** to automatically produce blocking on internal walls when wall framing is built.
- **In Line** produces blocking pieces that align with each other.
- **Stagger** produces blocking that alternates on either side of a center line along the wall.

Wall blocking is generated exactly half-way up each wall’s total height. Once created, it can be selected in a Framing Overview or Wall Detail.

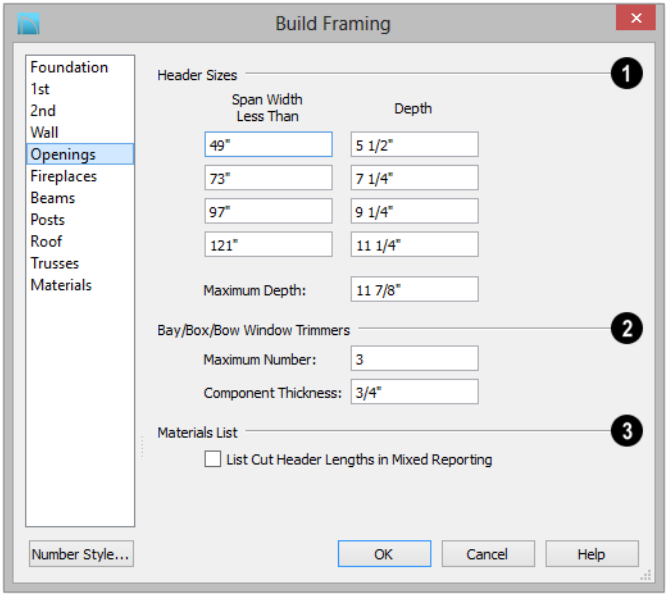
❺ **Mitre Ends of Angle Walls** - Specify how wall corners that are not right angles are framed. 90° corners are not affected by these settings.

- Select **Mitre Plate Ends** to mitre the ends of the top and bottom plates. If unchecked, top and bottom plates will be butted together.
- Select **Rotate End Studs** to rotate the studs closest to mitre ends to the angle of the mitre. If unchecked, studs will remain perpendicular to the angle of the walls.
- Select **Horizontal Frame Thru** to frame through the horizontal walls in floor plan view, butting vertical walls against them. If unchecked, walls that are vertical in floor plan view will frame through.

❻ Check **Build Wall Framing Details from Exterior** to have Wall Detail views display from the exterior of the plan rather than the interior. See “In Wall Detail Views” on page 589.

Openings Panel

The rough openings for doors and windows can be specified in the **Door** and **Window** **Defaults** and **Specification** dialogs. See “Default Settings” on page 72.



1 Specify default **Header Sizes**, dependent on width of the door, window, or fireplace, including its Rough Opening. These values should be set so that the wider the opening, the deeper the header.

- If the top of an opening's Rough Opening is closer to the top plate than the **Maximum Depth**, a solid header is produced to fill the entire space. Short cripple studs between the header and top plate are not produced.

2 Specify how **Bay/Box/Bow Trimmers**, are generated.

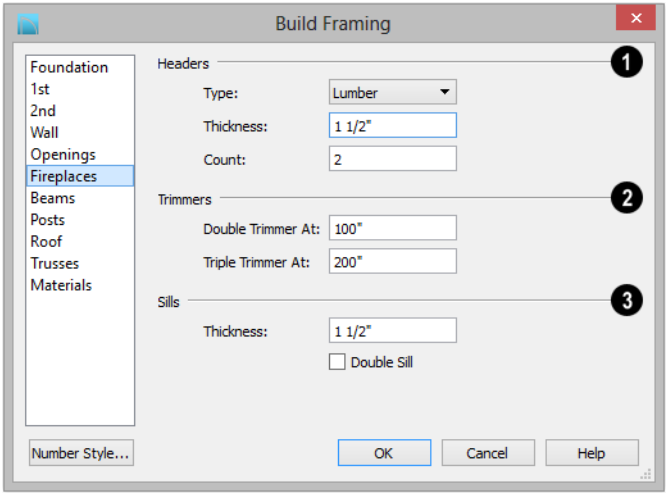
- Specify the **Maximum Number** of trimmers that a Bay, Box, or Bow Window with a lowered top height can have on each side of the opening.
- Specify the **Component Thickness**, which is the thickness of a thinner trimmer for manually resized Bay/Box/Bow Window components if a standard trimmer does not fit. See "Resizing Components" on page 417.

3 Check **List Cut Header Lengths in Mixed Reporting** to show precut headers in the Materials List. Precut headers are shown only if the walls have been framed and Mixed Reported is selected as the reporting method. See "Structural Member Reporting" on page 1250.

If this is unchecked, the Materials List produces a total footage for all headers. When checked, each different length of precut header is listed separately. Note that the total number of headers is affected by the **Count** value of each door and window.

Fireplaces Panel

The rough openings for **Fireplaces** placed in walls can be set on the Fireplaces panel. See “Fireplaces” on page 455.



1 Specify the characteristics of fireplace **Headers**.

- Specify the **Type** of material used for fireplace headers.
- Specify the **Thickness** of fireplace headers.
- Specify the **Count** of boards used to form a fireplace header.

2 Specify when to generate multiple **Trimmers** on each side of a fireplace. These values include the fireplace’s Rough Opening. See “Rough Openings” on page 563.

- **Double Trimmer At** - Fireplace openings of this width or greater receive two trimmers on each side when framed.
- **Triple Trimmer At** - Fireplace openings of this width or greater receive three trimmers on each side when framed.

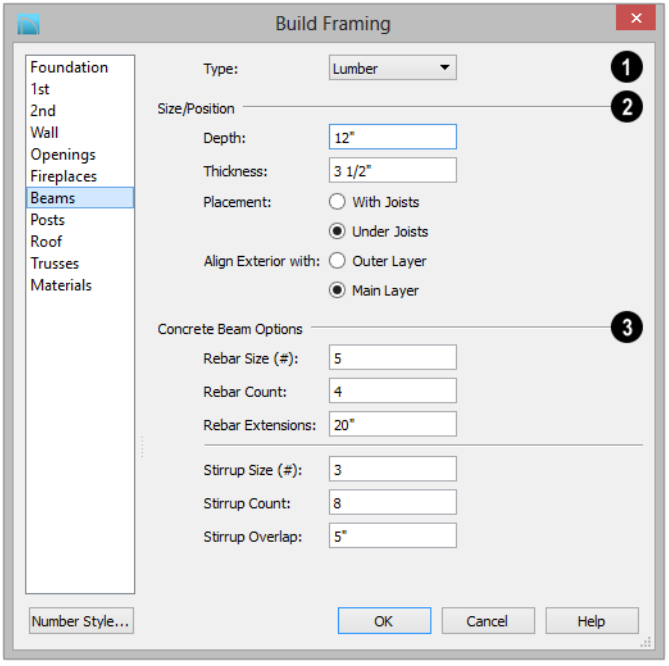
3 Specify the characteristics of fireplace **Sills**. A sill is only generated if a fireplace is raised sufficiently off the floor.

- Specify the **Thickness** of fireplace sills.
- Check **Double Sills** to specify a double sill for all fireplaces.

Beams Panel

Floor/Ceiling Beams and **Roof Beams** are not automatically generated: they can only be drawn manually. See “Manual Framing” on page 564.

Posts and beams may be created under a Deck room automatically, depending on its size, location, and other variables. Deck Framing defaults are set in the Deck Room Defaults dialog. See “Deck Framing and Planking” on page 334.



1 Select the **Type** of material used to create beams from the drop-down list. See “Framing Member Types” on page 593.

2 Specify the **Size/Position** of beams in the plan. These settings do not affect automatically generated deck beams.

- Specify the beams’ vertical **Depth**.
- Specify the beam **Thickness**, which appears as width in floor plan view.
- Specify the **Position** of **Floor/Ceiling Beams** relative to the joists. **With Joists** places beams at the same height as the joists so they hang on the beams; **Below Joists** to places beams below joists so they bear on the beams. See “Bearing Lines” on page 587.
- **Align Exterior with Outer Layer/Main Layer** - When a **Floor/Ceiling Beam** is drawn along and over an exterior wall, its exterior surface can snap to either the wall’s outer layer or outer main layer, as specified here.

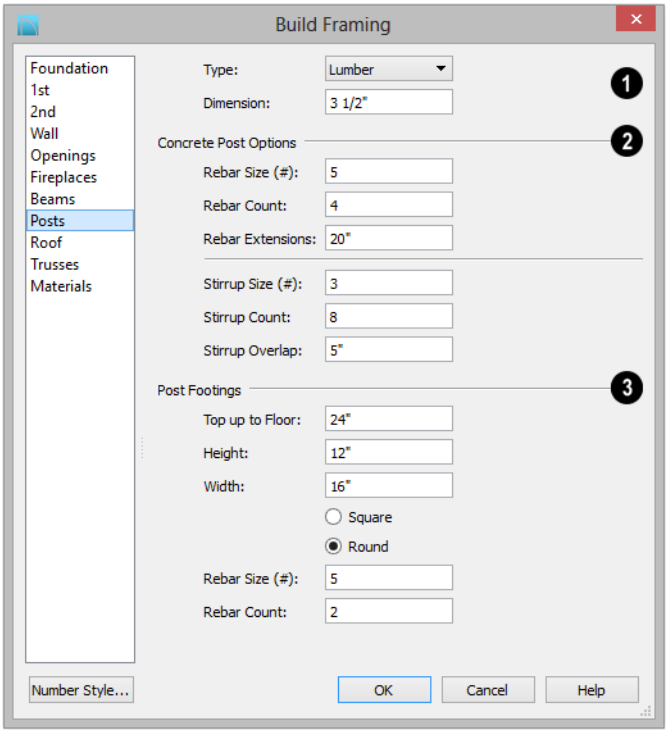
❸ **Concrete Beam Options** - Specify the **Rebar** and rectangular rebar **Stirrups**, or tie bars, for concrete beams.

- Specify the **Size Number** for both Rebar and Stirrups.
- Specify the **Count**, or number of bars, for both Rebar and Stirrups.
- Specify the length of Rebar **Extensions**.
- Specify the distance that Stirrups **Overlap**.

Posts Panel

Posts are not automatically generated: they can only be drawn manually. See "Manual Framing" on page 564.

Posts and beams may be created under a Deck room automatically, depending on its size, location, and other variables. Deck Framing defaults are set in the Deck Room Defaults dialog. See "Deck Framing and Planking" on page 334.



❶ Select the **Type** of material used to create posts from the drop-down list. The “Round” Type is unique to Posts. See “Framing Member Types” on page 593.

- **Dimension** - This is the length of each side of a square post and the diameter of a round post. Once created, posts not specified as Round can be edited to have a rectangular shape with any dimensions. Round posts can be resized but always remain circular.

❷ **Concrete Post Options** - Specify the **Rebar** and rectangular rebar **Stirrups**, or tie bars, for concrete posts.

- Specify the **Size Number** for both Rebar and Stirrups.
- Specify the **Count**, or number of bars, for both Rebar and Stirrups.
- Specify the length of Rebar **Extensions**.
- Specify the distance that Stirrups **Overlap**.

❸ **Post Footings** - When a post is placed inside of a floor platform on the lowest floor of a plan or generated under a deck, a footing for it is automatically produced and included in the Materials List. See “Materials Lists” on page 1247.

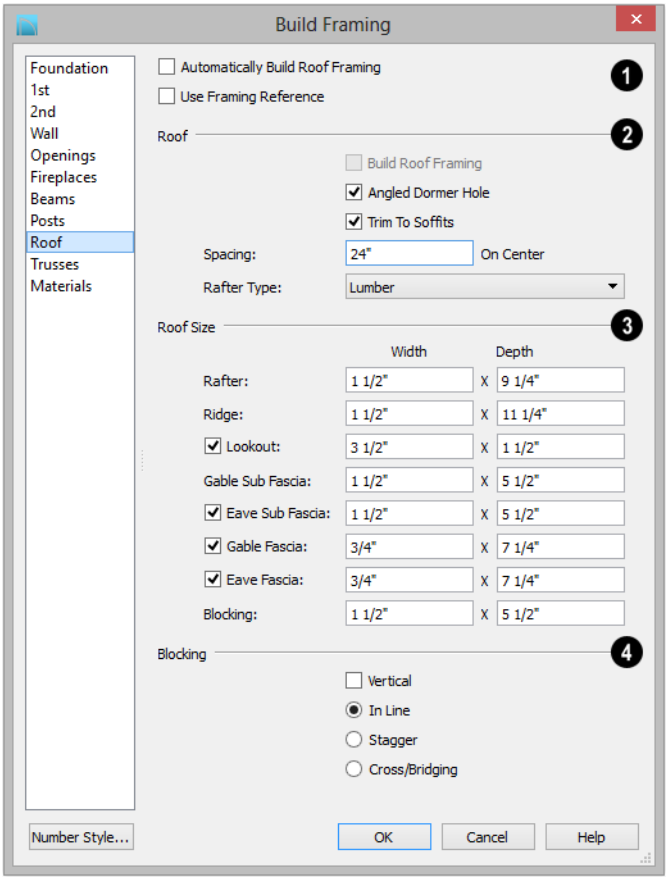
- Specify the **Top up to Floor** value, which is the distance from the top of the footing to the bottom of the floor platform.
- Specify the **Height** of the automatically produced footing under a new post.
- Specify the **Width** of the automatically produced footing under a new post.
- Select the **Square** or **Round** radio button to specify the shape of post footings.
- Specify the **Rebar Size Number** for post footing Rebar.
- Specify the **Rebar Count**, or number of bars, for Post Footings.

Roof Panel

The settings on the Roof panel of the **Build Framing** dialog are exactly the same as those on the Framing panel of the **Build Roof** dialog. See “Build Roof Dialog” on page 468.

These settings are also found on the Framing panel of the **Roof Plane Specification** dialog. Those settings that apply to ceiling planes are available in the **Ceiling Plane Specification** dialog. See “Roof Plane Specification Dialog” on page 486.

Note: Changes made on the Roof panel will not affect the structure of existing roof planes. To make changes take effect, rebuild the roof.



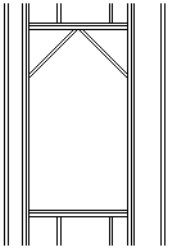
1 Check **Automatic Roof Framing** to automatically rebuild roof framing if changes are made to the roof plan. See "Automatic Framing" on page 564.

- Check **Use Framing Reference** to use a defined starting point for rafter layout. See "Framing Reference Markers" on page 583.

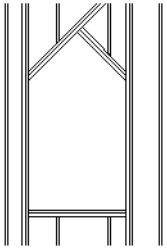
Note: Use Framing Reference is useful when framing a gable roof, but not necessarily a hip roof. See "Framing References and Roof Framing" on page 585.

2 **Roof** -

- Check **Build Roof Framing** to build roof framing for the entire model. Only available if roof planes are present in the plan. Not available in the **Framing Defaults** dialog. See “Roofs” on page 461.
- Uncheck **Angled Dormer Hole** to frame dormers using rafters under the dormer valleys and a double header where the peak of the dormer roof meets the main roof plane. When checked, a five-sided hole is framed with two angled double rafters located under the dormer valleys. If a double header does not fit within the main roof plane, an angled dormer hole is produced regardless of this setting.



rectangular dormer hole



Angled Dormer Hole

- Uncheck **Trim To Soffits** to generate full-depth rafters all the way to the subfascia. If checked, rafter depths are trimmed to the top surface of the soffits in the eave area. Does not affect decorative rafter tail ends. See “Rafter Tails Panel” on page 475.
- Specify the **Spacing** of automatically generated rafters. This also sets the initial offset value for laying out rafters using the **Multiple Copy** edit button. See “Multiple Copy” on page 171.
- Select the **Rafter Type** from the drop-down list. See “Framing Member Types” on page 593.

❸ **Roof Size** - Specify the desired **Width** and **Depth** for **Rafters**, the **Ridge**, **Lookouts**, **Gable Sub Fascia** (barge rafter), **Eave Sub Fascia**, **Gable Fascia**, **Eave Fascia** and **Blocking**.

Uncheck the boxes beside **Lookout**, **Eave Sub Fascia**, **Gable Fascia** and/or **Eave Fascia** to prevent these framing members from generating when roof framing is built. When these boxes are checked, these items will generate as specified here.

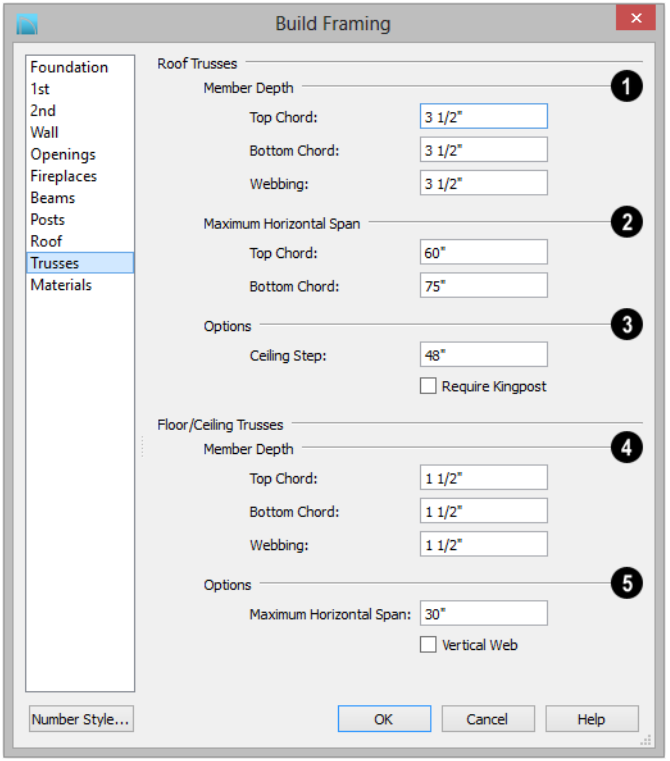
❹ Specify how **Blocking** is manually drawn after rafters have been placed. A row of blocking is drawn and can be moved and edited as a single object, but displays as separate pieces separated by the rafters. See “Roof Blocking” on page 567.

- Check **Vertical** to generate blocking that is oriented vertically, or plumb. When unchecked, blocking is perpendicular to the roof framing.
- **In Line** produces blocking pieces that align with each other.
- **Stagger** produces blocking that alternates on either side of the line you draw.
- **Cross/Bridging** produces cross bridging that looks like in line blocking in floor plan view, but shows as cross bridging in 3D views and the materials list.

Trusses Panel

Changes to the settings on this panel do not affect any trusses that are already present in the current plan. See “Trusses” on page 601.

> Chief Architect does not engineer trusses. Always consult an engineer or truss company to have your trusses professionally designed.



1 Specify the **Roof Truss Member Depths**.

- Specify the depth of the **Top Chord**.
- Specify the depth of the **Bottom Chord**.
- Specify the depth of the **Webbing**.

2 The **Maximum Horizontal Span** settings control the maximum length between junctions of the webbing and the **Top Chord** and **Bottom Chord**. Changing

these values can create different truss configurations such as kingpost, queenpost, fink, double fink, fan, howe, or double howe.

These distances are measured horizontally for both roof and floor and ceiling trusses. In some instances, especially in more complex trusses, making these spans equal may result in the webbing appearing more normal or standard. See “Trusses” on page 601.

3 **Options** -

- Check **Require Kingpost** to include a central vertical webbing member. If this is unchecked, a vertical member may still be created, depending on the Maximum Horizontal Span settings and the length of the truss.
- Specify the **Ceiling Step**, which is the maximum distance its bottom chord can step down to locate a ceiling on the floor below the top floor. See “Ceiling Steps” on page 616.

4 Specify the **Floor/Ceiling Truss Member Depths**.

- Specify the depth of the **Top Chord**.
- Specify the depth of the **Bottom Chord**.
- Specify the depth of the **Webbing**.

5 The **Maximum Horizontal Span** setting controls the maximum length between junctions of the webbing and the top and bottom chords.

Truss Spacing

Trusses are always drawn manually, so while their depth, span and kingpost defaults are specified in the **Build Framing** dialog, their spacing is not.

Trusses are typically replicated using the **Multiple Copy** edit button, and their spacing can be set in the **Multiple Copy** dialog. See “Multiple Copy Dialog” on page 172.

Materials Panel

The default materials that display on General Framing objects, Posts, and Rafters in 3D views are specified on the Materials panel. These materials are not used in the Materials List. Materials List information is derived from the structure Type of each framing object. See “Framing and the Materials List” on page 593.

Changes made on the Materials panel of the **Build Framing** dialog only affect subsequently created framing: both manually drawn and automatically generated.

The settings in the Materials panel of the **Build Framing** dialog are the same as in many other specification dialogs. See “Materials Panel” on page 831.

Framing Reference Markers

Framing Reference Markers are reference markers that specify the starting point for the layout of automatically-produced framing.

- Wall and floor framing always build to the Framing Reference Marker if one is present.
- Ceiling and roof framing only build to the Framing Reference Marker when **Use Framing Reference** is specified for that type of framing.

Typically, a single Framing Reference Marker on Floor 1 is used for the entire model.

- When more than one Framing Reference Marker is present, framing layout starts at the one closest to the center of the area to be framed.
- If no Framing Reference Marker is found on the floor being framed, the closest Framing Reference Marker on Floor 1 is used.

Note: If no Framing Reference Markers exist in your plan, the point at 0, 0 is used as the Framing Reference Markers location and unexpected results may occur.

When **Automatic Wall Framing** is checked, wall framing automatically rebuilds if a Framing Reference Marker is added or moved. See “Automatic Framing” on page 564.

Automatic Floor/Ceiling Framing and **Automatic Roof Framing**, on the other hand, do not respond when a Framing Reference Marker is added or moved. These framing types must be rebuild using the **Build Framing** dialog. See “Build Framing Dialog” on page 569.

Using Framing Reference Markers

To place a Framing Reference Marker, select **Build> Framing> Framing Reference Marker**  . Click in floor plan view to place the Framing Reference Marker.

When **Object Snaps**  are enabled, Framing Reference Marker snap to framing members and other CAD-based objects first, and then to a wall Main Layer surface or corner if possible. See “Object Snaps” on page 160.

Framing Reference Markers can be modified just like other markers. See “Markers” on page 1028.

When framing is generated using a Framing Reference Marker, the first framing member of a given type snaps to this point and all other framing members are laid out from there.

- Wall and roof framing snap to the Framing Reference Marker at their centers.
- Floor and ceiling framing snaps to the Framing Reference Marker at their centers when when it is set to **Butt Over Support** in the **Build Roof** dialog. See “Floor Panels” on page 570.
- Floor and ceiling framing snaps to the Framing Reference Marker along an edge when it is set to **Lap** over a supporting beam or wall. If **Lap** is selected, the surfaces where the joists lap are placed at reference spacing, so that joists are placed on either side of the framing reference locations.

Move to Framing Reference

Manually drawn framing and automatic framing that was not generated using a Framing Reference Marker can be moved relative to a Framing Reference Marker using the **Move to Framing Ref** edit button.

When a framing member using the **Move to Framing Ref** edit button, the on-center spacing distance set in the **Build Framing** dialog is used.

The **Move to Framing Ref** edit button may also reference spacing specific to a particular floor or ceiling platform. See “Joist Direction Lines” on page 586.

A group of selected framing objects that are all parallel to each other can be moved using the **Move to Framing Ref** edit button. Only one of the objects in the group is compared to the Framing Reference Marker and moved; the remaining objects are simply moved the same amount as the first object. Ideally, therefore, the group should have proper spacing relative to each other before the move.

To move framing objects to a framing reference marker

1. Group select the framing objects.
2. Click the **Move to Framing Ref** edit button.
3. The framing members are moved to the nearest Framing Reference Marker.

Framing References and Ceiling Framing

For floor joists, the starting point for layout is always the Framing Reference Marker. Ceiling joists, on the other hand, only use a Framing Reference Marker if **Use Framing Reference** is checked in the **Build Roof** dialog. See “Floor Panels” on page 570.

If the **Use Framing Reference** checkbox is cleared, the program will try to position ceiling joists so that they coincide with rafters. Be sure to build the roof framing first if you are doing this.

A Framing Reference Marker is not usually used for both ceiling joists and nearby rafters that run the same way because one is placed on top of the other.

Framing References and Roof Framing

Framing Reference Markers are useful when framing a gable roof, but not necessarily a hip roof. When a Framing Reference is used, common rafters on either side of a hip rafter do not meet in the same place.

If the Framing Reference is not used, the automatic framing utility starts common rafter spacing from each end of the horizontal ridges, which results in common rafters on either side of hip jacks meeting each other.

Joist Direction Lines

 By default, automatically-generated floor and ceiling joists will run in the direction that results in the shortest span. A **Joist Direction** line allows you to define the direction that joists in a particular floor or ceiling platform run, regardless of span.

To draw a Joist Direction line, select **Build**> **Framing**> **Joist Direction**  , then click and drag as you would draw a CAD line. In order to have any effect, a Joist Direction line must be drawn within the area of a single floor or ceiling platform.

To avoid unexpected results, only one Joist Direction line should be present in a given floor or ceiling platform, and it should not extend outside of the extents of that platform.

Joist Direction lines are located on the "Framing, Bearing Lines" layer by default and use the Text Style assigned to the layer that the Joist Direction line is on. See "Text Styles" on page 1030.

Multiple Joist Directions

By default, all of the rooms on each living floor share a single floor platform and a single ceiling platform. If you require joists that run in two directions in either of these platforms, begin by dividing the platform in question in two. There are a number of ways to do this:

- Divide the living area into separate rooms with different platform thicknesses and/or heights. See "Floor and Ceiling Platforms" on page 337.
- Specify one or more interior walls as **Bearing Walls**. See "Structure Panel" on page 304.
- Draw a **Floor/Ceiling Beam**  specified as a Bearing Beam. See "Floor/Ceiling Beam" on page 568.
- Draw a **Bearing Line**  . See "Bearing Lines" on page 587.

Bearing Walls, Floor/Ceiling Beams, and Bearing Lines should be drawn on the same living floor as the joists they will interact with. Floor framing for a living floor is created on the floor below, while ceiling framing for a living floor is created on that floor. See "Floor and Ceiling Framing" on page 562.

Joist Size and Spacing

The text along a Joist Direction line states the joist size and spacing for the platform. By default, these values reflect the settings in the **Framing Defaults** dialog. See "Floor Panels" on page 570.

If you modify joist depth or spacing in a platform via the **Room Specification** dialog, your change will not be reflected in the Joist Direction line's text. When this is the case, you may wish to edit the Joist Direction line's text in the **Joist Direction Specification** dialog.

It is important to note that if a Joist Direction line is set to use non-default Spacing and Depth values, they will override the settings in both the **Framing Defaults** and **Room**

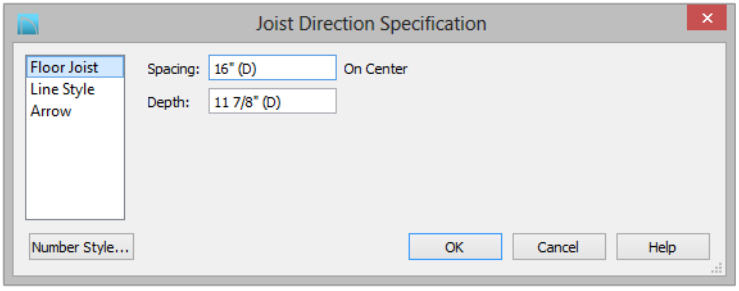
Specification dialogs. It will not, however, change the settings in either dialog.

Joist Direction Specification Dialog

A Joist Direction line can control the joist depth and spacing in the floor or ceiling platform in which it is drawn. To change these values, select a Joist Direction line and click the **Open Object** edit button. The **Joist Direction Specification** dialog opens.

Any changes made in the **Joist Direction Specification** dialog will not affect any joists present in its floor or ceiling platform. Only subsequently produced framing in its platform will be affected.

Floor Joist Panel



- Define the **Spacing** of the joists in the platform associated with the selected Joist Direction line.
- Define the **Depth** of these joists.

Note: This is not the recommended method for specifying joist depth and spacing in most cases. You should instead use the settings in the Room Specification dialog. See “Room Specification Dialog” on page 346.

Line Style Panel

For information about the settings on this panel, see “Line Style Panel” on page 1053.

Arrow Panel

For information about the settings on this panel, see “Arrow Panel” on page 1055.

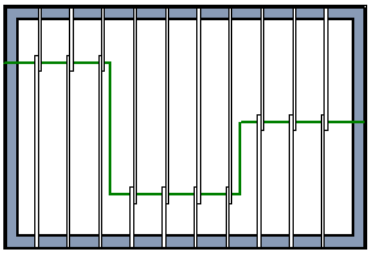
Bearing Lines

A **Bearing Line** directs the program to lap or butt joists where they cross the line instead of framing across to a wall.

Joists lap or butt over the line depending on the option selected in the **Build Framing** dialog. See “Floor Panels” on page 570.

In most cases, when joists lap or butt in the middle of a span rather than build across a platform, they bear on a wall or beam at that point. When this is the case, place a Bearing Wall or Bearing Beam instead of using a Bearing Line. See “Structure Panel” on page 304 and “Floor/Ceiling Beam” on page 568.

Select **Build> Framing> Bearing Line** , then click and drag to draw a Bearing Line as you would draw a CAD line. A Bearing Line should start outside the floor or ceiling platform and end outside of it, passing completely through the building.



Joists lapping over a Bearing Line polyline

Bearing Lines are edited just like CAD lines, and can be connected to form polylines. See “Editing Line Based Objects” on page 184 or “Editing Open Polyline Based Objects” on page 193.

Bearing Lines are one of the ways that a floor or ceiling platform can be divided into separate smaller platforms with different **Joist Directions** . See “Joist Direction Lines” on page 586.

Displaying Framing

The display of framing members is controlled in the **Layer Display Options** dialog. By default, framing objects are created on one of over twenty layers with names that begin with “Framing,”: Ceiling Beams, for example, are placed on the “Framing, Ceiling Beams” layer. Once created, though, framing objects can be placed on any layer you wish. See “Displaying Objects” on page 144.

In Floor Plan View

In floor plan view, wall studs and posts are represented by box-based CAD objects that look like Cross Boxes. See “Cross Box” on page 1069 and “Editing Box-Based Objects” on page 203.

Joists, rafters, and trusses are represented in floor plan view by line-based CAD objects that are essentially long, thin rectangles. See “Editing Line Based Objects” on page 184.

If you prefer, joists, rafters, and trusses can instead be represented by a single line. See “Line Properties Panel” on page 109.

By default, framing polylines have a solid white fill, and new members display in front of older ones, helping to distinguish newer members from those drawn previously. You can specify whether new framing members

are drawn with this fill. See “CAD Defaults and Preferences” on page 1040.

In 3D Views

The easiest way to view framing in 3D is to use either the **Orthographic Framing Overview** or **Perspective Framing Overview** tool, which display the model using the 3D Framing Set layer set. See “Framing Overview” on page 880.

Framing objects can display in other 3D and cross section/elevation views, although by default they are not set to do so. If you wish to see framing in these views, turn on the framing layers in the appropriate layer set.

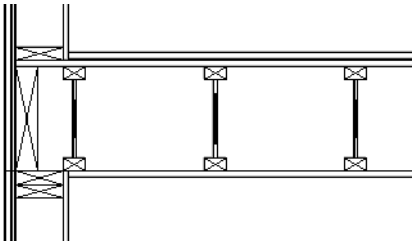
To reveal framing covered by other objects or wall layers, use the **Delete Surface** tool. See “Delete 3D Surface” on page 888.

In Cross Section/ Elevation Views

To display framing in a cross section/ elevation view, make sure the framing layers are turned on in the default layer set for Cross Sections. See “Layer Set Defaults” on page 146.

You can also use the **Delete Surface** tool to temporarily delete the surfaces of wall layers or other objects that block the view.

In cross section/elevation views, framing objects that are cut by the cross section plane display as boxes containing an ’X’.



I-joists, a rim joist, and wall plates cut in a cross section view

In Wall Detail Views

Wall Details are a special type of wall elevation view in which only the studs, plates and headers used to frame a selected wall display. They are the only views in which **Wall Bridging** can be built. See “Wall Bridging” on page 567.

A Wall Detail view for each framed wall in your plan is automatically created by the program and saved in the Project Browser when wall framing is built. See “The Library Browser” on page 798.

After wall framing has been built, select a wall and click the **Open Wall Detail** edit button to open its Wall Detail. See “Editing Walls” on page 278.

Most wall framing members occupy the entire thickness of the wall’s framing layer. Some, notably doubled headers or corner sheetrock nailers, may be turned sideways. Double or triple headers display one behind the other in a Wall Detail. You can select them using the **Select Next Object** edit button. See “Select Next Object” on page 183.

By default, Wall Details show walls as viewed from the interior. You can specify

whether Wall Details are viewed from the interior or exterior in the **Build Framing** dialog. See “Wall Panel” on page 573.

The framing members of an individual wall can be selected and edited in its Wall Detail. If you rebuild wall framing after manually editing in a Wall Detail, your changes will be lost. To protect changes made to a wall’s framing, check **Retain Wall Framing** in the **Wall Specification** dialog. See “General Panel” on page 302.

As with regular 3D views, Wall Details can be sent to layout and printed. See “Layout” on page 1203 and “Printing and Plotting” on page 1179.

Framing Materials and Types

The appearance of a framing member in 3D and cross section/elevation views is affected by the material assigned to it and also by its Type.

The material specified for a framing member determines what it looks like in camera views by applying a texture, pattern, or color to its surface. Materials have no effect on how the framing is calculated in the Materials List, however.

The default materials for framing are set:

- In the **Floor** and **Ceiling Structure Definition** dialogs for floor and ceiling framing. See “Floor and Ceiling Platform Definitions” on page 337.
- In the **Wall Type Definitions** dialog for wall framing. See “Wall Type Definitions Dialog” on page 298.
- In the **Framing Defaults** dialog for General Framing, Posts, and Rafters. See “Materials Panel” on page 583.

Framing Types can also influence how a framing member looks in camera views because some types have special profiles - for example, I-Joists, Steel-I, and C-Channel. Framing types are also stated in the Description column in the Materials List. See “Framing Member Types” on page 593.

Materials and framing types control how framing looks in 3D views

In the Materials List

When framing is calculated in the materials list, its dimensions and type are noted. Treated lumber is also counted separately form regular lumber. See “Framing Member Types” on page 593.

Framing lengths can be counted using one of several methods to produce, for example, cut lists and buy lists. See “Structural Member Reporting” on page 1250.

If framing is not present in a plan when a Materials List is created, it will not be calculated. See “Framing and the Materials List” on page 593.

Editing Framing

Framing members can be individually selected in all views, and some types can be group selected. Once selected, they can be edited muck like other line-based objects can using the edit handles, edit toolbar buttons, or the **Framing Specification** dialog. See “Framing Specification Dialog” on page 594.

When **Start and End Indicators** are enabled in the **Preferences** dialog, a selected framing member will display an S and an E at its start and end points. This makes it easier to choose which end to lock when specifing its Length or Angle. See “Edit Panel” on page 110.

Framing is organized into families which determine where it is generated and where it can be manually drawn. See “Manual vs. Automatic Framing” on page 563. Once framing has been created, however, it can be moved out of its structural component. In order to move roof framing above or below a roof plane, you must first check **Manual Rafter Height** in the **Framing Specification** dialog. See “General Panel” on page 595.

Using the Edit Handles

Framing members can be drawn, edited and moved much the way CAD lines can. See “Editing Line Based Objects” on page 184.

In Cross Section/Elevation views, joists and rafters cut by the cross section and displaying a cross box can also be edited. See “Editing Box-Based Objects” on page 203. Also, in Cross Section/Elevation views headers can be edited like closed polylines. See “Editing Closed-Polyline Based Objects” on page 198.

In a camera view or overview, the handles that display on a framing member depend on where it is clicked for selection and your current zoom factor.

- Click the top surface to display the same edit handles as in floor plan view, allowing you to rotate, move, and extend or shorten the length of the member.
- Click a side surface to display the same edit handles as in an elevation view, one at each end and one at the center.
- Zoom in and click on the appropriate edge to display edit handles that control the width and depth of framing members.

Using Dimensions

Framing members can be both moved and resized using dimensions. See “Moving Objects Using Dimensions” on page 989.

Using the Edit Tools

A selected framing member can be edited in a variety of ways using the buttons on the edit toolbar. See “The Edit Toolbar” on page 35.

Mitered Joints

Mitered joints can be created using the **Fillet Two Lines** edit button. Click on the end edge of a framing member such as a joist, click the **Fillet Two Lines** edit button, then click on the end edge of another nearby joist to extend one framing item to another framing item and join them with angled cut. See “Fillet Two Lines” on page 229.

Steel and Concrete

You can set framing defaults to generate steel framing and concrete structural members as well as lumber and other framing types. Individual framing members can also be specified as concrete or steel, as well.

When setting up defaults or modifying an individul object, make sure you specify both the desired framing Type and the material. See “Framing Materials and Types” on page 590.

Roof and Floor Trusses

Roof and floor trusses cannot be edited like regular framing members can and are discussed in their own chapter. See “Editing Truss Envelopes” on page 606.

Deleting Framing

Individual and group-selected framing members can be deleted the way other objects in the program are. See “Deleting Objects” on page 249.

Categories of framing, such as wall framing or floor and ceiling framing, can also be deleted in the **Delete Objects** dialog. See “Delete Objects Dialog” on page 249.

Keeping Framing Current

When you modify your plan, move walls, raise or lower platforms or redesign the roof, any framing present in the plan will not update to reflect your changes. In order for the framing to be updated, you must regenerate automatically produced framing and either edit or delete and replace manual framing.

For this reason, it is recommended that you wait until your model is finished, or nearly finished, before creating framing. See “Drawing a Plan” on page 42.

Automatic Framing

Automatically-generated framing can be rebuilt using either of two checkboxes in the **Build Framing** dialog:

- Select a **Build** checkbox to build automatic framing once. For example, check **Build Wall Framing** on the Wall panel to build wall framing once based on the current state of the model. If the model is changed later, you may need to do this again.
- Select an **Automatic** checkbox to build automatic framing every time a change is made to that structural component in the plan. For example, check **Automatic Wall Framing** on the Wall panel to rebuild all wall framing any time a wall is affected by changes to the model.

When floor, ceiling or roof framing is regenerated, all automatically produced framing objects and any copies of them are deleted and new framing is calculated. See “Rebuilding and Retaining Framing” on page 565.

Manual Framing

It is vital to remember that manually drawn framing objects and copies of them are not retained when automatic framing is rebuilt.

If a plan is not final, therefore, do not spend a lot of time altering or copying automatically produced framing objects. It is best to wait until your design is final before doing manual framing work.

Build Framing for Selected Object

If changes are made to a wall, roof plane, or ceiling plane that require its framing to be rebuilt, you do not have to rebuild all of the framing in that object's category. Instead, you can click the **Build Framing for Selected Object** edit button.

Build Framing for Selected Object  is only available for walls using a framed wall type, and for railings specified as Solid. See "Wall Type Definitions" on page 295.

Build Framing for Selected Object  is not available if the selected object has **Retain Framing** specified. See "Rebuilding and Retaining Framing" on page 565.

Framing and the Materials List

Each framing member created in a plan is counted in the Materials List. See "Materials Lists" on page 1247.

Framing can be calculated using one of several reporting methods. See "Structural Member Reporting" on page 1250.

Depending on what a framing member is used for, it may be listed in the Framing (F), Subfloor (SF), or Roofing (R) category. See "Categories" on page 1254.

- Framing includes all wall framing, posts, and General Framing objects.
- Sub Floor lists floor and ceiling framing joists as well as sheathing.
- Roofing includes trusses, rafters, and sheathing.

It is important to note that the floor, ceiling, and roof framing counted in the Materials List may vary considerably depending on whether framing of those types is actually present in the plan:

- If no framing is present in the model, then the required floor, ceiling, and roof framing is estimated. Total lineal footage for various depths of rafters and joists is estimated, rather than a quantity of specific lumber lengths and sizes. Wall framing is not estimated.
- If even one floor, ceiling, or roof framing object exists in the plan, then objects in that category are counted instead of estimated for the Materials List.

Framing Member Types

A variety of framing member types is available for use in Chief Architect: Lumber, I-Joist, Glulam, Engineered Lumber, LVL, Steel I, Steel Box, Solid Concrete, C Channel, and U Channel. In addition, Round is an available Type for posts.

You can select any of these types as the default for floor and ceiling framing, headers, posts and beams, and roof framing. See “Build Framing Dialog” on page 569.

You can also specify the type for individual framing members in their specification dialog. See “General Panel” on page 595.

Changing the framing member type does not affect how framing is placed, but it may change its profile in cross section and 3D views and will affect its description in the Materials List.

The framing member type does not affect the appearance of the material used by a framing member in 3D views. See “Framing Materials and Types” on page 590.

Structural Member Reporting

You can specify whether framing materials are calculated by lineal foot, as a cut list, or as a buy list. See “Structural Member Reporting” on page 1250.

Framing Materials and the Materials Panel

The materials applied to framing objects in 3D views are not used in the Materials List. Materials List information is derived from the structural use of each framing object and its **Type** - not the material seen on its surfaces in 3D views. See “Materials Panel” on page 583.

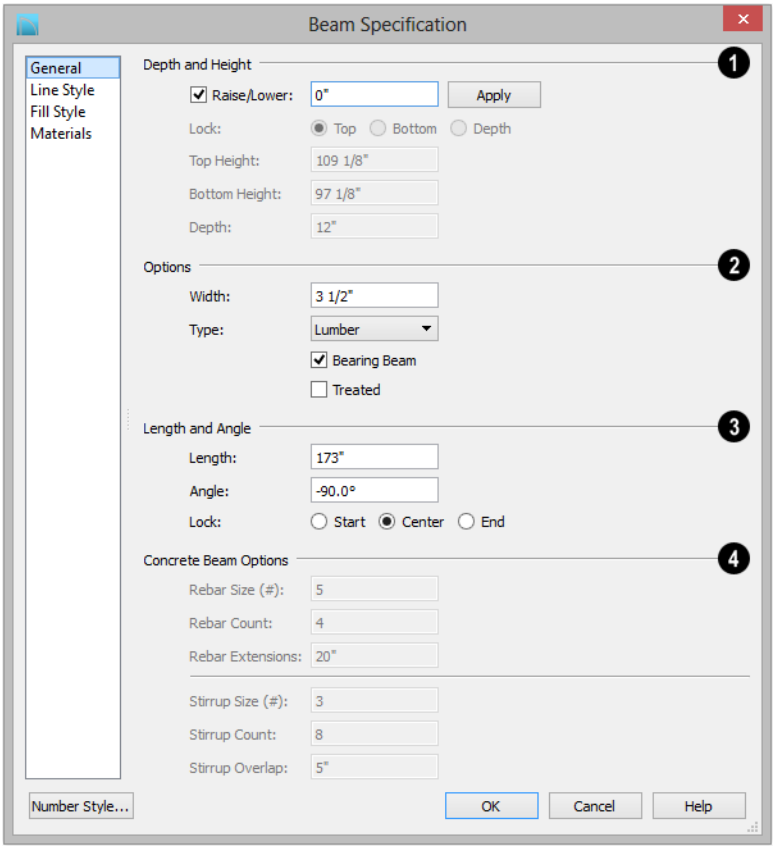
Framing Specification Dialog

Select a floor or ceiling joist, wall stud or rafter and click the **Open Object** edit button to open the **Framing Specification** dialog for the framing member type selected.

The options available in this dialog may vary depending on the type of object selected.

The settings in this dialog are similar to those in the **Beam Specification** dialog. See “Framing with Beams” on page 565.

General Panel



1 **Depth and Height** -

- Check the box beside **Raise/Lower**, then enter a positive value to raise or negative value to lower the framing object from its current position. The amount is added to both the Top and Bottom Heights when you click either **Apply** or **OK**, and does not affect the Depth. When Raise/Lower is checked, the other Depth and Height settings are disabled.
- Select a radio button to specify whether to **Lock** the Top, Bottom, or Total Height of the selected object. Click the radio button beside one of the height values to lock it, then change a value that remains available.
- Specify the **Top Height** of the post, as measured from the first floor subfloor at 0". For a rafter, this is the top height at its low end.
- Specify the **Bottom Height** of the post, as measured from the first floor subfloor at

0". For a rafter, this is the bottom height its low end.

- Specify the **Depth** of the framing object. For a rafter, this is the depth measured perpendicular to the roof plane.
- **Manual Rafter Height** - Normally, the height of each Rafter or Roof Beam end is reset after any move or edit so that it is located just under the roof surface. Check this box to allow the height of the object to be changed. Only available for Rafters and Roof Beams.

❷ **Options** -

- Set the framing member's **Width**, as seen in floor plan view.
- Select a **Type** of structural member from the drop-down list. See "Framing Member Types" on page 593.

Note: Instead of counting individual concrete posts and beams in the Materials List, the total volume of their concrete is calculated. The square footage for beam and post forms is also listed.

- Check **Bearing Beam** to specify the selected Floor/Ceiling Beam as a load-bearing beam. When checked, automatically generated joists run perpendicular to the selected beam and either lap or butt over it, as specified in the **Build Framing** dialog. See "Floor Panels" on page 570. Only available for Floor/Ceiling Beams.
- Check **Treated** to specify that the selected framing member be counted as treated in the Materials List.

❸ **Length and Angle** - Lock the point about which you want like the selected object to resize and/or rotate, then specify its exact length and angle. See "Editing Framing" on page 591.

- Specify the **Length** of the framing object. Rafter length is measured along the top of the rafter, and so is greater than the length measured in floor plan view.
- Specify the **Angle** of the framing object in floor plan view. Changing this rotates the object about the location specified by the radio buttons described below.
- Select **Lock Center** to resize or rotate the object about its center point.
- Select **Lock Start** to resize or rotate the object about the location from which you started drawing the framing object.
- Select **Lock End** to resize or rotate the object about the location where you stopped drawing it.

❹ Specify the **Rebar** and **Stirrups** for concrete beams. Only available when the selected object is a Beam and "Solid Concrete" is selected from the Type drop-down list.

- Specify the **Size Number** for both Rebar and Stirrups.
- Specify the **# Bars**, or number of bars, for both Rebar and Stirrups.
- Specify the length of Rebar **Extensions**.
- Specify the distance that Stirrups **Overlap**.

Line Style Panel

For information about the settings on this panel, see "Line Style Panel" on page 1053.

Fill Style Panel

The settings on the Fill Style panel affect the selected object's appearance in floor plan view. For information about these settings, see "Fill Style Panel" on page 1067.

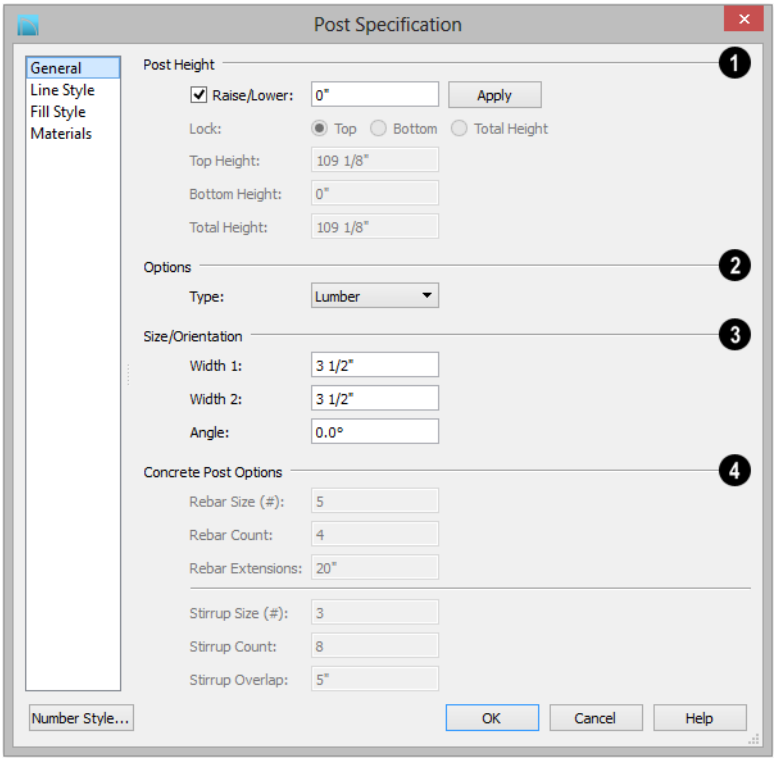
Materials Panel

The default materials on this panel are set in the **Build Framing** dialog. If you change the selected object's framing Type, the material here may update - unless you have specified a non-default material. For information about the settings on this panel, see "Materials Panel" on page 831.

Post Specification Dialog

Select a post and click the **Open Object** edit button to open the **Post Specification** dialog.

General Panel



1 **Post Height** - A post's Top and Bottom Heights are measured from 0" (mm). See "3D Drafting" on page 29.

- Specify the amount to **Raise/Lower** the selected post's Top and Bottom Heights and then click the **Apply** button to update the post without closing the dialog. The post's Total Height is not affected.
- Uncheck **Raise/Lower** to enable the settings that follow.
- Select a radio button to specify whether to **Lock** the **Top**, **Bottom**, or **Total Height** of the selected Post.
- Specify the **Top Height** of the post. Not available when the **Top** is locked, above.
- Specify the **Bottom Height** of the post. Not available when the **Bottom** is locked, above.
- Specify the **Total Height** of the post, which is the distance between the Top and Bottom Heights. Not available when the **Total Height** is locked, above.

2 Select a **Type** from the drop-down list. The Round Type is unique to Posts. See "Framing Member Types" on page 593.

3 **Size/Orientation** -

- **Post Width 1** and **2** - Specify the post width in each dimension. When a Round post is specified, Width 1 refers to its diameter and Width 2 is not available.
- Specify the **Angle** of the post's rotation.

❹ **Concrete Post Options** - Specify the Rebar and Stirrups for concrete posts. Only available when "Solid Concrete" is selected as the Type.

- Specify the **Size Number** for both Rebar and Stirrups.
- Specify the **Rebar Count**, or number of bars, for both Rebar and Stirrups.
- Specify the length of Rebar **Extensions**.
- Specify the distance that Stirrups **Overlap**.

Note: Instead of counting individual concrete posts and beams in the Materials List, the total volume of their concrete is calculated. The square footage for beam and post forms is also listed.

Line Style Panel

For information about the settings on this panel, see "Line Style Panel" on page 1053.

Fill Style Panel

The settings on the Fill Style panel affect the selected object's appearance in floor plan view. For information about these settings, see "Fill Style Panel" on page 1067.

Materials Panel

The default materials on this panel are set in the **Build Framing** dialog. If you change the selected object's framing Type, the material here may update - unless you have specified a non-default material. For information about the settings on this panel, see "Materials Panel" on page 831.

Chapter 17:

Trusses

There are two basic ways to frame a roof. The first is commonly called “stick framing,” or sometimes “handstacking” or “cut-and-stack.” This type of roof incorporates framing such as rafters, ridges, and ceiling joists. See “Framing” on page 561.

The other method is to use prefabricated, engineered roof trusses. Chief Architect allows you to design and display a wide variety of trusses.

Disclaimer

Chief Architect does not engineer trusses. The trusses displayed by Chief Architect are for illustrative purposes only. They can show how trusses are used in your plan, and help you communicate to the licensed engineer who produces your final truss design where you want your trusses and how you would like them to work.

Always have your truss designs approved by a licensed engineer.

Chapter Contents

Truss Defaults

The default settings for floor, ceiling and roof trusses are set in the **Framing Defaults** dialog. Select **Edit> Default Settings** and in the **Default Settings** dialog, select Framing and click the **Edit** button.

- The default settings for truss chord and webbing depth, maximum span, and king-post are set in the **Framing Defaults** dialog. See “Trusses Panel” on page 582.
- The overall depth of individual **Floor/Ceiling Trusses** are based on the thicknesses of the platforms in which they are drawn. See “Floor Panels” on page 570.
- The structure of **Roof Trusses** is determined by the position of the roof plane(s) above and the ceiling plane(s) below. See “Roof Planes” on page 477 and “Ceiling Planes” on page 498.

Floor and Ceiling Trusses

Floor and ceiling trusses can be used instead of joists to frame platforms. As with manually-drawn floor and ceiling framing, the presence of a room above determines whether a floor or ceiling truss is drawn. For example, a truss drawn on the first floor of a single story home will be a ceiling truss, while a truss drawn on the first floor of a two-story building will be a floor truss for the 2nd floor.

Floor and ceiling trusses can only be drawn manually. To place a floor or ceiling truss in your plan, select **Build> Framing> Floor/Ceiling Truss**, then click and drag within a floor or ceiling platform in floor plan view. See “Drawing Trusses” on page 603.

The Trusses panel of the **Build Framing** dialog contains default settings for floor and ceiling trusses. See “Trusses Panel” on page 582. These default settings can be overridden by the settings in the **Floor/Ceiling Truss Specification** dialog. See “Floor/Ceiling Truss Specification Dialog” on page 620.

Roof Trusses

Roof trusses can be used instead of or in combination with rafters to frame roofs and ceilings.

Roof trusses can only be drawn manually, and can only be created where roof and ceiling planes already are present. Select **Build> Framing> Roof Truss**, then click and drag in floor plan view within one or more roof planes to manually draw a roof truss. See “Drawing Trusses” on page 603.

If you intend to use roof trusses, you need first to build your roof planes with this in mind. Before building the roof, select the **Trusses (no Birdsmouth)** checkbox in the

Build Roof dialog. When this is checked, roof plane thickness is based on the default **Top Chord Depth** set in the **Framing Defaults** dialog. See “Trusses Panel” on page 582.

If **Trusses (no Birdsmouth)** is not checked, the roof plane thickness is determined by the rafter **Depth** setting on the Roof panel of the **Framing Defaults** dialog. If you plan to use both trusses and rafters, you should leave this unchecked.

Roof Truss Placement

A roof truss can only exist in the space defined by the roof planes above it and the ceiling planes below it. This is because the shape of a truss is defined by the location of the roof and the ceiling.

If **Ceiling Over This Room** is unchecked in the **Room Specification** dialog, you must manually draw a **Ceiling Plane**  before a roof truss can be drawn over that room. See “Structure Panel” on page 348.

If the program either does not find both roof and ceiling planes, or if there is not enough room between them, to model a truss, a warning message displays. For example, if you draw a truss in a roof overhang where there is no ceiling, this message displays: “Roof and ceiling surfaces too close together or cannot be found, so cannot make truss.”

The incorrect truss may still display in floor plan view with a label of the form “TR-*”. If it does, it should be deleted or moved. See “Editing Trusses” on page 605.

One or both ends of a truss may be truncated if they are drawn across another truss. If this happens, it will end exactly on the surface of the existing truss, producing a girder truss. See “Girder Trusses” on page 617.

Trusses can end on interior walls. You can draw a truss that partially crosses the building by starting and/or ending it within 24” (600mm) of an interior wall. The truss extends over the wall’s Main Layer. Its end lines up with the Main Layer surface on the far side of the wall.

Roof Truss Webbing

The webbing in a newly drawn truss is controlled by the **Top Chord** and **Bottom Chord** settings in the **Framing Defaults** dialog. See “Trusses Panel” on page 582.

Changing these default values may cause different truss configurations such as kingpost, queenpost, fink, double fink, fan, howe, or double howe to be represented.

Drawing Trusses

Trusses cannot be generated automatically: the must be manually drawn and then replicated. All trusses are drawn similar to the way CAD lines are and can be drawn in floor plan view only. See “Draw Line” on page 1048.

To draw and replicate trusses

1. Select the either the **Floor/Ceiling Truss**  or **Roof Truss**  tool, then click and drag within either a floor/ceiling platform or one or more roof planes.

- Roof trusses seek an exterior wall and adjust their length automatically.
- Floor/Ceiling trusses will snap to the wall surfaces, the exterior surface of a wall's Main Layer, as well as to a variety of CAD-based objects, and can be drawn to any length.

2. Reposition the truss:
   - Floor/ceiling trusses are often positioned relative to an exterior wall or **Framing Reference Marker**  . See "Framing Reference Markers" on page 583.
   - Roof trusses are can be positioned over a gable end wall or at the ridge end of a hip.
3. Open the truss's specification dialog and edit its settings to meet your needs. See "Roof Truss Specification Dialog" on page 617 or "Floor/Ceiling Truss Specification Dialog" on page 620.
4. Make multiple copies of the truss at specified intervals using the **Multiple Copy**  edit tool.

The copies of Roof Trusses automatically conform to the structural conditions in their new locations. As a result, replicated Roof Trusses and their labels may be different from the original. See "Truss Labels" on page 607.

Unlike Roof Trusses, Floor/Ceiling Trusses do not conform to new structural conditions when they are either moved or copied. See "Moving Trusses" on page 606.

To replicate trusses using Multiple Copy

1. Select the truss to be copied in floor plan view.
2. Click the **Multiple Copy**  edit button.
3. Click the **Multiple Copy Interval**  edit button to open the **Multiple Copy** dialog. See "Multiple Copy" on page 171.
4. Enter the correct spacing in the **All Trusses** box. Once set, click **OK**.
5. Select the truss and use the Move edit handle to drag it perpendicularly. The pointer becomes a four-headed arrow ✣ when it is over the Move handle.
6. New trusses appear as you drag. Drag as far as necessary to produce all desired trusses. Each truss is created according to the particular Roof/Ceiling/Truss Base planes above and below it.

Displaying Trusses

The display of trusses and their labels is controlled in the **Layer Display Options** dialog. See "Layer Display Options Dialog" on page 148.

Truss labels display in floor plan view, cross section/elevation views, and the Truss Detail, and are used in the Materials List. See "Truss Labels" on page 607.

In 3D Views

The easiest way to view trusses in 3D is to use either the **Orthographic Framing**

Overview or **Perspective Framing Overview** tool, which display the model using the 3D Framing Set layer set. See “Framing Overview” on page 880.

Trusses can display in other 3D and cross section/elevation views, although by default they are not set to do so. If you wish to see trusses in these views, turn on the “Framing, Trusses” layer in the appropriate layer set.

You can create exposed trusses by placing roof and ceiling planes to produce the desired truss structure, drawing the trusses, and then removing the ceiling. See “Vaulted and Cathedral Ceilings” on page 343.

To reveal trusses covered by other objects, you can use the **Delete Surface** tool. See “Delete 3D Surface” on page 888.

In the Truss Detail

All the floor, ceiling and roof trusses present in the current plan display in the Truss Detail, which is a special CAD Detail window in which a diagram of each truss configuration present in the plan is automatically generated. See “Truss Details” on page 607.

In the Materials List

All trusses are listed under the Roofing category in the Materials List. Their labels appear in the Size column, along with their length. See “The Materials List Tools” on page 1248.

Editing Trusses

Trusses can be selected like other objects in Chief Architect. See “Selecting Objects” on page 180 for more information.

Once selected, trusses can be edited using dimensions, their edit handles, the edit toolbar buttons, or by opening them for specification.

When **Start and End Indicators** are enabled in the **Preferences** dialog, a truss selected in floor plan view will display an S and an E at its start and end points. See “Edit Panel” on page 110.

Trusses can be deleted all at once in the **Delete Objects** dialog. See “Delete Objects Dialog” on page 249.

Using Dimensions

Trusses can be relocated precisely using dimensions. See “Moving Objects Using Dimensions” on page 989.

Using the Edit Handles

When selected in floor plan view, trusses edit like CAD lines. See “Editing Line Based Objects” on page 184.

The depth of truss chords can be changed in the truss’s specification dialog, but not using the edit handles.

When selected in Cross Section/Elevation views and 3D views, trusses edit like closed polylines. See “Editing Closed-Polyline Based Objects” on page 198.

Like joists or rafters, trusses can be selected and moved in 3D views. The only difference is that the **Lock Truss and Webbing** setting in the **Roof Truss Specification** dialog prevents the truss from moving back to between the roof and ceiling planes the next time it is edited or otherwise changed.

Using the Edit Tools

A selected truss can be edited in a variety of ways using the buttons on the edit toolbar. See “The Edit Toolbar” on page 35.

Moving Trusses

Trusses can be moved using their Move edit handle, the **Multiple Copy** edit tool, or the **Transform/Replicate Object** edit tool.

When a **Roof Truss** is moved, it snaps to two things:

- If drawn along an exterior wall, it snaps so that its outer surface is flush with the outer surface of the wall's Main Layer.
- The center line can snap to the edge or corner of a nearby roof plane.

To prevent this, special snapping, check **No Special Snapping** in the **Roof Truss Specification** dialog. See “General Panel” on page 618.

In addition, when a **Roof Truss** is moved, its shape updates to conform to the structural conditions defined by the roof and ceiling in its new location. As a result, a Roof Truss’s label could change when the truss is moved to a new location. To prevent this from occurring, check **Lock Truss Envelope** in the **Roof Truss Specification** dialog before moving the truss. See “Roof Truss Specification Dialog” on page 617.

This is not the case with **Floor/Ceiling Trusses**: when moved to a location with a different platform structure, a Floor/Ceiling Truss will not update to conform to its new surroundings. It is important to draw, position, and copy them within the same floor or ceiling platform structure. If a different Floor/Ceiling Truss depth is needed, a new truss should be drawn.

Editing Truss Envelopes

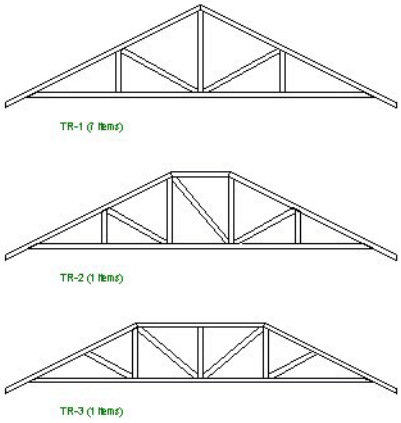
When a truss is viewed at a 90° angle in a 3D view, its envelope, or shape, can be edited. Click on the truss to select it and edit handles display on a surrounding polyline. Change the shape of this polyline and the truss regenerates inside it. Use this function to change overhang or truss end details rather than the overall truss shape.

The **Lock truss and webbing** attribute is set after editing so that the truss does not reshape itself back between the roof and ceiling planes the next time it is edited or otherwise changed. See “Roof Truss Specification Dialog” on page 617.

Truss Details

A Truss Detail is a special CAD Detail window in which a diagram of each truss configuration present in the plan is drawn. To open a plan's Truss Detail, select **CAD>**

CAD Detail Management . See "CAD Details" on page 1085.



A Truss Detail is created autuomatically when a truss is created, and displays all trusses present in the current plan. If multiple trusses are identical, only one diagram is drawn. Each truss's label displays at the lower left of the truss diagram The quantity of each type is also listed.

In a Truss Detail, individual chords and webbing are represented using framing members. The truss label information is presented in a Text object.

The trusses in a Truss Detail are linked to the actual trusses in the plan. If you move a truss in a Truss Detail, it will move in the model as well. To modify the information in a Truss Detail without affecting the model, use **CAD Detail From View** to create a line-drawn copy first. See "CAD Detail from View" on page 1086.

> Note: The Truss Detail is for display of trusses only. Editing the members that make up the trusses in the Truss Detail is possible but not recommended.

To restore an edited Truss Detail diagram

1. Delete any new members you have drawn in the detail view.
2. In floor plan view, select the truss and click the **Open Object** edit button to open the **Roof Truss Specification** dialog.
3. Check **Force Truss Rebuild** and click **OK** and the truss regenerates along with its Truss Detail diagram.

Truss Labels

Labels for roof trusses display in floor plan view when the "Framing, Roof Truss Labels" layer is turned on in the **Layer Display Options** dialog. Similarly, floor and ceiling trusses display in the floor plan view when the "Framing, Floor/Ceiling Truss Labels" is turned on. Truss labels use the Text Style associated with their layer. See "Layer Display Options Dialog" on page 148.

Note: Truss labels only display when the trusses they identify are also displaying. See “Displaying Trusses” on page 604.

Truss labels also display in the Truss Detail, can be set to display in cross section/ elevation views, and are used in the Materials List, where they are listed under the Size column. See “Displaying Trusses” on page 604.

By default, truss labels are centered on the truss that they identify. If the truss is moved or deleted, the label is moved or deleted as well. Truss labels have their own Move edit handle which displays when their truss is selected. See “Editing Trusses” on page 605.

Truss labels obey the **Minimum Display Size** for labels set in the **Preferences** dialog. See “Appearance Panel” on page 90.

Truss Label Format

Roof truss labels use the format TR-X, where X is a number indicating the order in which each distinct truss configuration was created. For example, the first truss type created in a plan is labeled TR-1; the second, TR-2; and so on.

Floor and ceiling trusses are labeled FTR-X and use the same numbering convention.

If two or more trusses share the same configuration with identical chords and webbing, they will also share the same truss label.

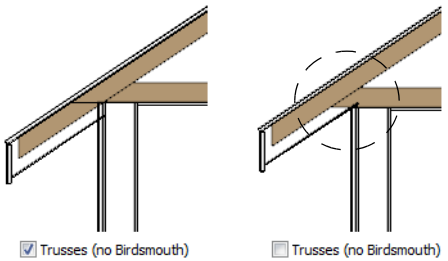
Mixing Trusses with Stick Framing

After the trusses for your roof are in place, additional roof framing can be added. See “Roof Framing” on page 563.

Framing Defaults

Roof planes created using defaults set up for trusses will continue to use those defaults when stick framing is added. If you intend to add rafters, the roof planes should be created while **Trusses (no Birdsmouth)** is unchecked in the **Build Roof** dialog. See “Roof Panel” on page 469.

Leaving **Trusses (no Birdsmouth)** unchecked has a similar effect on roof trusses to that of **Raise Off Plate**: roof truss bottom chords may be longer than expected and their top chords, higher. This is necessary to create the space needed to accommodate the rafter’s depth.



Automatic Framing

The **Build Framing** dialog can be used to generate roof framing in areas not framed by the trusses, including gable eaves and the ends of hips. Note that rafters will not generate closer than 14” (350mm) to an existing, parallel truss.

Automatically generated roof framing will not extend through an existing roof truss. Instead:

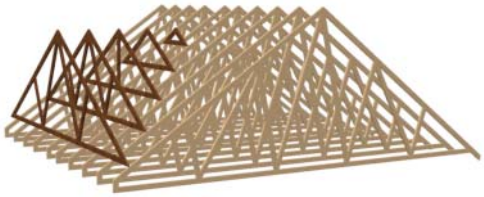
- Automatically produced rafters generate inward from the eave until they butt into a truss.
- Blocking for standard and hip ridges generates as individual rafter objects between trusses.
- Lookouts will pass over **Reduced Gable** trusses and will end at the next truss in. See “Roof Truss Specification Dialog” on page 617.
- Hip ridges and common rafters at the end of a hip roof will pass over a **Drop Hip Truss**. See “Drop Hip or California Hip” on page 614.

Manually Drawn Framing

Unlike automatically generated roof framing, manually drawn rafters will extend through trusses. Rafters can also snap to truss edges as they are being drawn or when they are being edited. See “Manual Framing” on page 564.

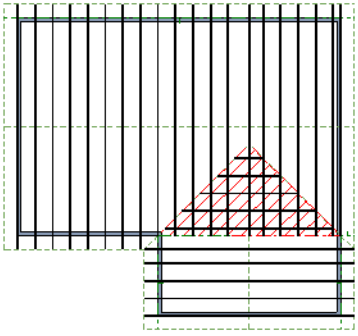
Truss Bases

A **Truss Base** is a closed polyline that defines the area in which valley fill roof trusses are to be built across and above the tops of normal, full size roof trusses.



Valley fill trusses (shown darker)

Valley fill trusses are often used in reverse gable conditions, where a roof ridge builds onto a roof plane that has a ridge running at a different angle. A classic example of this is an “L” shaped house with a gable roof. The main portion of the house is trussed through from end to end with normal trusses. Starting at its outside end, the smaller wing is trussed with normal trusses until the main house is reached. Where the wing’s roof builds over the main house, valley fill trusses are used.



Truss Base (in red) with valley fill trusses

Normal roof trusses are built between roof planes and ceiling planes. See “Roof Trusses” on page 602. Valley fill roof trusses created using a Truss Base, on the other hand, are built between a larger, supporting roof plane below and overbuilt roof planes above.

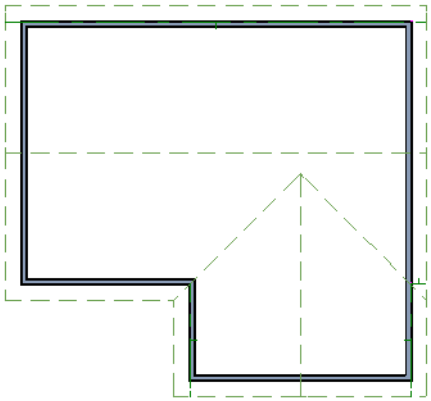
Truss bases are drawn and can be edited much like roof planes, with some limitations.

See “Truss Base Specification Dialog” on page 612.

To work correctly, a truss base must be in the same plane with the underlying roof plane, so their baselines should be colinear.

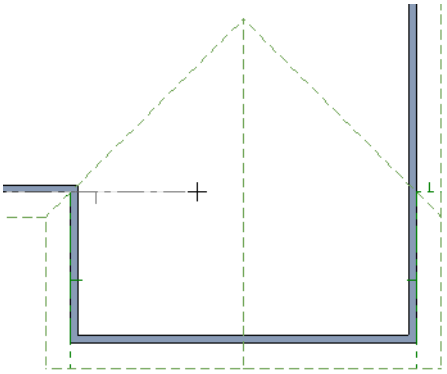
To create a truss base

1. Create an L-shaped house with a reverse gable roof.

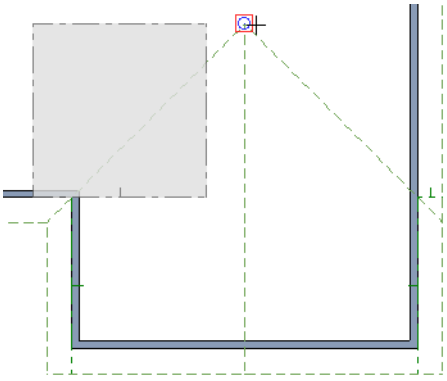


The triangular area of overlap between the main roof and the gable must be defined as a Truss Base.

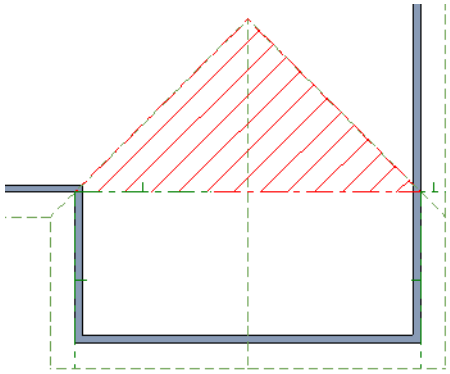
2. Select **Build> Roof> Truss Base** , then draw a baseline that is colinear with the baseline of the roof plane that will support the overbuild. See “The Baseline” on page 477.



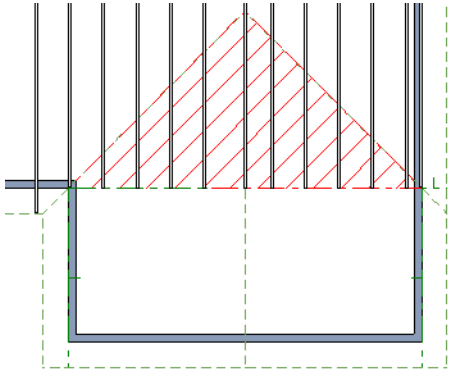
3. Move the pointer and click on the point where the gable intersects the main roof.



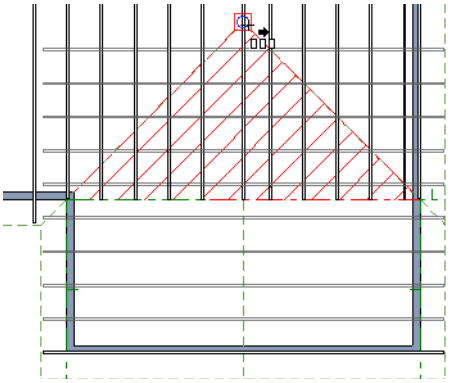
4. A rectangular Truss Base is created. Use its edit handles to reposition it and change its shape as needed.
   - The two angled sides should be colinear with the roof valleys.
   - The straight bottom edge must remain colinear with the Truss Base baseline and that of the underlying roof plane.



5. Draw the normal **Roof Trusses** across the length of the main portion of the house. See “Roof Trusses” on page 602.
   - The trusses of the underlying roof generate through the Truss Base, but stop at the Truss Base’s bottom edge so that no overhang is produced in that area.

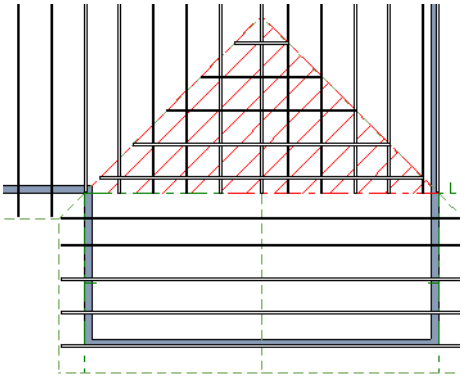


6. When the trusses of the underlying roof are in place, draw the first truss of the reverse gable and position it over the outer wall.
7. With this truss selected, click the **Multiple Copy** edit button and drag the Move edit handle up to the peak of the Truss Base.
   - Copies of the truss appear as you drag the pointer.
   - The truss copies all appear to be full length until you release the mouse.



Trusses drawn perpendicular to the baseline of a Truss Base go under the Truss Base. Trusses drawn parallel to the baseline of the Truss Base become valley fill trusses drawn over it..

8. When you release the mouse button, any copies drawn in the Truss Base are clipped by it.



Editing Truss Bases

A selected truss base can be edited in floor plan view using edit handles, edit toolbar buttons, and the **Truss Base Specification** dialog.

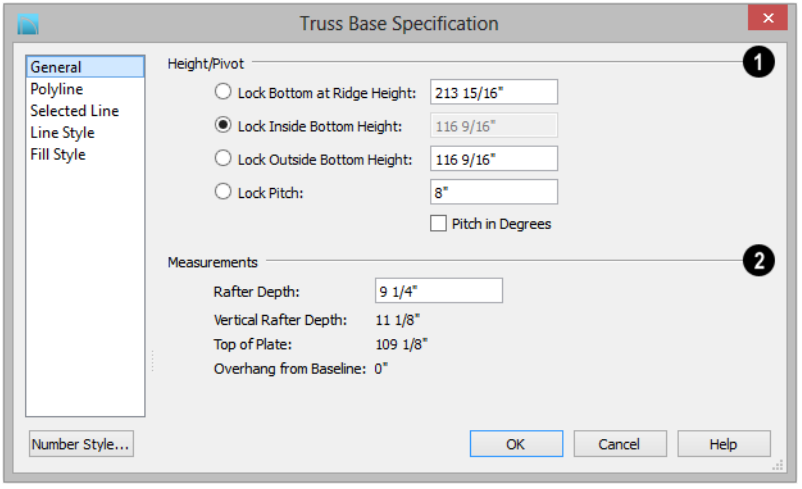
Truss bases can be edited much the way roof planes can, with some limitations. They are not actual 3D objects, so they cannot be assigned materials, moldings or other design attributes; however, their shape, height, pitch and display can be edited. See “Editing Roof and Ceiling Planes” on page 480.

Truss Base Specification Dialog

Select a truss base and click the **Open Object** edit button to open the **Truss Base Specification** dialog.

This dialog is almost identical to the **Roof Plane Specification** dialog. Although truss bases are not the same as roof planes, Chief Architect handles the positioning of the two in a similar manner.

General Panel



Four values define 3D orientation of a truss base: Ridge/Top Height, Baseline Height, Fascia Top Height, and Pitch. These values are related; if one is changed, the others change as well.

These values are measured from the first floor elevation of 0’ 0". Baseline Height and Pitch should be set identical to those for the roof plane that surrounds the truss base.

Click the radio button to the right of a value to define it as the pivot point for the truss base and prevent it from being changed.

Changing these values does not affect the 2D representation of the truss base.

1. Specify the **Height/Pivot** of the selected truss base.

- Specify the **Ridge/Top** height, which is the truss base's highest point.
- Specify the **Baseline** height.
- Specify the **Fascia top** height, which is the truss base's lowest point. Usually, this is the same height as the Baseline.
- Specify the **Pitch** of the selected truss base. If you lock the pitch and change one of the Height values, the truss base moves vertically keeping the same slope.
- Check **Pitch in Degrees** to display pitch in degrees rather than run-and-rise units.

2. Specify the **Measurements** associated with the selected truss base.

- The **Rafter Depth** value should be the same as that for the surrounding roof plane so the selected truss base can align correctly with the surrounding roof. The truss base itself has no rafters.
- The **Vertical Rafter Depth**, **Top of Plate** and **Overhang from Baseline** values are shown for reference.

Options Panel

Click **Up** to display the truss base up one floor, or click **Down** to show it on the floor below. If no higher or lower floor exists, the option is not available.

Polyline Panel

The Polyline panel indicates the length of the truss base's **Perimeter** and its enclosed **Area**. Truss bases have no thickness, so they do not have a **Volume**.

Selected Line Panel

For information about the Selected Line panel, see "Line Panel" on page 1052.

Line Style Panel

The settings on the Line Style panel affect the appearance of the selected Truss Base in floor plan view. For information about these settings, see "Line Style Panel" on page 1053.

Fill Style Panel

The settings on the Line Style panel affect the appearance of the selected Truss Base in floor plan view. For information about the settings on this panel, see "Fill Style Panel" on page 1067.

Hip Trusses

A variety of different hip truss configurations can be created, including:

- Step Down Hip trusses
- Drop Hip or California Hip trusses
- Subgirder Hip trusses

Step Down Hip

Step Down hip roofs are the quickest style of hip truss framing to produce.

To create a step down hip truss system

1. First, draw a **Roof Truss** at the apex of the triangular hip roof plane. When **Object Snaps** are enabled, it will snap into position. See “Object Snaps” on page 160.
2. Select the truss; click the **Multiple Copy** edit button; and click and drag the Move handle down into the hip to create copies at regular intervals. See “To replicate trusses using Multiple Copy” on page 604.
3. Stop when the height of the hip truss reaches a reasonable minimum.
4. Using the **Roof Truss** tool, draw hip jacks along the hip ridge from the last truss out into the overhang.
5. Using the **Roof Truss** tool, draw a jack truss from the intersection of the last hip truss and the hip jack to the eave.
6. Select the jack truss; click the **Multiple Copy** edit button; and lay out jack trusses up to the other hip jack.

Drop Hip or California Hip

A Drop Hip, or California Hip, system uses trusses with lowered top chords to support stick frame hip ridges and common rafters.

To create a drop hip truss system

1. Start a drop hip truss system as you would a step down hip system.
2. When the hip trusses are drawn, group select them, open the **Truss Specification** dialog, and select the **Drop Hip Truss** checkbox. See “General Panel” on page 618.
3. Use the **Build Framing** dialog to produce the common rafters, and the short joists at the hip end. See “Build Framing Dialog” on page 569.

The amount that the top chord is lowered is derived from the rafter **Depth** on the Roof panel of the **Framing Defaults** dialog. Because both common rafters and hip ridges must pass over this truss, the ridge depth should be set equal to that of the rafter depth.

Subgirder Hip

Subgirders are the partial trusses that butt into the doubled truss at the end of the main run.

To create a subgirder truss system

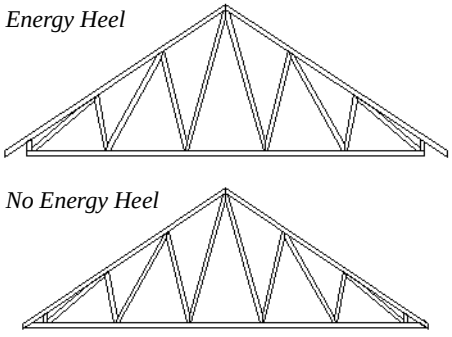
1. Draw a **Roof Truss** where the hip apex meets the ridge.
2. Double it by drawing a second truss on the far side from the hip section.
3. Using the **Roof Truss** tool, draw the first subgirder from the hip apex out to the eaves.
4. Select it and use the **Multiple Copy** edit button to make copies in both directions. Stop when the height of the subgirders reach a reasonable minimum.
5. Finish off with hip jacks and jack trusses as in a step down hip system.

Special Roof Trusses

A number of special purpose roof trusses can be created in Chief Architect.

Energy Heels

To provide more space for ceiling insulation at the exterior walls, roofs are sometimes raised off of the top plate with an energy heel. To create a truss with an energy heel, a vertical member is added over the supporting wall and the bottom chord stops there rather than extending into the overhang.

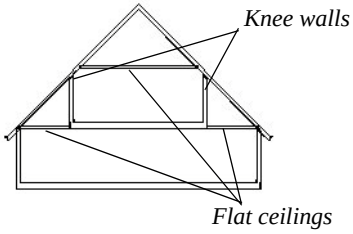


To create an energy heel

1. In the **Build Roof** dialog:
   - Check **Trusses (no Birdsmouth)**;
   - Uncheck **Automatic Birdsmouth Cut**;
   - Specify the desired energy heel height as a positive **Raise Off Plate** value.
2. Automatically generate or manually draw the roof planes.
3. Draw and position the first truss. See “To draw and replicate trusses” on page 603.
4. Open this truss’s specification dialog and check **Energy Heel** and **Force Truss Rebuild**, then click **OK**. See “Roof Truss Specification Dialog” on page 617.
5. Use the **Multiple Copy** edit tool to replicate the truss as needed.

Attic Trusses

Attic trusses, a variation of roof trusses, can be drawn if a plan contains an Attic area on both sides and above an upstairs room, such as in a Cape Cod style home. The following is a typical cross section view of a building with attic trusses:



Certain conditions must be met before an attic truss can be built:

- The structure should be sufficiently wide to allow for a loft and attic spaces.
- The loft area must be on a living floor. It cannot be on the Attic floor. See “The Attic Floor” on page 433.
- The loft area must have Attic rooms on both sides. See “Room Types” on page 329.
- The loft area must be separated from the Attic rooms on both sides by Knee Walls. See “Knee Walls” on page 290.

- A flat ceiling in the loft area and a floor below must be present.
- The roof pitch must be steep enough to provide appropriate ceiling height for the loft area. Typical pitches for such a condition are 8 in 12 or greater.
- The roof should bear on the walls of the floor below the loft area and form continuous planes from ridge to baselines.

Once these conditions are met, a roof truss is ready to be designated as an attic truss.

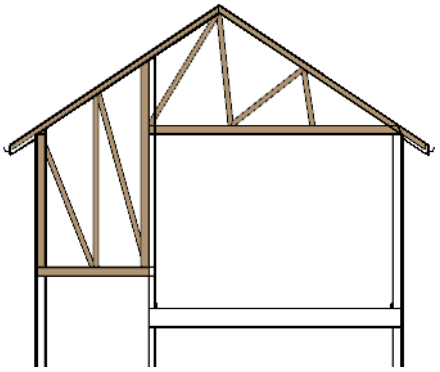
1. Select the roof truss in floor plan view and click the **Open Object** edit button to display the General panel of the **Roof Truss Specification** dialog.
2. Select the **Attic Truss** checkbox and click OK. See "Roof Truss Specification Dialog" on page 617.

The final product can be scrutinized in a framing overview or in the Truss Detail window. See "Truss Details" on page 607.

Ceiling Steps

If a roof truss is drawn across areas with different ceiling heights on the top floor of a plan, the bottom chord will automatically step to accomodate those ceiling heights.

In addition, a roof truss can be made to recognize ceiling heights on two different floors: one on the top floor of the structure and one on the floor below.



To create a ceiling step

1. The area in which the step is to be produced must be a separate room specified as an "Attic". See "Room Types" on page 329.
2. Select the roof truss in floor plan view and click the **Open Object** edit button to display the General panel of the **Roof Truss Specification** dialog.
3. In the **Ceiling Step** field, specify the distance that the bottom chord must step down to locate the ceiling platform of the room beneath the Attic.
   - If the Ceiling Step value will place the bottom of the stepped bottom chord within the ceiling platform, a step will be created to the bottom of the ceiling platform.
   - Check **Force Truss Rebuild**, then click **OK** to regenerate the truss.
4. Use the **Multiple Copy** edit tool to replicate the truss within the area of the roof plan requiring a step.

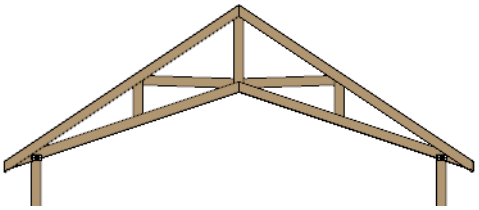
For best results, you may want to make sure that the Bottom Chord is the same depth as

the ceiling platform framing. See “Structure Panel” on page 348.

Scissors Trusses

Trusses drawn between roof planes and sloping ceiling planes of a different pitch than the roof are called Scissor trusses. See “Ceiling Planes” on page 498.

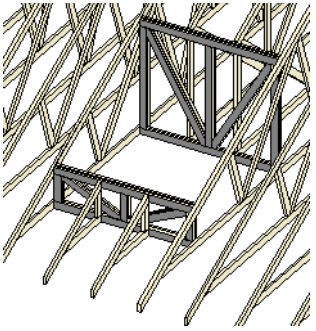
The following is an example of a scissors truss drawn beneath a 8 in 12 pitch gable roof and above 4 in 12 pitch ceiling planes.



Girder Trusses

Girder trusses provide support for trusses that are cut short, for example, by a reverse gable or a skylight. They are often doubled- or tripled-up for strength.

Draw a new truss from an existing truss to the roof edge, as you would to draw a hip or end jack truss; or draw a truss between two trusses, forming a girder. This may be necessary for a large opening, such as a skylight.



Trusses cannot be drawn through each other. If a truss is drawn through an existing truss, the program automatically shortens it so that it butts into the existing truss.

Roof Truss Specification Dialog

Select a roof truss or group of roof trusses and click the **Open Object** edit button to open the **Roof Truss Specification** dialog.

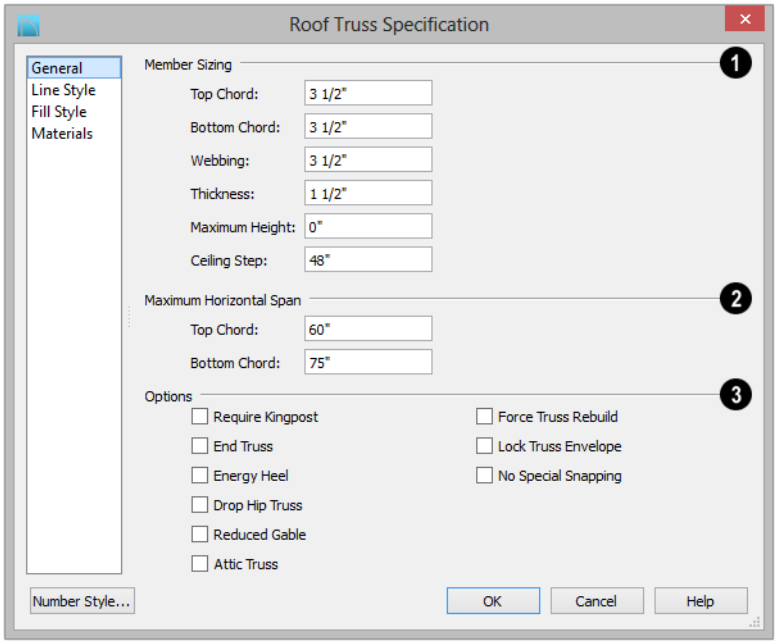
The **Roof Truss Specification** dialog allows you to redefine parts of an existing truss or group of trusses. Some settings affect only individual trusses, such as gable trusses, while others affect the whole group.

The shape or volume of a roof truss is controlled by the roof planes above it and the ceiling planes below it. It cannot be changed from this dialog.

Truss webbing is drawn for representational purposes only and as with trusses in Chief Architect in general, is not engineered.

General Panel

The defaults for many of the settings on the General panel are set in the **Build Framing** dialog. See “Trusses Panel” on page 582.



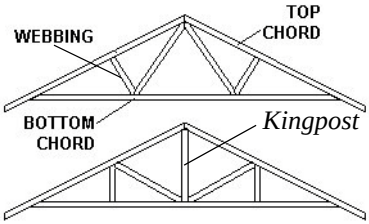
1 **Member Sizing** - Specify the sizes of the different members that form the selected truss.

- Specify the depths of the **Top Chord** and **Bottom Chord**.
- Specify the depth of the **Webbing**.
- Specify the **Thickness**, which is the width of the truss in floor plan view.
- Specify the **Maximum Height** of the selected truss.
- Specify the **Ceiling Step** of the selected truss, which is the maximum distance its bottom chord can step down to locate a ceiling on the floor below the top floor. See “Ceiling Steps” on page 616.

2 Specify the **Maximum Span**, which is the maximum horizontal distance between supports along the **Top Chord** and the **Bottom Chord**. When these values are equal, the truss webbing often appears more regular.

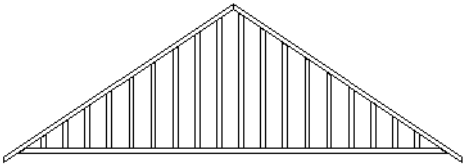
3 Additional **Options** allow you to create special truss types.

- Check **Require Kingpost** to require a vertical webbing member from the roof peak to the bottom chord.



If Require Kingpost is unchecked, a kingpost may still be supplied, depending on the truss length and the specified maximum spans.

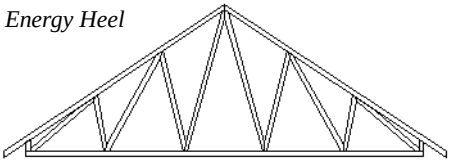
- Check **End Truss** to replace the webbing with vertical members positioned and spaced the same as the wall studs below.

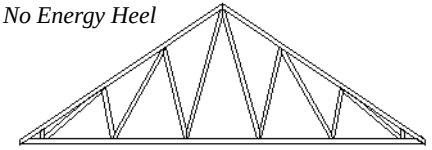


End Truss with vertical supports

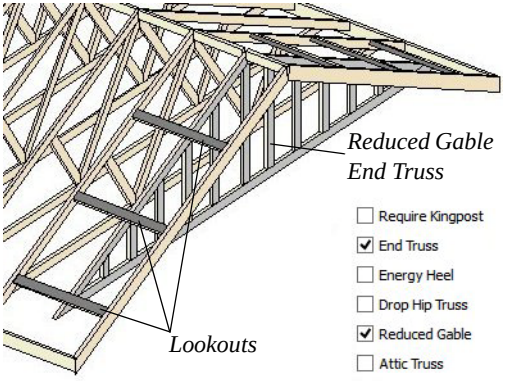
If an End Truss is in the same position as a gable attic wall, it replaces the framing that would otherwise be produced for that wall.

- Check **Energy Heel** to model remove the bottom chord from the overhang area. For an energy heel to be modeled, the roof should also be raised off the top plates by at least 7", depending on the roof pitch. See "Energy Heels" on page 615.





- Check **Drop Hip Truss** to lower the flat top of a truss in the hip area of a roof so that common rafters and hip ridges can pass over and be supported by it. See "Drop Hip or California Hip" on page 614.
- Check **Reduced Gable** to lower the top chord of an End Truss so that lookouts can pass over the truss. Reduced trusses do not have overhangs, but you can draw short rafters drawn at the ends of the truss.



- Check **Attic Truss** to specify an attic truss. See "Attic Trusses" on page 615.
- Check **Force Truss Rebuild** to rebuild the truss envelope based on the current state of the ceiling and roof when you

click **OK**. Not available if Lock Truss Envelope is checked.

- Check **Lock Truss Envelope** to lock the size and configuration of the selected truss. If a locked truss is moved, it will maintain its original settings and will not fit properly if the new roof and ceiling conditions are different from the original.
- Check **No Special Snapping** to prevent the selected truss from snapping along its long edge to a wall's Main Layer or to the corner of a roof plane. If enabled, **Object Snaps** may still occur. See "Object Snaps" on page 160.

Line Style Panel

The settings on this panel affect the appearance of the selected truss in floor plan view only. See "Line Style Panel" on page 1053.

Fill Style Panel

The settings on this panel affect the appearance of the selected truss in floor plan view. See "Fill Style Panel" on page 1067.

Materials Panel

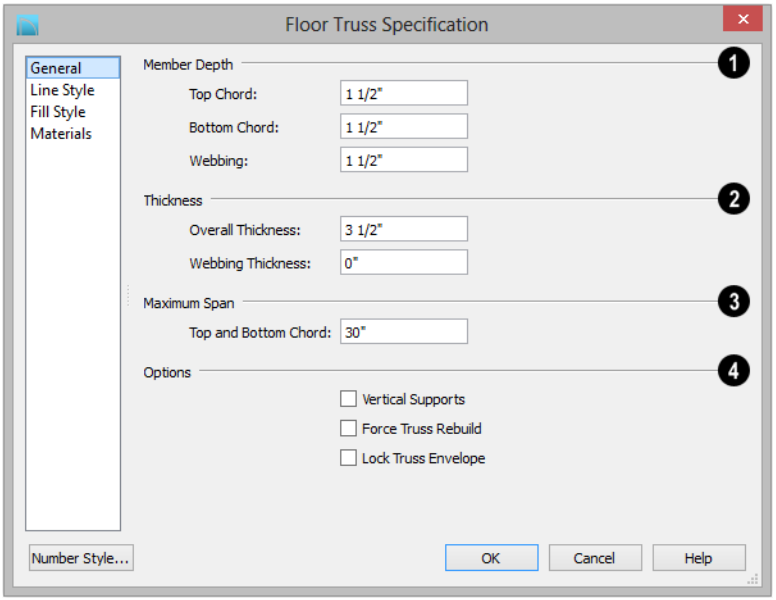
The settings on the Materials panel affect the appearance of the selected truss in 3D views. See "Materials Panel" on page 831.

Floor/Ceiling Truss Specification Dialog

To open the **Floor** or **Ceiling Truss Specification** dialog, select a floor truss in floor plan view and click the **Open Object** edit button. See "Floor and Ceiling Trusses" on page 602.

Default values for trusses are set in the **Build Framing** dialog. See "Trusses Panel" on page 582.

General Panel



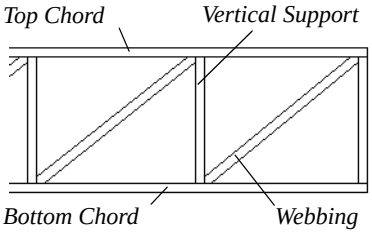
1 Specify the **Member Depth** of the different components of the selected truss.

- Specify the depth of the **Top Chord**.
- Specify the depth of the **Bottom Chord**.
- Specify the depth of the **Webbing**.

2 Specify the **Thickness** of the truss's chords and webbing.

- Specify the **Overall Thickness** of the selected truss.
- Specify the **Webbing Thickness** thickness of the webbing.

3 Specify the **Maximum Span**, which is the maximum horizontal distance between supports along the **Top and Bottom Chord**.



4 **Options** -

- Check **Vertical Supports** to use vertical supports in the selected truss.
- Check **Force Truss Rebuild** to rebuild the truss envelope based on the existing floor or ceiling platform when you click OK. Not available if Lock truss envelope is checked, below.
- Check **Lock Truss Envelope** to lock the size and configuration of the truss. A

locked truss which has been relocated will maintain its original settings.

Line Style Panel

The settings on this panel affect the appearance of the selected truss in floor plan view only. See “Line Style Panel” on page 1053.

Fill Style Panel

The settings on this panel affect the appearance of the selected truss in floor plan view. See “Fill Style Panel” on page 1067.

Materials Panel

The settings on the Materials panel affect the appearance of the selected truss in 3D views. See “Materials Panel” on page 831.

Chapter 18:

Electrical

The electrical plan shows the location of all electrical objects such as lights, switches, outlets, smoke detectors and vent fans. Basic wiring diagrams show which objects share circuits and the locations of the controlling switches.

Electrical objects can be displayed in 2D and 3D views. Some electrical light fixtures also add light sources to 3D and ray trace views. See “Lighting” on page 914.

Usually, the electrical plan is one of the last additions to a plan since the position of most electrical objects is determined by the location of walls, cabinets and other objects.

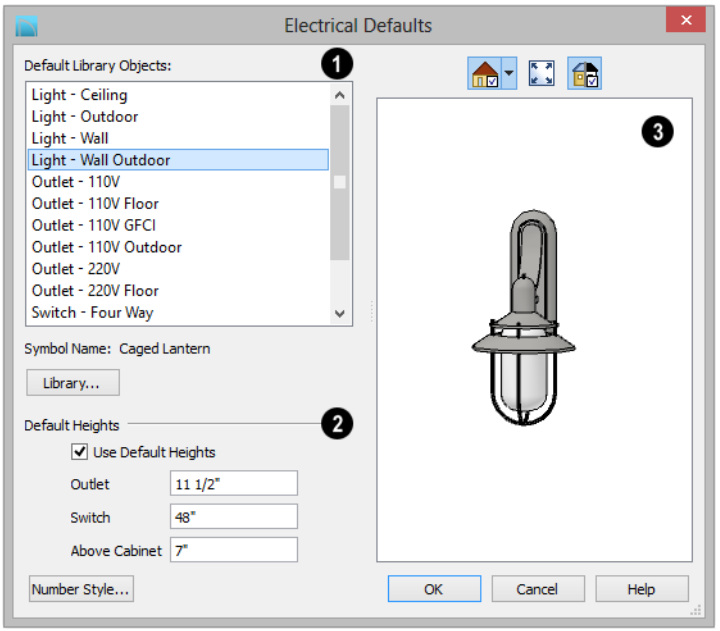
Building requirements vary throughout the country and around the world. It is your responsibility to comply with local codes.

Chapter Contents

Electrical Defaults

Default Settings for electrical objects control which symbols are placed in the current plan when the Electrical Tools are used and can be accessed by selecting **Edit> Default Settings** from the menu or by double-clicking the **Electrical Tools** button. See “Default Settings” on page 72.

Default heights of individual objects can be overridden in the **Electrical Service Specification** dialog. See “Electrical Service Specification Dialog” on page 630.



1 The **Default Library Objects** are the objects created using the Electrical Tools. Select an item in the scrollable list to see and edit its settings.

- The name of the object shown in the preview image displays here.
- Select an item in the Default Library Objects list and click the **Library** button to select a new default object from the library. See “Select Library Object Dialog” on page 816.

2 **Default Heights** - Specify the heights at which electrical outlets and switches are initially placed.

- Check **Use Default Heights** to apply the default heights specified here to electrical objects placed in floor plan view. When this is unchecked, electrical objects use

the height saved with their symbol. See “Placing Library Objects” on page 814.

- **Outlet** - Specify the default height for outlets, and phone, cable and tv jacks.
- **Switch** - Specify the default height for switches, doorbells and thermostats.
- **Above Cabinet** - Specify the default height for switches and outlets placed above most cabinets in floor plan view, as measured from the countertop. See “Adjusting Electrical Object Heights” on page 630.

❸ A preview of the selected object displays here. See “Dialog Preview Panes” on page 38.

The Electrical Tools

Select **Build> Electrical** to access the Electrical Tools.

Click in floor plan view to place an electrical object. Some can only be placed against walls, some only on the ceiling or floor, and some automatically change as needed. If you click within 12" of the wall, the selected object is placed on the wall.

Electrical objects are placed according to the settings in the **Electrical Defaults** dialog.

Once an electrical object has been placed, it can be edited in the **Electrical Service Specification** dialog. See “Electrical Service Specification Dialog” on page 630.

Outlets

Select **Build> Electrical> 110V Outlet** to place 110 volt duplex outlets in walls or on the floor. Select **Build> Electrical> 220V Outlet** to place 220 volt outlets.

The type and height of an outlet will vary depending on where it is placed. For example:

- In rooms defined as Bath or Master Bath, Ground Fault Circuit Interrupt (GFCI) outlets are placed.

If standard outlets are placed in a room prior to defining it as a Bath, you should replace them with GFCI outlets.

- An outlet placed at the back of a base cabinet in floor plan view is positioned above the counter.
- An outlet placed at the back of a base cabinet containing a kitchen sink is placed at the standard 11 1/2" (300 mm) above the floor.
- Outlets placed outside the building or in an exterior area such as a deck or porch are labeled WP, or Water Proof.

To take advantage of the program’s capabilities, define room types properly before placing electrical objects. See “Room Types” on page 329.

Light Fixtures

Select **Build> Electrical> Light** to place light fixtures as specified in the **Electrical Defaults** dialog. All light fixtures

placed in a plan can also serve as light sources in most 3D and ray trace views. To place a light fixture using the Light tool

- Click near a wall to place a wall-mounted fixture at that location.
- Click away from a wall to place a ceiling mounted light.
- Some light symbols from the library can be mounted under wall cabinets, as well.

The rendering characteristics of individual lights that control how they appear in Render and ray trace views can be specified on the Light Data panel of the **Electrical Service Specification** dialog. See "Light Data Panel" on page 632.

Switches

Select **Build> Electrical> Switch** to place electrical switches as specified in the **Electrical Defaults** dialog. Like outlets, the height of switches is measured from the floor to the center of the object.

An electrical switch can be placed on either a wall or a cabinet, depending on the type of switch. A selection of each type is available in the Library Browser. See "Placing Library Objects" on page 814.

If you connect two or more switches in a circuit, they update to 3-way or 4-way switches automatically.

Switches placed from the Electrical Library do not automatically update by default, but can be specified to do so. See "Electrical Service Specification Dialog" on page 630.

Auto Place Outlets

Select **Build> Electrical> Auto Place Outlets** and click in a room tool to place outlets at regular intervals around the entire room. See "Auto Place Outlets" on page 626.

Connect Electrical

Select **Build> Electrical> Connect Electrical**, then click and drag to draw splines that snap to electrical switches, outlets, and lights to illustrate wiring circuits. See "Creating Wiring Schematics" on page 627.

Lighting and Electrical Library Catalogs

A selection of free-standing and ceiling-, wall- and cabinet-mounted light fixtures is available in the Library Browser at Chief Architect Core Catalogs> Architectural> Lighting.

Special use outlets, switches, jacks and numerous other electrical items can be found at Chief Architect Core Catalogs> Mechanical, Electrical, Plumbing> Electrical. See "The Library" on page 797.

Auto Place Outlets

Select **Build> Electrical> Auto Place Outlets** and click in a room to place 110 volt outlets around the entire room, spaced so that no wall position is farther than six feet (1800mm) from the nearest outlet. 110 or 220 volt outlets are also placed behind

large appliances. In addition, a light is placed above each sink.

Outlets and sink lights are placed based on settings in the **Electrical Defaults** dialog. See “Electrical Defaults” on page 624.

It is important that a room’s Type be defined before **Auto Place Outlets** is used so that outlets are placed appropriately. For example, GFCI (Ground Fault Circuit Interrupter) outlets are placed over cabinets in Kitchen, Bath and Master Bath rooms. See “Room Types” on page 329.

Auto Place Outlets does not work in rooms assigned an exterior room type such as Deck. To place outlets in an exterior room, place them from the Electrical Library or use the **110V Outlets** tool.

Railings and invisible walls are ignored by **Auto Place Outlets**. If it is used in a room defined by railings or invisible walls, outlets are automatically placed in any adjacent rooms on the other side of these wall types. See “Room Definition” on page 325.

> Note: Auto Place Outlets requires that a room have a door before outlets can be placed.

Once placed, any outlet can be moved, edited, or deleted. See “Editing Electrical Objects” on page 629.

Creating Wiring Schematics

Electrical schematics can be created in two ways. Using the **Connect Electrical** tool is quick and easy, but if you need detailed schematics, you can create your own wiring diagrams using the CAD tools. See “CAD Objects” on page 1039.

Connect Electrical

Select **Build> Electrical> Connect Electrical**, then click and drag to draw splines that snap to electrical switches, outlets, and lights to illustrate wiring circuits. See “Splines” on page 1073.

To create a new circuit or add to an existing circuit, click on a switch, outlet, or light while the **Connect Electrical** tool is active, drag to the next object and release. You can also draw electrical circuits using the **Alternate** continuous drawing mode. See “Alternate” on page 177.

Connect Electrical splines cannot be snapped to one another: they can only snap to electrical objects. Once drawn, though, they can be edited to form complex curves.

To remove a connection from a circuit, simply select and **Delete** it. If you remove an electrical object from a circuit, any Connect Electrical splines snapped to it will also be deleted. See “Deleting Objects” on page 249.

Three- and Four-Way Switches

Multiple switches can control an object or group of objects.

- Two switches controlling the same objects are referred to as three-way switches.
- Three switches controlling the same objects are called four-way switches.

In floor plan view, a three- or four-way switches's "way" number will automatically display in its 2D symbol.

Electrical Library Content

Select **View> Library Browser** to accesses a variety of electrical symbols. See "The Library" on page 797.

Browse for electrical objects such as bath vent fans, an electrical panel, fluorescent lights, chandeliers, a smoke detector, thermostat, and more. Select a symbol, then click in your plan to place it on a wall, floor, or ceiling.

You can create electrical symbols and save them to the library. See "Custom Symbols" on page 1159.

You can also assign electrical objects from the library to toolbar buttons for easy access and placement to frequently-used library objects. See "Place Library Object Button" on page 818.

Displaying Electrical Objects

The display of electrical objects and connections is controlled in the **Layer Display Options** dialog. See "Displaying Objects" on page 144.

Like most other symbols, electrical objects are represented in floor plan view by a CAD block. You can specify a symbol's 2D CAD block in the **Symbol Specification** dialog. See "2D Block Panel" on page 1162.

When displayed in 3D views, light fixtures act as sources of light that help illuminate the 3D model. See "Lighting" on page 914.

Electrical Labels

Electrical labels display in floor plan and cross section/elevation views when the "Electrical, Labels" layer is turned on and use the Text Style assigned to their layer. See "Object Labels" on page 1241.

Customized labels using text and Text Macros as well as label position and orientation can be specified in the **Electrical Service Specification** dialog. See Text Macros.

Electrical objects can display callout labels as specified in the **Electrical Schedule Specification** dialog. See "Label Panel" on page 1243.

Electrical labels have their own edit handles and can be moved and rotated when the electrical object is selected.

Note: Some electrical objects are represented in floor plan view by a CAD block that includes text. This text is not part of the object's label and does not use the Text Style assigned to the "Electrical, Labels" layer.

In the Materials List

Electrical objects, including outlets, switches, lights, and symbols from the library such as jacks and fans, are listed under the Electrical Category in the Materials List. See "Materials Lists" on page 1247.

Editing Electrical Objects

Electrical objects can be selected as a group and individually in 2D and 3D and edited using the edit handles, the edit toolbar and their specification dialog. See "Electrical Service Specification Dialog" on page 630.

Light fixtures and Added Lights can be group-selected, but their light data cannot be edited unless each has the same number of light sources. See "Lighting" on page 914.

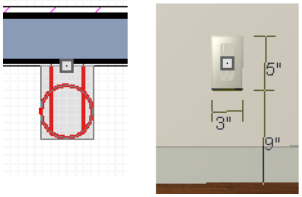
Lights can also be edited using the **Adjust Lights** dialog. See "Adjust Lights Dialog" on page 917.

Moving Electrical Objects Using Dimensions

Electrical objects can be moved precisely using manual dimensions. See "Moving Objects Using Dimensions" on page 989. First, dimensions must be checked on the Locate Objects panel of the **Dimension Defaults** dialog. See "Dimension Preferences and Defaults" on page 962.

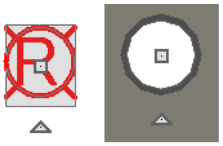
Using the Edit Handles

The edit handles for electrical objects vary depending on the location of the object. Wall mounted electrical objects cannot be rotated, so only the Move edit handle displays.



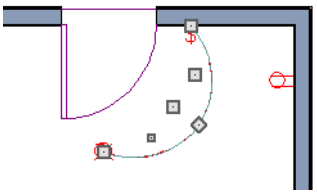
Wall-mounted outlet in 2D and 3D views

Electrical objects placed on floors and ceilings can be rotated.



Ceiling-mounted outlet in 2D and 3D views

Electrical connections edit like splines. See "Editing Spline Based Objects" on page 206.



Using the Edit Buttons

A selected electrical symbol can be edited in a variety of ways using the buttons on the

edit toolbar. See “The Edit Toolbar” on page 35.

Adjusting Electrical Object Heights

When a wall-mounted electrical object is placed in floor plan view, its initial height is based on settings in the **Electrical Defaults** dialog. See “Electrical Defaults” on page 624.

An electrical object placed on a wall in a 3D view is positioned wherever you click on the wall, regardless of the height at that point.

Once placed, a wall-mounted electrical object’s height can be edited in either of three ways:

- Specify the height in the **Electrical Service Specification** dialog. See “Electrical Service Specification Dialog” on page 630.
- In 3D views, the position of an electrical object can be adjusted using its edit handles.
- In any view, use the **Transform/Replicate Object** tool. See “Transform/Replicate Object Dialog” on page 238.

Deleting Electrical Objects

An electrical object can be deleted by selecting it and clicking the **Delete** edit button or by pressing the Delete key.

All electrical objects in a room, on a floor, or in the entire plan can also be deleted as a group using the **Delete Objects** dialog. See “Deleting Objects” on page 249.

Electrical Service Specification Dialog

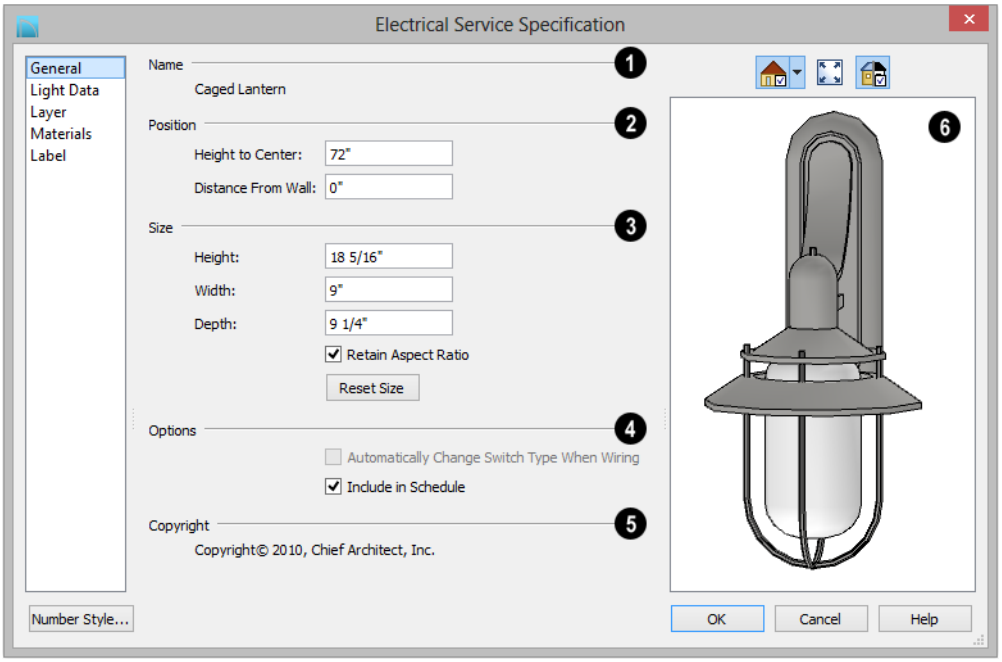
Select one or more electrical objects and click the **Open Object** edit button to open the **Electrical Service Specification** dialog. The settings in this dialog vary, depending on the type of object(s) you select.

The **Electrical Service Specification** dialog has five panels:

- The General Panel specifies the location of the selected electrical object(s).
- The Light Data Panel specifies how lights appear in rendered views. Not available for switches or outlets. See “Lighting” on page 914.
- The Layer Panel specifies the layer the object is placed on.
- The Materials Panel allows you to change materials on electrical objects.
- The Label Panel lets you specify the selected object’s label.

General Panel

The items on this panel vary, depending on the type of electrical object selected.



1 The **Name** of the selected object as used in the Library Browser and Materials List displays here.

2 Specify the **Position** of the selected electical object. The options available depend on the type of object selected.

- Specify the **Offset From Ceiling** of a ceiling outlet or ceiling mounted light. If the light is mounted to a cabinet, this value is the offset from the cabinet.
- Specify the **Height to Center** of a switch, wall outlet or wall light.
- Specify the **Offset From Floor** of a floor outlet or floor lamp.
- Specify the **Distance From Wall** of a wall mounted symbol. A negative value will recess the symbol into the wall and may prevent it from being seen in 3D.

3 Specify the **Size** of the selected electical symbol.

- Specify the **Height**, **Width** and **Depth** of the selected symbol.
- Click the **Reset** button to restore the electrical symbol's original size.

4 **Options** -

- Check **Automatically Change Switch Type When Wiring** for a selected switch to become a three- or four-way switch if your wiring plan later uses it as such. See "Connect Electrical" on page 627. Switches placed from the toolbar use this option by default; switches placed from the library do not. Only available for switches.

- Check **Include in Schedule** to include the selected light fixture in electrical schedules. See “Schedules and Object Labels” on page 1231..

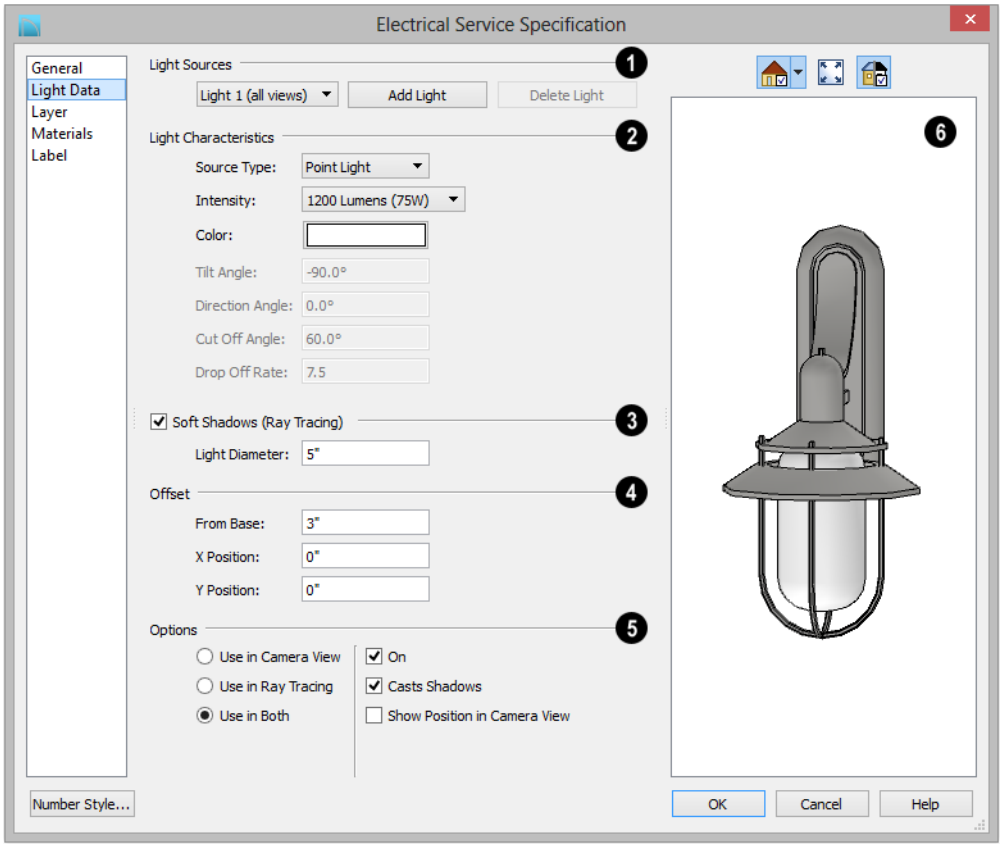
❺ Any **Copyright** information associated with the selected symbol will be stated here.

❻ A preview of the selected object displays here. See “Dialog Preview Panes” on page 38.

Light Data Panel

The Light Data panel is available when the selected electrical object is a light fixture. The available options vary depending on the type of light selected. If multiple light fixtures with different numbers of light sources are selected, the settings on this panel are not available.

The settings on this panel are similar to those on the same panel of the **Light Specification** dialog. See “Light Specification Dialog” on page 920.



1 Each fixture can have multiple **Light Sources**, listed here. Not available for Added Lights. See “Lighting” on page 914.

- Select a **Light Source** assigned to the selected light fixture from the drop-down list. The selected light source can be edited using the settings on this panel.
- Click **Add Light** or **Delete Light** to add or delete light sources from the list. If the selected fixture has only one light source, Delete Light will not be available.

2 Specify the **Light Characteristics** of the currently selected Light Source.

- Select a light **Source Type** from the drop-down list. The type selected determines what options are enabled on this panel. See “Light Types” on page 918.
- Select an **Intensity** from the drop-down list. The available options are described using lumens and correspond to commonly used light bulb wattages.
- Select “Custom” from the **Intensity** list to open the **Custom Light Intensity** dialog and create a custom Intensity setting. See “Custom Light Intensity Dialog” on page 635.

- Click the **Color** bar to define the color of the selected light source. Colored lights alter the appearance of textures and can be used to achieve special effects. See “Color Chooser/Select Color Dialog” on page 853.


The default color of light is pure white, which has the least affect on the appearance of material colors and textures.

The Angle and Drop Off Rate settings below are not available when the Source Type is Point Light.

- The **Tilt Angle** controls the angle of the illumination with respect to the horizon. A value of -90° points the light straight down and a value of 90° points it straight up. 0° is parallel to the horizon.
- The **Direction Angle** defines the direction of the illumination relative to the ground. 0° is measured horizontally pointing to the right. Positive values rotate in a counter-clockwise direction from there. Enter a value up to 360°. If you enter a negative value, the program adds 360° to it when you click OK or press the Tab key.
- The **Cut Off Angle** controls the angle of the cone of illumination for Spot Lights only. A cone angle of 180° creates a spot light that shines in a half sphere on one side of the light source. A small cone angle, for example 10°, creates a very narrow cone of light. The cut off angle should always be between 0° and 180°.
- The **Drop Off Rate** affects how fast a Spot Light’s intensity drops off from the center of the cone to the outside edge. Only available for Spot Lights.

  A value of 0 produces a cone of light with the same intensity from the center to the outside edge. The default drop off value is 7.5, causes the light intensity to drop off fairly quickly.

  Limitations in the OpenGL lighting model can create a jagged circle of light on a large flat surface if the Drop Off Rate value is too low. You can address this by decreasing the Maximum Triangle Size and increasing the Drop off Rate.

❸ Check **Soft Shadows (Ray Tracing)** to have the selected Point Light source cast soft shadows in Ray Trace views. Not active for Spot and Parallel Light sources.

- Specify the **Light Diameter**, which is how big the source of illumination appears in Ray Trace views.

❹ The **Offset** settings control the location of the selected Light Source relative to the fixture.

- **From Base** controls how far the light source is from the fixture base. The fixture base is determined by the surface that it is attached to (i.e. wall, floor, or ceiling).
- **X Position** and **Y Position** allow you to position the light source relative to the center of the fixture, along the floor/ ceiling.

❺ Additional **Options** that affect how the selected light source behaves are available.

- Select **Use in Camera View** to turn the selected light source on in regular 3D views only.

- Select **Use in Ray Tracing** to turn the selected light source on in ray trace views only.
- Select **Use in Both** to turn the selected light source on in both camera and ray trace views.

Note: Many more lights can be included in ray trace views than in rendered views. Some fixtures may have four or five lights for use in ray trace views but only one in rendered views. See “Rendering and Ray Tracing” on page 911.

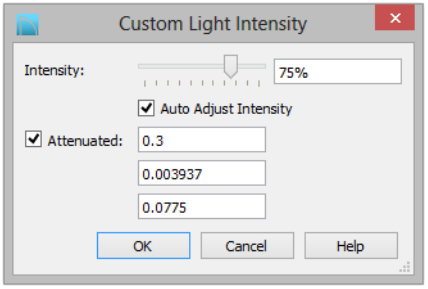
- When multiple lights are selected and they are set to be used in different types of views, **No Change** will be available. Leave this option selected unless you want the lights to all be used in the same types of views.
- Check **On** to use the light source is used in camera or ray trace views, or uncheck it if you prefer that the light source not be used. See “Lighting” on page 914.
- **Casts Shadows** controls whether or not the light source casts shadows in Final Views with Shadows and ray trace views. See “Previews vs Final Views” on page 913.

  Shadow calculations can slow rendering speed significantly; however, when ray tracing, it is recommended that this box be checked.
- Check **Show Position in Camera View** to indicate the position of a selected Point or Spot Light source in the preview pane and in 3D views that support lighting when it is turned On. This tool can be used to determine if your light source is positioned correctly. See “In 3D Views” on page 917.

6 A preview of the selected object displays here. The selected light source’s Position in Camera View will display in the Standard Rendering Technique if the light source is On. See “Dialog Preview Panes” on page 38.

Custom Light Intensity Dialog

Select “Custom” from the **Intensity** drop-down list on the Light Data panel to open the **Custom Light Intensity** dialog.



- **Intensity** - Use the slider bar or text field to control how bright the light appears in camera and ray trace views.
- Check **Auto Adjust Intensity** to have the program to scale the Intensity depending on the number of lights in the room. When unchecked, the Intensity set here is used.
- Check **Attenuated** to control how quickly a light source’s intensity drops as its distance from the light source grows. When unchecked, the light does not drop off. Only Spot and Point Lights have attenuation.

The three **Attenuated** values represent the three coefficients (a, b, and c) in the

expression 1 / (a + b*d+c*d*d), where d is the distance from the light source. Increasing any of these values results in the light intensity dropping faster (the light does not travel as far). Decreasing any value results in the light intensity dropping slower (the light travels farther). Small changes in these coefficients can have significant impact on lighting effects. You may need to experiment to fully understand how to use them.

Layer Panel

The Layer panel is found in the specification dialogs for a variety of objects, including electrical objects. For more information, see "Layer Panel" on page 152.

Materials Panel

The Materials panel is found in the specification dialogs for a variety of objects. For more information, see "Materials Panel" on page 831.

Label Panel

Labels for electrical fixtures display in floor plan view and cross section/elevation views when the "Electrical, Labels" layer is turned on and use the Text Style assigned to that layer. See "Electrical Labels" on page 628.

For information about the settings on this panel, see "Label Panel" on page 1243.

Note: If you choose a label shape in the Electrical Schedule Specification dialog, the settings here are overridden and the schedule label is used instead. See "Label Panel" on page 1239.

Electrical Schedules

The **Electrical Schedule** tool allows you to produce customizable electrical schedules as well as electrical labels that display schedule numbers. See "The Schedule Tools" on page 1232.

Chapter 19:

Trim and Molding

Chief Architect offers a wide selection of trim and molding options. Corner boards, quoins, and frieze moldings can be added to a building's exterior. Molding polylines and 3D molding polylines can be edited as 2D CAD objects using the CAD editing tools, then extruded to display in 3D for a variety of powerful applications.

In addition, Chief Architect offers a wide selection of trim and molding options for doors, windows, rooms, and many interior objects. See "The Library" on page 797.

You can also assign moldings to a variety of objects, such as rooms and cabinets, in those objects' specification dialogs. See "Specification Dialogs" on page 38.

Chapter Contents

Trim and Molding Defaults

Select **Edit> Default Settings** to open the **Default Settings** dialog where you can access the defaults for a variety of drawing tools, including a number that affect trim and moldings.

- Click the + beside “Corner Trim” to access the defaults for Corner Boards and Quoins. See “Corner Boards” on page 638 and “Quoins” on page 640.
- Select “Floor” and click the **Edit** button to specify the default moldings for rooms on the current floor. See “Floor Defaults” on page 324.
- Click the + beside “Door” to access the defaults for Interior and Exterior Doors. See “Door Defaults” on page 355.
- Select “Window” and click the **Edit** button to specify the default casing for windows. See “Window Defaults” on page 384.
- Click the + beside “Cabinet” to access the defaults for the Cabinet Tools, where you can specify default crown and other moldings. See “Cabinet Defaults” on page 660.

Corner Boards

Corner boards are added to a building exterior in any view by selecting **Build> Trim> Corner Boards**.

Click at a wall corner where you want to add trim. Be sure to click where the outside wall surfaces meet. If you click where the inside surfaces meet, corner trim will be created inside the room.

You can also add Corner Boards to all exterior corners at once by selecting **Build> Trim> Auto Place Corner Boards**.

By default, **Auto Place Corner Boards** adds Corner Boards to outside corners only. If you prefer, you can specify that inside corners receive corner boards in the **Corner Board Defaults** dialog. See “General Panel” on page 639.

Note: The Auto Place Corner Boards tool does not place corner boards on manually drawn dormers or at intersections with Attic Walls. See “Attic Walls” on page 290.

Corner boards extend from the top plate down to the bottom of the floor platform of the floor on which it is placed, but do not extend to other floors. You must add corner boards to all floors of the building that you want to have corner boards.

A selected corner board or boards can be moved, but only to another wall corner or corners. In 3D views, corner boards can be

lengthened or shortened using the edit handles. Corner boards can be copied, deleted and resized similar to other objects using the edit toolbar or the **Corner Board Specification** dialog.

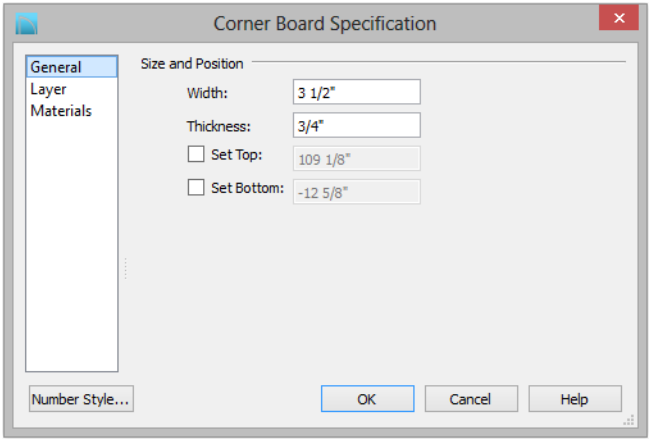
The default material for corner boards is defined by the **Exterior Trim** entry in the **Material Defaults** dialog. See “Material Defaults” on page 852.

Corner Board Specification Dialog

Select one or more corner boards and click the **Open Object** edit button to open the **Corner Board Specification** dialog.

The settings in this dialog are similar to those in the **Corner Board Defaults** dialog, but affect the selected corner boards rather than all subsequently created corner boards.

General Panel



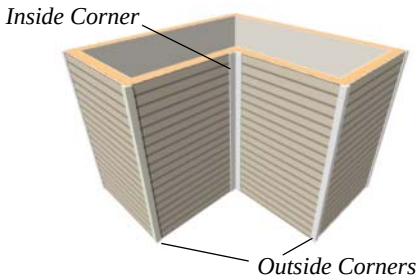
Specify the **Width** and **Thickness** of the selected corner board(s).

Check **Set Top/Set Bottom** to specify the top and bottom heights of the corner board(s).

- If **Set Top** is unchecked, the top of the corner board automatically extends to the top plate.
- If **Set Bottom** is unchecked, the bottom of the corner board automatically extends to the bottom of the floor platform.

In the **Corner Board Defaults** dialog, an additional **Auto Place Option** is available.

- Check **Include Inside Corners** to place Corner Boards on inside corners when the **Auto Place Corner Boards** tool is used. When unchecked, only outside corners receive corner boards.



Layer Panel

For information about the Layer panel, see “Layer Panel” on page 152.

Materials Panel

The settings on the Materials panel are available for a wide variety of objects in the program. For information about these settings, see “Materials Panel” on page 831.

Quoins

Select **Build> Trim> Quoins** in any view and click at a wall corner where you want to place quoins.

You can also add Quoins to all exterior corners at once by selecting **Build> Trim> Auto Place Quoins**.

By default, **Auto Place Quoins** adds Quoins to outside corners only. If you prefer, you can specify that inside corners receive quoins in the **Quoin Defaults** dialog. See “General Panel” on page 639.

Note: The Auto Place Quoins tool does not place quoins on manually drawn dormers or at intersections with Attic Walls. See “Attic Walls” on page 290.

A selected quoin or quoins can be moved, but only to another wall corner or corners. In 3D views, quoins can be lengthened or shortened using the edit handles. Quoins can be copied, deleted and resized similar to other objects using the edit toolbar or the **Quoin Specification** dialog.

The size of quoins in floor plan view is relative on their size in 3D.

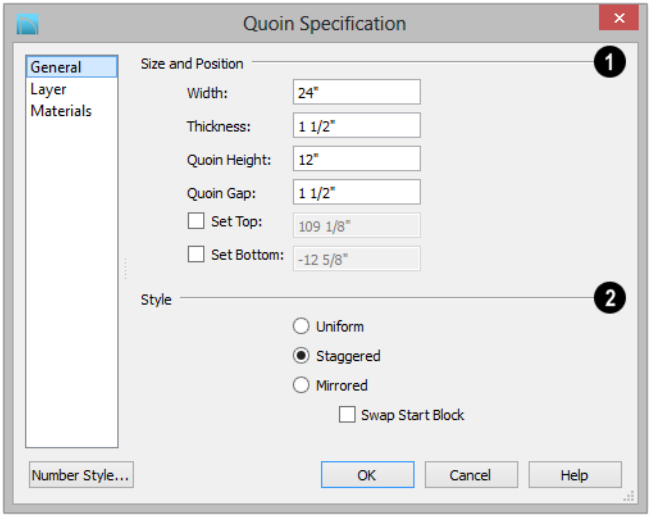
Initially, quoins use the same material as the default material of the wall surface they are placed against. This material is specified in the **Wall Type Definitions** dialog. See “Wall Specification Dialog” on page 301.

Quoin Specification Dialog

Select one or more quoins and click the **Open Object** edit button to open the **Quoin Specification** dialog.

The settings in this dialog are the same as those in the **Quoin Defaults** dialog, but affect the selected quoins rather than all subsequently created quoins.

General Panel



1 Specify the **Size** and **Position** of the quoins in the selected Quoin object.

- Specify the **Width**, which is the horizontal dimension of each quoin in the selected Quoin object. The dimension along the other wall is half this value when they are staggered or mirrored.
- Specify the **Thickness**, which is the amount that the quoin protrudes from the exterior surface of the wall.
- Specify the **Quoin Height** for individual quoins in the selected Quoin object.
- Specify the **Quoin Gap**, which is the distance between successive quoins.

Check **Set Top/Set Bottom** to specify the top and bottom heights of the quoin(s) in the text fields.

- If **Set Top** is unchecked, the top of the corner board automatically extends to the top plate.
- If **Set Bottom** is unchecked, the bottom of the quoin automatically extends to the bottom of the floor platform.

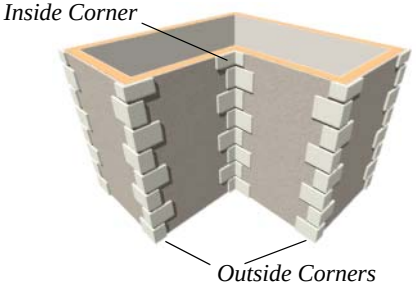
2 Specify the arrangement of quoins used by the selected Quoin object.

- **Uniform** - Produce quoins that are of equal length on both sides of the corner.
- **Staggered** - Produce quoins that have one long side and one short side staggered on opposite sides of the corner.
- **Mirrored** - Produce quoins that alternate having either two long sides or two short sides.

- When Staggered or Mirrored is selected, check **Swap Start Block** to switch the starting order for the quoins.

In the **Quoin Defaults** dialog, an additional **Auto Place Option** is available.

- Check **Include Inside Corners** to place Quoins on inside corners when the **Auto Place Quoins** tool is used. When unchecked, only outside corners receive quoins.



Layer Panel

For information about the Layer panel, see “Layer Panel” on page 152.

Materials Panel

The settings on the Materials panel are available for a wide variety of objects in the program. For information about these settings, see “Materials Panel” on page 831.

Editing Corner Boards and Quoins

Before a corner board or quoin can be edited, it must be selected. Click on a trim object when the **Select Objects** tool is active. Corner boards and quoins can also be group selected and edited. See “Selecting Objects” on page 180

Corner boards and quoins can be edited using their edit handles, the edit toolbar buttons, and their specification dialogs.

Using the Mouse

Depending on the type of view, a corner board or quoin displays a different set of edit handles when selected.

- In floor plan view, corner boards and quoins display one edit handle and can be moved from one eligible location at a wall corner to another.
- In3D views, corner boards and quoins can be moved, lengthened, and shorted much the other line-based objects are. See “Editing Line Based Objects” on page 184.

Using the Edit Buttons

A selected corner board or quoin can be edited in a variety of ways using the buttons on the edit toolbar. See “The Edit Toolbar” on page 35.

Deleting Corner Trim

Corner boards and quoins can be selected individually or in groups and deleted using the **Delete** edit button or the Delete key on the keyboard. They can also be removed using the **Delete Objects** dialog. See “Deleting Objects” on page 249.

Millwork

A selection of various types of millwork including columns, corbels and finials is available in the Library Browser. See “The Library Browser” on page 798.

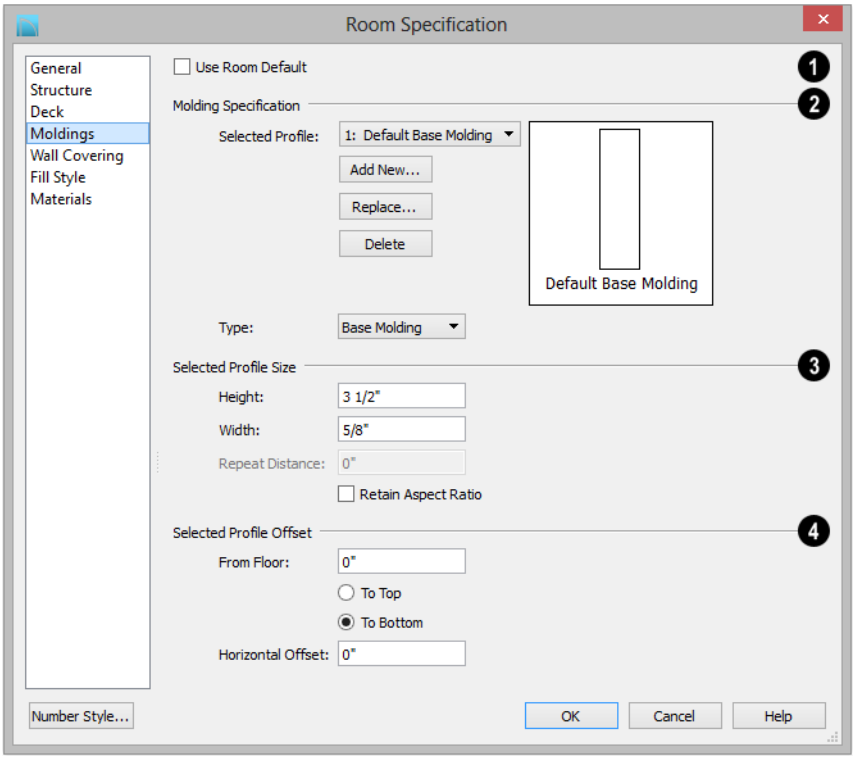
Most millwork items can be placed in a plan as free-standing objects. Some items - notably, newels and balusters - can be assigned to objects such as railings, stairs and ramps. Other examples of millwork that can be assigned to objects include lintels on doors and windows and pilasters and feet on cabinets. See “Placing Library Objects” on page 814.

Moldings Panel

The specification dialogs for a variety of objects in the program include a Moldings panel. Objects that can have moldings assigned to them include rooms, cabinets, custom countertops, and molding polylines.

There are also a number of roof attributes that are assigned the way moldings are. Rafter tails, ridge caps, gutters, frieze molding, and shadow boards are all created by specifying a specially shaped profile and extruding it down a predetermined path. As a result, the settings on the Rafter Tails, Ridge Caps, Gutter, Frieze, and Shadow Boards panels function the same as those on the Moldings panel. See “Build Roof Dialog” on page 468.

Select an object or group of similar objects and click the **Open Object** edit button to open the specification dialog for that selection.



1 Only available for rooms, uncheck **Use Room Default** to make the settings that follow active. Check this box to use the defaults set in the **Floor Defaults** dialog for the current floor. See “Floor Defaults” on page 324.

Check **No Ridge Caps on Selected Edge** to prevent a ridge cap from being created on the selected edge of a roof plane. Only available on the Ridge Caps Panel of the **Roof Plane Specification** dialog. See “Selected Edge” on page 181.

Check **No Shadow Boards on Selected Edge** to prevent shadow boards from being created on the selected edge of a roof plane. Only available on the Shadow Boards Panel of the **Roof Plane Specification** dialog. See “Roof Plane Specification Dialog” on page 486.

2 **Molding Profile** - Specify the molding profile(s) and/or symbol molding(s) assigned to the selected object. The Default Base Molding is a basic rectangular stock profile rather than a profile from the library.

- A drop-down list of the **Molding** profile(s) or symbol(s) assigned to the selected object displays here. Select the name of a molding to edit it or remove it from the list.
- If multiple objects with different moldings assigned to them are selected, a **No Change** checkbox will be available just

above the **Molding** drop-down list.

Uncheck this box to make the settings that follow active but note that only moldings that all selected objects have in common will be retained.

- Click the **Add New** button to open the **Select Library Object** dialog and add a new molding profile or symbol to the list. See “Select Library Object Dialog” on page 816.
- Click the **Replace** button to remove the selected profile or symbol and replace it with a new one from the **Select Library Object** dialog. Only available when a profile is already selected.
- Click the **Delete** button to remove the currently selected profile or symbol from the list.
- Choose the currently selected molding’s **Type** from the drop-down list. For frieze molding and shadow boards, the choices are Eave and Gable, Eave only, and Gable only. For rooms, they are Base Molding, Chair Rail, and Crown Molding. If no Type is selected, the molding will not be listed in the Room Finish Schedule. See “Schedules and Object Labels” on page 1231.

❸ Specify **Selected Profile Size**. These setttings only affect the molding profile or symbol selected above.

- Specify the **Height** of the selected molding profile.
- Specify the selected profile’s **Width**. This option is not available for molding polylines created from default room moldings.
- Specify the **Repeat Distance** of a selected symbol molding. This option is only available when a symbol molding is selected. See “Symbol Moldings” on page 647,
- When **Retain Aspect Ratio** is checked, if you change either the Height or Width, the other value changes to maintain their original ratio. When this is unchecked, the two values can be edited independently. This option also affects the Repeat Distance of a symbol molding.

❹ Define the **Selected Profile Offset**, which is the offset of the selected molding relative to the object it is assigned to.

- Specify the offset **From Floor** of the selected molding profile; for objects other than rooms, specify the **Vertical** offset. A positive offset moves the molding upward and a negative offset moves the molding downward.
- Select **To Top** to specify that the top of the molding is offset vertically from the top of the object it is applied to.
- Select **To Bottom** to specify that the bottom of the molding is offset vertically from the bottom of the object it is applied to.
- Specify the **Horizontal** offset, which is how close the molding is to the perimeter of the selected object. Increase this value to create a gap between the selected object and the molding. See “Built-Up and Recessed Moldings” on page 647.

Molding Profiles

A molding profile is a polyline that represents a 2D cross section of a particular style of molding. A molding profile does not display in 3D on its own; it must be applied to an object like a room, a cabinet, or a molding polyline. See “Moldings Panel” on page 643 and “Molding Polylines” on page 648.

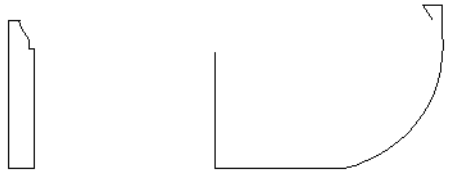
The library contains a selection of moldings, as well as curbs, gutters, handrails and rafter tails. You can customize library molding profiles and also create your own custom profiles and add them to the library. See “Adding Library Content” on page 807.

Creating a Molding Profile

You can easily create custom molding profiles using the CAD Line and Arc Tools by following a few basic guidelines. The object is to draw a polyline, closed or not.

- Moldings can be drawn in either floor plan view or in a CAD Detail window.
- Draw the profile at its actual, unscaled size.
- The profile must be drawn with the proper orientation. The back of most profiles, or the side facing the wall, must be drawn as a vertical edge on the left side of the polyline.
- Similarly, curbs and gutters are drawn with the back of the profile as a vertical edge on the left side of the polyline.
- Open polylines should be used for gutter and rafter tail profiles. Gutter profiles attach to the roof on the left side, and rafter tail profiles should be open on the left side.
- Ridge cap profiles must be closed polylines drawn to match the pitch of the roof planes they will cap.
- Rail, handrail, and railing beam profiles should be drawn with the bottom edge facing downward.

Base molding and gutter profiles



Closed polyline with back on the left side

Open polyline with back on the left side

When the molding profile suits your needs, select it and click the **Add to Library** edit button.

Place Molding Profile

An existing molding profile can be placed in floor plan view or a CAD Detail, edited, and added to the library as a new profile.

Right-click on a molding profile in the library and select **Place Molding Profile** from the contextual menu. Move your pointer into the drawing area and click once to place a closed polyline identical to the selected profile at that location. The polyline can then be edited to suit your needs.

Note: Place Molding Profile cannot be used to apply a molding profile to an object - it is only used to place a profile polyline.

Built-Up and Recessed Moldings

Built up or stacked moldings can be created in a couple of ways. One way is to draw the entire build-up in a single molding profile.

Another way is to apply multiple molding profiles to an object and specify the vertical and horizontal offsets of each. See "Moldings Panel" on page 643.

To build up two molding profiles

1. On the Moldings panel of the specification dialog of any object that molding can be applied to, click the **Add New** button
2. Add a molding profile to the object and specify its **Height**, **Width**, and **Vertical** and **Horizontal Offset** values. Make a note of these values.
3. Click the **Add New** button and add a second molding profile to the object.
4. Specify the second molding profile's Height, Width and Offset values.
   - To define the **Vertical Offset**, add the first profile's Height and Vertical Offset values.
   - To define the **Horizontal Offset**, add the first profile's Width and Horizontal Offset values.

Similarly, molding can be recessed by specifying a negative Horizontal Offset - for example, to create an under cabinet light rail. See "Editing Cabinet Styles" on page 673.

Symbol Moldings

Symbol Moldings are 3D symbols that are repeated along a path to form molding. Molding symbols are different from molding profiles because they are replicated 3D sumbols instead of extruded 2D shapes.

Creating a Symbol Molding

Begin by opening a new, blank plan and creating a single instance of the molding symbol using the **Primitive Tools**  . See "Primitive Tools" on page 759. For example, to create the molding shown in the illustration above, make an object that looks like this:

When you are satisfied with its appearance, convert it to a 3D symbol. See “Convert to Symbol” on page 1173.

You can also import a 3D symbol from another application. See “Importing 3D Symbols” on page 1149.

To import a molding symbol

1. Select **File> Import> 3D Symbol** from the menu. See “Import 3D Symbol Dialog” on page 1150.
2. In the **Import 3D Symbol** dialog, specify the symbol as Molding and click the **Advanced** button.
   - If you plan to use the molding symbol more than once, check the box beside **Add to Library**. See “Add to Library” on page 807.
3. On the 3D panel of the **Symbol Specification** dialog, rotate the symbol as needed so that it faces you in the preview image.

Symbol moldings work best if you make them symmetrical.

Once created, a symbol molding can be assigned to an object or replicated along a molding polyline. See “Molding Polylines” on page 648.

Symbol moldings are center aligned. Both ends have a 45° miter, so the end instances may appear chopped. You can specify the **Repeat Distance** of a symbol molding applied to an object to control the width of each instance of the symbol on the object. See “Moldings Panel” on page 643.

Molding Polylines

A molding polyline is a 3D path that either a 2D molding profile is extruded along or a series of molding symbols is repeated along. Molding polylines can be used to create custom room moldings and decorations anywhere in your 3D model.

The **Molding Polyline** tools are accessed by selecting **Build> Trim** from the menu.

There are four types of molding polylines:

- **Molding Polylines**
- **Molding Lines**
- **3D Molding Polylines**
- **3D Molding Lines**

To create a molding polyline, first select the desired **Molding Polyline** tool. The **Select Library Object** dialog will open. Select a

molding profile or symbol from the library, then click and drag to draw the path for the selected molding profile or symbol.

If a molding profile or symbol has been previously selected during the current session in the program, you can begin drawing using this molding without selecting anything from the library.

Molding polylines can also be created using the **Make Room Molding Polyline** and the **Convert Polyline** edit tools.

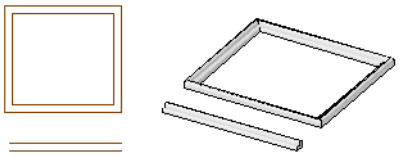
Molding Polyline Tool

Select **Build> Trim> Molding Polyline** in floor plan view, a camera view or overview to create a molding polyline with a closed shape and a single height off the floor along its entire perimeter. Molding Polylines are drawn like rectangular polylines.

In floor plan view, Molding Polylines can also be created by selecting a profile from the Library Browser. Single-click to place a 2'x2' closed polyline or click and drag to draw a rectangular polyline.

Molding Line Tool

Select **Build> Trim> Molding Line** in floor plan view, a camera view or overview to create a molding line with a single height off the floor along its entire length. Multiple Molding Lines can be connected to form open or closed polylines as long as they share the same height.



Molding polyline and molding line in Floor Plan View and 3D overview

3D Molding Polyline Tool

Select **Build> Trim> 3D Molding Polyline** in floor plan or cross section/elevation view to create a closed molding polyline.

- When drawn in a cross section/elevation view, a 3D Molding Polyline's top and bottom edges have two different heights. Its sides have different heights at their start and end points.
- If drawn in floor plan view, a camera view or overview, a 3D Molding Polyline has a single height along its perimeter.

In either case, its edges can be edited so that it travels in three dimensions rather than two.

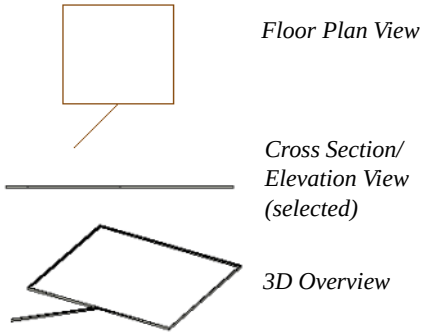
3D Molding Line Tool

Select **Build> Trim> 3D Molding Line** in floor plan or cross section/elevation view to create a molding line.

- If drawn in a cross section/elevation view, a 3D Molding Line's start and end points can have two different heights.
- If drawn in floor plan view, a camera view or overview, a 3D Molding Line has a single height along its length.

3D Molding Lines can be connected to form polylines as long as the ends at which two segments connect have identical heights.

Once drawn, a 3D Molding Line can be edited so that it travels in three dimensions.



3D Molding polyline and 3D molding line as they appear in three different views.

Moldings Library

In the floor plan view, select a molding profile from the library. The **Molding Polyline** tool becomes active, allowing you to draw a molding polyline with using the selected profile.

Converting Room Molding

Select a room and click on the **Make Room Molding Polyline** edit button. This opens the **Make Room Molding Polyline** dialog, allowing you to select which type of room molding to convert to a molding polyline. See “Room Polylines” on page 345.

Converting a CAD Polyline

Select a CAD polyline and click the **Convert Polyline** edit button to covert it into a molding polyline or a 3D molding polyline. See “Convert Polyline” on page 235.

Displaying Molding Polylines

As with other objects, the display of molding polylines in 2D and 3D views is controlled in the **Layer Display Options** dialog. See “Displaying Objects” on page 144.

By default, molding polylines are placed on the “Moldings” layer.

In floor plan view, molding polylines display as two sets of lines: one representing the molding’s front and one its back. The distance between them is determined by the Width of the molding profile. If a Horizontal offset is specified, that value is added to the distance between the two lines. See “Moldings Panel” on page 643.

Editing Molding Polylines

Molding polylines can be edited much the way CAD polylines are. See “Editing Open Polyline Based Objects” on page 193 and “Editing Closed-Polyline Based Objects” on page 198.

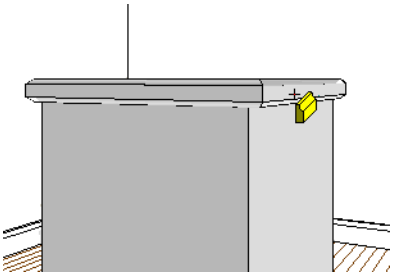
Molding lines and polylines also can be edited in their specification dialogs. See “Molding Polyline Specification Dialog” on page 651 and “3D Molding Polyline Specification Dialog” on page 653.

Note: 3D Molding Polyline edges that slope rather than having a single height are best edited in a camera or elevation view. See “3D Views” on page 867.

Changing Profiles on Existing Moldings

In 3D views, select a molding profile or symbol from the Library Browser and move your mouse pointer into the view window.

The pointer displays the Moldings icon. Click on a molding polyline, 3D molding polyline, room molding, cabinet molding, door molding, or window molding in the view to change its molding profile. This is the same as changing the molding profile in the object’s specification dialog. See “Moldings Panel” on page 643.



Click on a molding in 3D view to change it

Deleting Molding Polylines

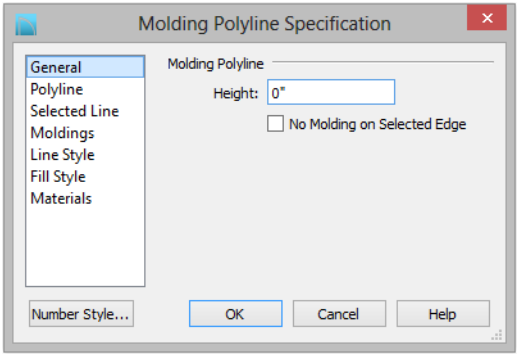
Molding polylines can be deleted like other objects using the **Delete** edit button or the Delete key on your keyboard.

Molding Polylines are also deleted when the **Delete Objects** dialog is used to delete CAD objects. See “Deleting Objects” on page 249.

Molding Polyline Specification Dialog

To open the **Molding Polyline Specification** dialog, select a molding polyline or group of molding polylines and click the **Open Object** edit button.

General Panel



- Specify the Molding Polyline’s **Height**, relative to 0.

- Check **No Molding on Selected Edge** to create blank section in the molding polyline along the selected line segment.

Polyline Panel

The Polyline panel can be found in dialogs throughout the program. For more information, see “Polyline Panel” on page 1066.

Selected Line Panel

The Selected Line panel is available when the selected segment of the molding polyline is a line, as opposed to an arc. For more information, see “Line Style Panel” on page 1053.

Arc Panel

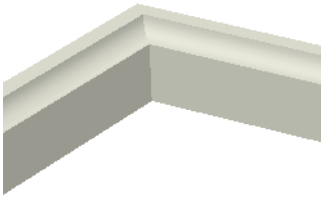
The Arc panel displays when the selected segment of the molding polyline is an arc, as opposed to a line. See “Arc Panel” on page 1061.

Moldings Panel

The Moldings panel can be found in dialogs throughout the program. See “Moldings Panel” on page 643.

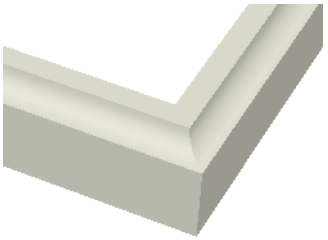
One setting on this panel is unique to the **Molding Polyline** and **3D Molding Polyline Specification** dialogs:

- Check **Inside** to extrude the molding profile on the inside of closed polyline or right side of an open polyline.



Molding extruded inside

- When unchecked, the molding profile extrudes on the outside or left side of the polyline.



Molding extruded outside (Inside unchecked)

Line Style Panel

The Line Style panel can be found in dialogs throughout the program. For information about the settings on this panel, see “Line Style Panel” on page 1053.

Fill Style Panel

The Fill Style panel can be found in dialogs throughout the program. For information about the settings on this panel, see “Fill Style Panel” on page 1067.

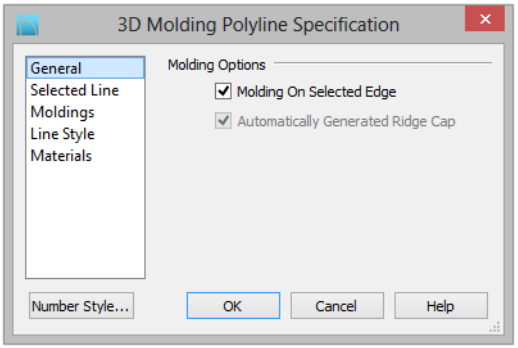
Materials Panel

The Materials panel can be found in dialogs throughout the program. For information about the settings on this panel, see “Materials Panel” on page 831.

3D Molding Polyline Specification Dialog

Select a 3D molding polyline and click the **Open Object** edit button to open the **3D Molding Polyline Specification** dialog.

General Panel



- Uncheck **Molding on Selected Edge** to turn off the display of the specified molding on the selected edge of the polyline. See “Selecting Objects” on page 180.
- If the selected object is an automatically generated ridge cap, frieze molding, or shadow boards polyline, this checkbox’s label will reflect the object type. See “Roof Returns and Other Details” on page 515.

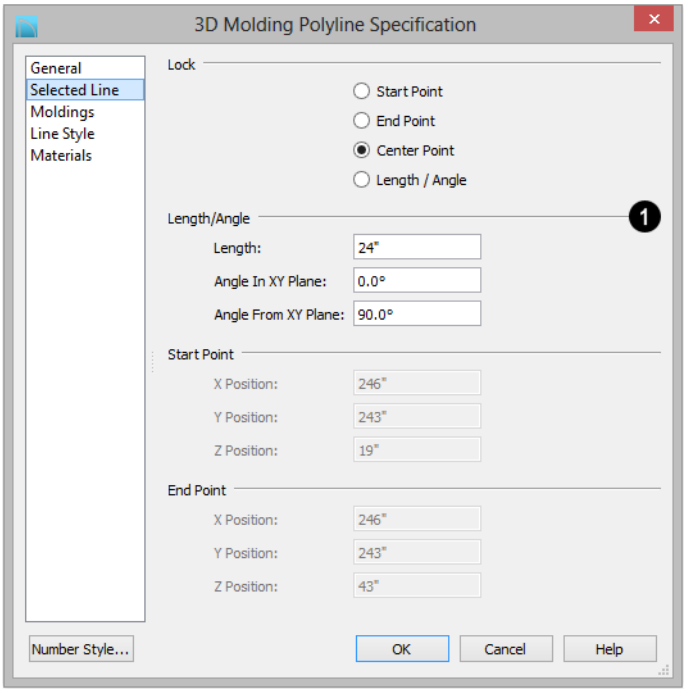
An **Automatically Generated** checkbox will be present if a ridge cap, frieze molding, or shadow boards polyline is selected. This checkbox is for reference only and cannot be edited. See “Roof Returns and Other Details” on page 515.

- When this box is checked, the selected roof trim is updated whenever you check **Build Fascia and Roof Trim** in the **Build Roof** dialog and click OK.
- If the selected object is edited, this box will become permanently unchecked. To restore the automatic updating behavior, the frieze, shadow boards, or ridge caps must be deleted and regenerated.

Selected Line Panel

The Selected Line panel is available when the selected segment of the 3D molding polyline is a line as opposed to an arc.

Most of the settings on this panel are the same as those on the Line panel of the **Line Specification** dialog. See “Line Panel” on page 1052.

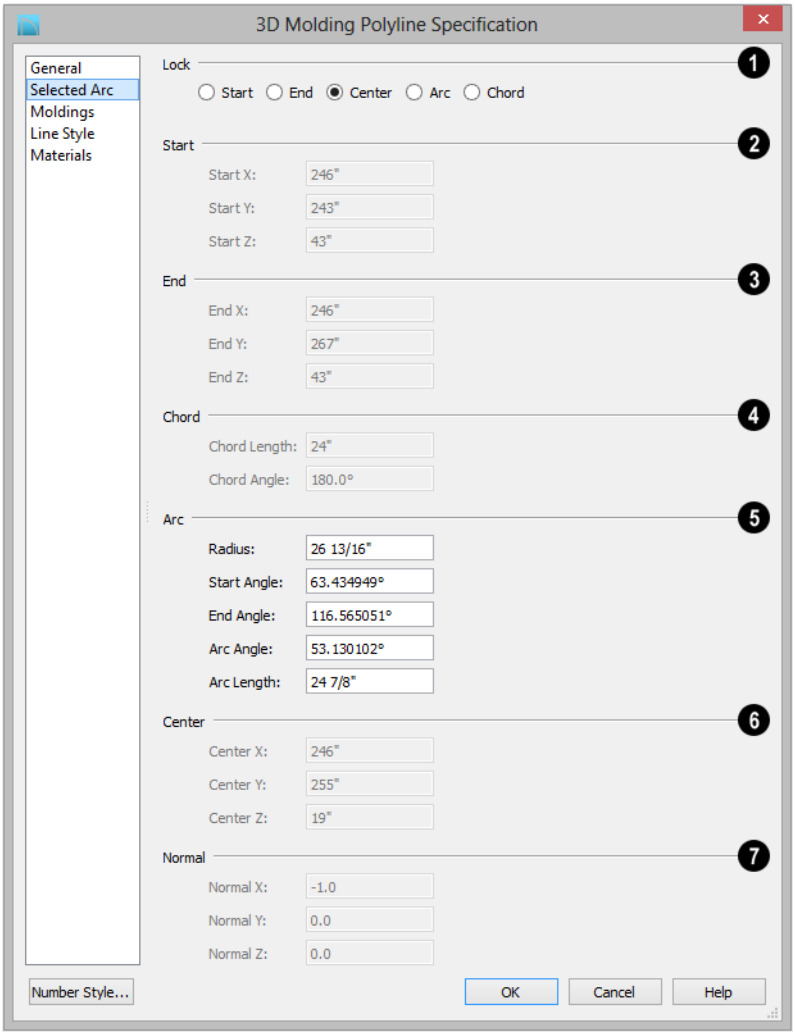


1 The **Length/Angle** settings in the **3D Molding Polyline Specification** dialog are unique to this dialog.

- **Length** specifies the 3D length of the selected edge of the 3D molding polyline.
- **Angle in XY Plane** specifies the counter-clockwise angle that the selected line makes with the positive X axis when viewed from above, as in floor plan view.
- **Angle from XY Plane** specifies the angle that the selected line makes with the horizontal XY plane when viewed from the side, as in a cross section/elevation view. A positive value means that the line slopes up; a negative value means that it slopes down.

Selected Arc Panel

The Selected Arc panel is available when the selected segment of the 3D molding polyline is an arc as opposed to a line.



1. The **Lock** options specify how changing one value affects other values.
   - Select **Start** to keep the start and center of the arc fixed and move the end.

- Select **End** to keep the end and center of the arc fixed and move the start.
- Select **Center** to keep the center of the arc fixed and move the start or end.
- Select **Arc** to keep the arc geometry fixed and translate the arc.
- Select **Chord** to keep the start and end fixed and change the radius.

❷ Specify the coordinates of the selected arc's **Start** point. Only available when **Lock End** or **Lock Arc** is selected.

❸ Specify the coordinates of the selected arc's **End** point. Only available when either **Lock Start** or **Lock Arc** is selected.

❹ Specify the length and angle of the selected arc's **Chord**. Only available when **Lock Start** or **Lock End** is selected.

- Specify the **Chord Length**, which is the 3D distance between arc start and end.
- Specify the **Chord Angle**: the angle created by the chord and the positive X axis.

❺ The **Arc** options specify radius, angle and length values of the selected arc:

- **Radius** - The distance from the arc to the arc center.
- **Start Angle** - The angle created by a line from the arc center to the start and the positive X axis.
- **End Angle** - The angle that a line from the center to the end
- **Arc Angle** - The angle created by a line from the arc center to the start and a line from the center to the end.
- **Arc Length** - The length of the arc.

❻ Specify the coordinates of the selected arc's **Center** point. Only available when **Lock Arc** is selected.

❼ The items under the **Normal** heading state the coordinates of the normal of the plane that the arc exists in. The normal is a vector that is parallel to that plane and is expressed as a line between two points: (0,0,0) and the point defined in the dialog.

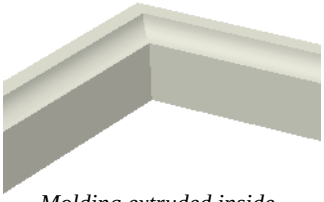
The arc direction in plan view is counter clockwise if the normal has a positive value on the z axis (0,0,1) and clockwise if the value on the z axis is negative (0,0,-1).

Moldings Panel

The Moldings panel can be found in the specification dialogs for a variety of different objects in the program. See "Moldings Panel" on page 643.

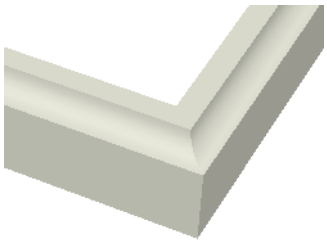
One setting on this panel is unique to the **Molding Polyline** and **3D Molding Polyline Specification** dialogs:

- Check **Inside** to extrude the molding profile on the inside or right side of the polyline.



Molding extruded inside

- When unchecked, the molding profile extrudes on the outside or left side of the polyline.



Molding extruded outside (Inside unchecked)

Line Style Panel

The Line Style panel can be found in dialogs throughout the program. For more information, see “Line Style Panel” on page 1053.

If an automatic frieze or shadow board polyline is edited, it will no longer be considered Automatic and the **Default Layer** checkbox on this panel will be unchecked.

Materials Panel

The Materials panel is found in dialogs throughout the program. See “Materials Panel” on page 831.

Frieze Moldings

Frieze moldings, also known as freize boards, are mounted below the eaves of roof planes and can be generated automatically using the **Build Roof** dialog.

Frieze moldings under a dormer’s eaves

Creating Frieze Moldings

To create automatic frieze moldings, specify a molding profile on the Frieze panel of the **Build Roof** dialog; check **Build Fascia, Gutters** on the Build panel of the **Build Roof** dialog; and click OK. See “Frieze Molding” on page 517.

Displaying Frieze Moldings

By default, frieze molding displays in 3D views but not in floor plan view and its default layer, “Roofs, Trim”, is locked. See “Layer Display Options Dialog” on page 148.

Selecting Frieze Moldings

To select a frieze molding, its layer must first be unlocked and turned on. See “Locking Layers” on page 145. In floor plan or a cross section/elevation view, click on a frieze molding. If the wall behind it is selected, click the **Select Next Object** edit button or press the Tab key until the frieze molding is selected. When the frieze molding is selected the Status Bar says “3D Molding Polyline.” See “The Status Bar” on page 39.

Editing Frieze Moldings

Like other 3D Molding Polyines, frieze molding can be edited much the way CAD polylines are in floor plan and cross section/ elevation views. See “Editing Molding Polylines” on page 650.

Frieze molding can also be edited in the **3D Molding Polyline Specification** dialog. See “3D Molding Polyline Specification Dialog” on page 653.

If you edit a frieze molding, it is no longer considered an Automatic frieze and will not be deleted and replaced if Fascia and Roof Trim is rebuilt. Once **Automatic** is unchecked, it cannot be checked again.To restore the automatic updating behavior of frieze molding, it must be regenerated.

Chapter 20:

Cabinets

With Chief Architect's cabinet tools you can create base, wall, and full height cabinets as well as soffits, shelves, partitions, and custom countertops. These objects are very versatile, allowing for a wide range of customization.

A selection of cabinet door and drawer styles are available in the Library Browser and, in addition, a numerous cabinet manufacturer catalogs are available for download on our web site, chiefarchitect.com.

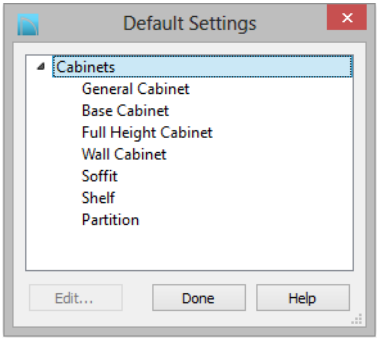
Chief Architect also has many customized cabinet symbols and cabinet groups available in the library. Cabinets you have customized can be saved to your own library for future use.

Chapter Contents

Cabinet Defaults

Access default settings for each cabinet tool by selecting **Edit> Default Settings**, then clicking the + beside **Cabinets**. Select a subheading and click the **Edit** button to open the defaults dialog associated with your selection:

The Cabinet Defaults dialogs can also be accessed by double-clicking the **Cabinet Tools** parent button.



Double-clicking a Cabinet Tools child button also opens its corresponding defaults dialog, if that object has a defaults dialog.

Each type of cabinet object has default definitions for size, style, materials and much more. In fact, the default dialog for each cabinet type is similar to its corresponding specification dialog. For descriptions of these settings, see “Cabinet Specification Dialog” on page 678, “Shelf/Partition Specification Dialog” on page 691 and “Soffit Specification Dialog” on page 776.

Cabinet Fillers, Custom Backsplashes, and Custom Countertops do not have defaults dialogs. Instead, their initial settings are based on the those of other objects.

- Base Cabinet Fillers’ initial settings are based on Base Cabinet Defaults.
- Wall Cabinet Fillers’ initial settings are based on Wall Cabinet Defaults.
- Full Height Cabinet Fillers’ initial settings are based on Full Height Cabinet Defaults.
- Custom Backsplashes’ initial settings are based on the Base Cabinet Defaults for backsplash thickness and material.
- Custom Countertops’ initial settings are based on Base Cabinet Default settings but are also influenced by the settings of cabinets beneath them. See “Custom Countertops” on page 662.

Dynamic Cabinet Defaults

The following cabinet default values are dynamic: **Separation**, **Backsplash Height** and **Thickness**, **Countertop Overhang** and **Thickness**, **Toe Kick Height** and **Depth**, **Side** and **Vertical Overlap**, **Stiles**, and **Hardware** spacing. See “Dynamic Defaults” on page 74.

All **Materials** are also dynamic, with one exception: materials assigned to doors and drawers when the default door/drawer is a library symbol. When this is the case, the default door/drawer material is dynamically linked to the “Cabinet Door/Drawer” material set in the **Material Defaults** dialog rather than the **Cabinet Defaults** dialog. See “Material Defaults Dialog” on page 852.

When a dynamic default is changed, existing cabinet objects using the default value are affected.

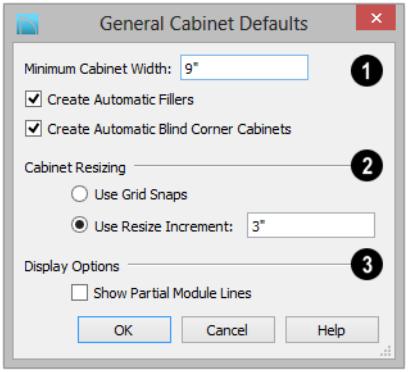
Set as Default

You can set the attributes for a cabinet placed in your plan as the defaults for that cabinet type. See “Set as Default” on page 74

Note: Set as Default is not available for special shaped cabinets. Only Standard cabinets can be the default cabinet type. See “Special Cabinets” on page 675.

General Cabinet Defaults

The **General Cabinet Defaults** dialog can be accessed only from the **Default Settings** dialog.



1

- Specify the **Minimum Cabinet Width**. The minimum allowable width is 1/16 of an inch (10 mm).
- Uncheck **Create Automatic Fillers** to prevent fillers from automatically generating in spaces between cabinets. This setting is dynamic: changing it will affect cabinets already present in your plan. See “Cabinet Fillers” on page 664.
- Uncheck **Create Automatic Blind Corner Cabinets** to prevent blind corner cabinets from being created. This setting is dynamic: changing it will affect cabinets already present in your plan. See “Blind Cabinets” on page 678.

2 Specify how **Cabinet Resizing** takes place when the edit handles are used.

- Select **Use Grid Snaps** to resize cabinets using Snap Grid increments. See “Grid Snaps” on page 164.
- Select **Use Resize Increment** to resize cabinets using the increment specified here.
- Set the **Resize Increment** at which cabinets resize. The minimum allowable increment is 1/16 of an inch (10 mm).

3 Check **Show Partial Module Lines** to represent module lines as grey lines that do not extend across the cabinets. When this is unchecked, lines between merged cabinet modules display as specified by the “Cabinets, Module Lines” layer. See “Displaying Cabinets” on page 668.

The Cabinet Tools

Select **Build> Cabinet** to access the Cabinet Tools.

Cabinets are easily created with a single click in floor plan view or any camera view. See “Click-to-Create” on page 165.

Typically, groups of cabinet objects are positioned closely together and arranged to form work spaces, and there are some special behaviors and techniques to be aware of. See “Placing Cabinets and Fillers” on page 665.

Once created, cabinets, soffits, shelves, partitions and fillers can be selected and edited much like other box-based objects. See “Editing Cabinets” on page 671.

Base Cabinets

Select **Build> Cabinet> Base Cabinet** and click in any view. Base cabinets can be placed directly under wall cabinets and generate a countertop and toe kick by default.

Wall Cabinets

To place a wall cabinet, select **Build> Cabinet> Wall Cabinet** and click in any view. Wall cabinets can be placed directly over base cabinets.

Full Height Cabinets

To place a full height cabinet, select **Build> Cabinet> Full Height** and click in any view. Full height cabinets generate a toe kick by default and cannot be placed on top of other cabinets.

Soffits

Soffits typically fill the space between cabinet tops and the ceiling, but can also be used to create any object that can be modeled as a 3D box. To place a soffit, select **Build> Cabinet> Soffit** and click in any view.

By default, soffits use the material assigned to interior walls in the **Material Defaults** dialog. Like cabinets, soffits can have molding profiles applied to them.

For more information about using soffits for a variety of purposes, see “Other Objects” on page 759.

Shelves

Select **Build> Cabinet> Shelf** and click in any view to create a shelf.

Create corner shelves by placing one shelf on each wall, then moving or stretching them until they touch.

Once created, shelves can be selected and edited. See “Shelf/Partition Specification Dialog” on page 691.

You can also specify shelves inside of base, wall, and full height cabinet boxes. See “Cabinet Shelf Specification Dialog” on page 690.

Partitions

Select **Build> Cabinet> Partition** button and click in any view to create a vertical partition.

Like shelves, partitions can be selected and edited after they are placed.

Partitions can be used with shelves to create complex storage systems.

Custom Countertops

Custom Countertops are drawn and edited just like other closed-polyline

based objects. Select **Build> Cabinet> Custom Countertop**, then either click and drag a rectangle or single-click to place a 2’x2’ countertop. See “Custom Countertops” on page 667.

You can also generate a custom countertop over one or more base cabinets using the **Generate Custom Countertop** edit tool. See “Using the Edit Tools” on page 672.

Custom Counter Holes

Select **Build> Cabinet> Custom Counter Hole**, then either click and drag a rectangle or single-click to place a 2’x2’ countertop hole. Custom Counter Holes must be drawn within an existing Custom Countertop, can be drawn in any view except cross section/elevation views and can be edited to any shape. See “Editing Custom Countertops” on page 667.

Custom Backsplashes

Select **Build> Cabinet> Custom Backsplash** while an elevation or camera view is active, then either click and drag a rectangle or single-click on a wall surface to place a Custom Backsplash Layered Material Polyline on that wall. See “Custom Backsplashes” on page 780.

Cabinets Library Catalogs

In the Library Browser, browse to Chief Architect Core Catalogs> Architectural> Cabinets to access a selection of specialty cabinets. Select the library object you want, then click in any view to place it in the plan. Once placed, library cabinets can be edited. See “The Library” on page 797.

A selection of cabinet manufacturer catalogs is also available for download. These catalogs include door and drawer styles and may also provide moldings and millwork, finishes, and hardware. See “Manufacturer Catalogs” on page 803.

In addition, you can add single cabinets and blocked units to the library. See “Adding Library Content” on page 807 and “Architectural Blocks” on page 789.

Cabinet Doors, Drawers, and Panels Catalogs

A selection of cabinet door, drawer, and panel styles is available in Chief Architect Core Catalogs> Architectural. Select an item, then click on a cabinet in your plan to place the door or drawer onto that cabinet. Doors, drawers, and panels can be assigned to a cabinet in its specification dialog, as well. Cabinet doors, drawers, and panels can also be placed as stand-alone fixtures.

You can create custom cabinet doors and drawers and save them in the library for future use. See “Convert to Symbol” on page 1173.

Built-In Appliances

A variety of fixtures and appliances such as sinks, cooktops, and dishwashers can be placed into cabinets. See “Inserted Objects” on page 815.

Place fixtures and appliances into cabinets early, so that any resizing can be done while there is adequate free space.

To insert a fixture into a cabinet, select the fixture in the Library Browser, then click on a cabinet. There must be enough space in the cabinet or adjoining cabinets to contain the selected fixture.

Only one front mounted appliance can be inserted in this manner. Additional front fixtures can be added in the **Cabinet Specification** dialog. See “Front Panel” on page 681.

If a sink or cooktop is inserted into a cabinet with a top Drawer or Double Drawer, its Item Type will automatically change to a False Drawer or False Double Drawer.

Once placed, an inserted fixture can be selected and edited:

- To select a fixture in a cabinet top, click on it and then click the **Select Next Object** edit button. See “Select Next Object” on page 183.
- Front fixtures can only be modified or deleted in the **Cabinet Specification** dialog. See “Front Panel” on page 681.

When a cabinet has a fixture on either its top or front, the **Open Symbol** edit button opens its specification dialog. When a cabinet has both, the **Open Symbol** button opens the specification dialog for the fixture on the front. When a cabinet has multiple front appliances, the **Open Symbol** edit button will not be available.

> Fixtures can be added to both the top and front of the same cabinet. It is up to you to determine which can be effectively and safely combined in the real world.

Electrical Switches and Outlets

Electrical switches and outlets can be placed on cabinets in most views. See “The Electrical Tools” on page 625.

Cabinet Fillers

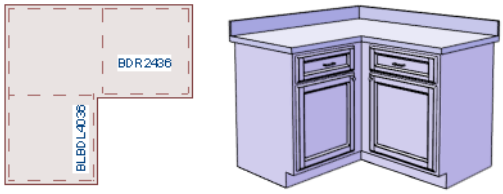
Cabinet fillers can be created automatically or placed manually. See “General Cabinet Defaults” on page 661.

Both automatic and manually placed cabinet fillers are included in the Materials List. Cabinet filler sizes in the Materials List are rounded to the nearest 1/16” (1 mm).

Automatic Fillers

By default, Chief Architect models a continuous countertop and generates fillers automatically when cabinets of the same height are either touching or placed with 3” (75 mm) of one another.

If two cabinets meeting at a corner are separated from each other by 3”(75 mm) or less, the program will automatically generate a filler in the angle between them. A filler is used to separate the front of one of these cabinets from the one it meets so that drawers and doors have room to operate.



Two base cabinets and the filler between them

Cabinet Filler Tools

If you prefer, you can place cabinet fillers manually using the **Cabinet Filler Tools**. Select **Build> Cabinet Filler** to access these tools.

To create a cabinet filler, select **Build> Cabinet Filler**, choose the desired tool from the submenu, then click to place a filler just as you would a cabinet, in any view.

Base Cabinet Fillers are composed of a front surface, a toe kick and a section of countertop.

Wall Cabinet Fillers are composed of a front surface only.

Full Height Cabinet Fillers are composed of a front surface and a toe kick.

You can also convert a regular base, wall or full height cabinet into a filler by checking **Filler** in the **Cabinet Specification** dialog. Similarly, a cabinet filler can be converted to a regular cabinet by unchecking this box. See “General Panel” on page 679.

Once created, manually placed cabinet fillers can be edited much like regular cabinets.

Placing Cabinets and Fillers

Cabinets and cabinet fillers are easily created with a single click in any view. See “Click-to-Create” on page 165.

When used near a wall corner, the Cabinet Tools will produce corner cabinets and soffits. See “Corner Cabinets” on page 675.

When created, cabinets are positioned relative to the floor of the room in which they are placed. Base and full height cabinets typically rest on the floor while wall cabinets are placed a set distance above the floor. See “Cabinet Defaults” on page 660.

If the ceiling height of the room does not accomodate the height of a cabinet, its **Floor to Bottom** value will be retained and its **Height** will be reduced so that it fits under the ceiling. When this happens, some front items may be removed from the cabinet if there is not enough room for them. See “Front Panel” on page 681.

Because cabinets are typically organized into groups with shared attributes, they have some special behaviors.

Cabinet Snapping and Aligning

Cabinets have several special snapping and aligning behaviors which help you create precisely aligned cabinets quickly and easily.

- When Base and/or Full Height cabinets are within 3” of one another’s sides, they will snap together. Wall cabinets snap in a similar manner, but only with other Wall cabinets.

- When Base and/or Full Height cabinets are within 3” of one another’s sides and their front or back surfaces are within 3” of aligning, they will become aligned. Wall cabinets snap in a similar manner with other Wall cabinets as well as Full Height cabinets.
- When a Base and/or Full Height cabinet is placed against the back of another Base or Full Height cabinet, its back surface will automatically face the other cabinet’s back. Wall cabinets snap in a similar manner with other Wall as well as Full Height cabinets.
- When a cabinet or cabinet filler is placed against a wall, its back and/or side will snap to the wall and, if the wall is moved, the cabinet will move with it.

When cabinets are snapped to a wall or to other cabinets, only exposed end cabinets have side counter overhangs, closed toe kicks, feet and corner pilasters. Adjacent cabinet fronts share front pilasters.

Cabinet snapping and aligning occurs even when when **Object Snaps**  are turned off; however, you can override this behavior by moving a cabinet into the desired position using dimensions. See “Moving Objects Using Dimensions” on page 989.

Cabinet Merging

When cabinets of the same height and type are placed side-by-side within 3” (30 mm) of one another they will automatically merge, making any shared components such as the toe kick, countertop, backsplash, and moldings continuous. Any gap between merged cabinets will be automatically filled. The exposed ends of merged cabinets have side counter overhangs, closed toe kicks, feet and corner pilasters. Adjacent merged cabinets share front pilasters.

Cabinets placed at different angles will also merge if they face toward one another and meet at a front corner. Cabinets that meet at a back corner will also merge provided that they face away from one another at an angle no greater than 87°. In either case, a filler is created in the angle between the two.

If the side of a cabinet is placed within 3” (30 mm) of a wall, the countertop will extend to the wall and a filler will be created.

Cabinet merging occurs even when **Object Snaps**  are turned off; however, you can suppress this behavior for cabinets that do not actually touch by turning off **Create Automatic Fillers**. See “General Cabinet Defaults” on page 661.

Base and Wall Cabinets

Base and wall cabinets have different default heights, so they can be placed directly above or below one another without interference.

You can use **Object Snaps**  to center a wall cabinet’s back center point above that of a base cabinet, or vice versa. See “Click-to-Create” on page 165.

Minimum Cabinet Size

If you try to place a cabinet into a space that is too narrow for its default size, the program will place a smaller cabinet with a width that is a multiple of the default **Resize Increment**. For example, if you try to place a 24” wide cabinet in a 20” wide space and your Resize Increment is 3”, the program

places an 18” cabinet. See “General Cabinet Defaults” on page 661.

If you try to place a cabinet into a space narrower than the default **Minimum Cabinet Width**, a cabinet will not be placed. If, for example, you have a space that is 8” and your Minimum Cabinet Width is 9”, no cabinet is placed.

Cabinet Fillers

By default, the program will automatically place a filler between cabinets that are within 3” of one another. You can instead turn off **Create Automatic Fillers** and place fillers manually.

Custom Countertops

Countertops are automatically generated on top of base cabinets. These default countertops are basically components of the cabinets. They can be edited in the **Cabinet Specification** dialog but cannot be selected and modified separately. You can instead use **Custom Countertops**, which are drawn and edited just like other closed-polyline based objects can be selected and edited independent of the cabinets beneath. See “Rectangular Polyline” on page 1069.

Select **Build> Cabinet> Custom Countertop**  , then either click and drag a rectangle or single-click to place a 2’x2’ countertop. Custom Countertops can be drawn in any view except cross section/ elevation views.

You can also generate a custom countertop over one or more selected base cabinets by clicking the **Generate Custom Countertop**  edit button. See “Using the Edit Tools” on page 672.

When a Custom Countertop covers any portion of a base cabinet, it overrides the default countertop.

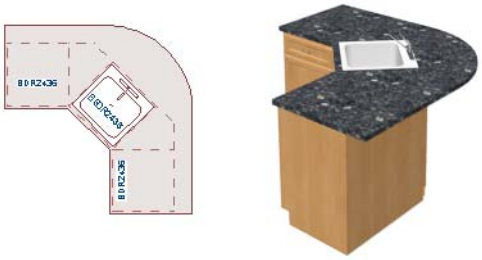
If a sink or built-in appliance is added to the cabinet, a hole for the fixture is automatically cut in the custom countertop.

A custom countertop bases its thickness and height on the base cabinet(s) below.

- If there are multiple cabinets below, it uses the specifications for the cabinet with the greatest overall height.
- If there is no base cabinet below, its height and thickness are based on the base cabinet defaults. See “Cabinet Defaults” on page 660.

Editing Custom Countertops

Once created, a custom countertop or Custom Counter Hole can be selected in 2D and 3D views and edited like other closed-polyline based objects. See “Editing Closed-Polyline Based Objects” on page 198.



Customcountertops initially use the default countertop material set in the Base Cabinet Defaults dialog. You can specify a different material as well as the height and position in the **Custom Countertop Specification** dialog. See “Custom Countertop Specification Dialog” on page 692.

You can also specify the edge profile of a custom countertop in the **Custom Countertop Specification** dialog. See “Moldings Panel” on page 692.

Displaying Cabinets

The display of the various cabinet object types, labels, module lines, door opening indicators and more is controlled in the **Layer Display Options** dialog. See “Displaying Objects” on page 144.

In Floor Plan View

Cabinets are drawn so that wall cabinets, soffits and shelves are always in front of base and full height cabinets, countertops and partitions. You can select a cabinet of any type, though, and click the **Move to Front** edit button to make that object display in front of other cabinets of the same type. See “Move to Front of Group” on page 216.

Objects assigned to cabinets, including doors, drawers, moldings, and hardware are located on the same layer as their parent object. They display in 3D views, but not in floor plan view.

Cabinet labels display in floor plan and cross section/elevation views when the “Cabinets, Labels” layer is turned on Text Style assigned to their layer. See “Cabinet Labels” on page 669.

Fill Styles and colors can be assigned to cabinet objects. Custom Countertops use a transparent fill style by default. If generated using the **Generate Custom Countertop** edit tool, a Custom Countertop uses the same fill style as the selected cabinet. See “Fill Style Panel” on page 1067.

Both automatic and Custom Countertops display if the “Cabinets, Countertops” layer is turned on. Custom Countertops can be assigned a molding profile, and can display the width of this profile if **Display Molding Edges** is selected in the **Custom Countertop Specification** dialog. See “General Panel” on page 693.

By default, cabinet module lines display in floor plan view when cabinet objects of the same type are placed side by side. If you prefer that these lines not display, turn off the “Cabinets, Module Lines” layer. You can also specify whether module lines are full or

partial. See “General Cabinet Defaults” on page 661.

You can also display cabinet front indicator arrows in floor plan view by turning on the “Cabinets, Front Indicators” layer.

In 3D Views

A cabinet’s label will display in cross section/elevation views when the “Cabinets, Labels” layer is turned on and the center point of the cabinet’s front is visible in the view. See “Cabinet Labels” on page 669.

To show door opening indicator arrows in cross section/elevation and Orthographic views, turn on the “Opening Indicators” layer. Opening indicators display in Vector Views only. See “Vector View” on page 928.

In the Materials List

There are a number of ways to control how, or whether, cabinets are included in the Materials List. See “Organizing Materials Lists” on page 1253.

You can add and edit information about cabinet accessories and sub-accessories in its **Components** dialog. See “Components Dialog” on page 1265.

If a base cabinet has an under-counter appliance inserted into it, that cabinet will not be counted in the Materials List - only the countertop materials associated with it will be listed. The cabinet will also display the appliance’s label information instead of its own.

Any crown or other moldings applied to cabinets are calculated separately and listed under the “Interior Trim” category.

Cabinet Labels

Labels for cabinets and cabinet fillers display in floor plan and cross section/elevation views when the “Cabinets, Labels” layer is turned on. See “Object Labels” on page 1241.

Shelves and Partitions can also display labels when the “Cabinets, Labels” layer is turned on. Unlike cabinets and cabinet fillers, their Automatic Label is blank; however, you can specify a custom label using text in their specification dialogs.

Cabinet labels have their own edit handles and can be moved and rotated when a cabinet is selected. They use the Text Style specified for the “Cabinets, Labels” layer. See “Text Styles” on page 1030.

If a base cabinet has an appliance inserted into it, the appliance’s label will display instead of the cabinet’s, and will be placed on the “Cabinets, Labels” layer. This does not occur if the cabinet has a Schedule Callout Label: in that case, the cabinet’s label will display instead. If the fixture also has a Schedule Callout Label, they will both display on the “Cabinet, Labels” layer.

Cabinet labels are available in four different formats:

- **Automatic Labels**, which include size, type and other information in abbreviated form.

- **User-Specified**, which are entered in the **Cabinet Specification** dialog. See “Label Panel” on page 1243.
- **Component Code**, which can be specified in a cabinet’s **Components** dialog and applied using the text macro %component_code%. See “Components Dialog” on page 1265.
- **Schedule Callout Labels**, which are specified in the **Cabinet Schedule Specification** dialog. See “Label Panel” on page 1239.

The minimum on-screen display size of object labels can be specified in the **Preferences** dialog. See “Appearance Panel” on page 90.

Automatic Labels

The format for automatic cabinet labels has four parts: Key, Code, Size, and Door Swing.

The **Key** provides basic information about the cabinet box and its use. B refers to base cabinets, W refers to wall cabinets and U refers to full height cabinets.

Together with the key, the **Code** provides additional information about the shape of the cabinet box:

Code	
	All Cabinets
LS + Key	Lazy Susan
LSD + Key	Lazy Susan Diagonal Door
DC + Key	Diagonal Door
LC + Key	Left Corner
BC + Key	Blind Corner
PBC + Key	Peninsula Blind Corner
Key + P	Peninsula
Key + F	Filler
E + Key	Right or Left End
A + Key	Angled Front
PR + Key	Peninsula Radius
R + Key	Radius End
B	**Base**
OB	Oven Base
SB	Sink Base
RB	Range Base
#DB	Drawer Bank (# is the number of drawers
FHB	Full Height Base (1 full height door
W	**Wall**
Code from above + #D	Drawer (# is the number of drawers
U	**Full Height (Utility)**
OTC	Tall Oven
RTC	Tall Refrigerator

Blind corner cabinets are dependent on the cabinet’s position in the plan. A cabinet can only be a blind corner cabinet when its front is partially hidden by another cabinet. See “Blind Cabinets” on page 678. If a cabinet is moved, therefore, its Code information may change.

Peninsula cabinets are only designated as such when they have one or more doors on the back side. See “Sides/Back Panel” on page 686.

The **Size** follows the Code in a cabinet label. Cabinet width is always included in the label; depth and height, on the other hand, may be included depending on the cabinet type and whether they are standard or non-standard.

Base and full height cabinet labels present Size information in this order: width, depth,

height. Wall cabinet labels present it in a slightly different order: width, height, depth.

	Sizes
Base	**W(D)(H)**
Width (W)	Always included
Depth (D)	24” (60 cm)
Height (H)	34 1/2” (90 cm)
Corner Depth (D)	Depth = Width
Wall	**WH(D)**
Width (W)	Always included
Height (H)	Always included
Depth (D)	12” (30 cm)
Corner Depth (D)	Depth = Width
Full Height	**WDH**
Width (W)	Always included
Depth (D)	Always included
Height (H)	Always included
Corner Depth (D)	Always included

Door Swing is included at the end of the label as either **L** or **R**, but only if all the doors on a cabinet have the same swing.

Here are a few examples of automatic cabinet labels and their meanings:

- **3DB24**: Base cabinet with 3 drawers, 24” wide. Depth and height are standard.
- **SB24R**: Sink base, 24” wide, with a right door. Depth and height are standard.
- **BCW2436R**: Blind wall cabinet, 24” wide, 36” high, with a right door. Depth is standard.
- **DCW2436L**: Diagonal corner wall cabinet, 24” wide, 36” high, with a left door. Depth is standard (equal to width).
- **OTC362490**: Full height cabinet with oven, 36” wide, 24” deep, 90” high.

The Automatic Labels for Shelves and Partitions are blank, but you can specify custom labels for both. See “Shelf/Partition Specification Dialog” on page 691.

Editing Cabinets

Cabinets and cabinet fillers can be selected in 2D and 3D views both individually and in groups and edited using the edit handles, the edit toolbar and their specification dialog.

Using the Mouse

Cabinets can be edited like other box-based objects. See “Editing Box-Based Objects” on page 203. The edit handles that a cabinet displays when selected will vary depending on the view.

When a cabinet is selected in floor plan view or on its top surface in a 3D view, ten edit handles display: the Move handle at the center, the Rotate handle, and a Resize handle on each edge and at each corner.

In 3D views, cabinets can be selected on any surface: front, side, back or top. When the side of a cabinet is selected, five edit handles are available: the Move handle and a Resize handle on each edge.

When cabinet labels are displayed, a label will move as its cabinet is moved or resized. When a cabinet is selected, its label will have its own Move and Rotate edit handles, as well. See “Displaying Cabinets” on page 668.

Cabinets cannot be concentrically resized, even when the Concentric edit behavior is enabled. See “Edit Behaviors” on page 176.

In the Specification Dialog

A selected cabinet can be customized in a variety of ways in its specification dialog. See “Cabinet Specification Dialog” on page 678.

Multiple Cabinets

When multiple cabinets are selected as a group, any specifications that they share in common can be modified in the **Cabinet Specification** dialog.

When you group select cabinets of different types, some options are not available in the **Cabinet Specification** dialog. For example, you cannot modify the crown molding on a full height cabinet if it is selected with a base cabinet that does not have crown molding.

Soffits, shelves, and partitions can be group selected and edited using their corresponding specification dialog. It is important that only soffits, or only shelves, or only partitions be a part of the selection set in order to access the needed specification dialog.

Using the Edit Tools

A cabinet or cabinets can be edited in a variety of ways using the buttons on the edit toolbar. See “The Edit Toolbar” on page 35.

Add to Library

Cabinets can be saved in the Library Browser. Select a base, wall or full height cabinet or cabinet filler and click either the **Add to Library** or **Add to Library As** edit button. See “Add to Library” on page 807.

If you use **Add to Library As**, you can add the selected cabinet to the library in either of two ways:

- Select Cabinet Module to save the cabinet along with its doors, drawers and panels and any fixtures or appliances.
- Select Cabinet Doors and Drawers to save the cabinet door style only.

Using Dimensions

Like various other objects, cabinets can be moved and resized using dimensions. See “Moving Objects Using Dimensions” on page 989.

In order to be edited using dimensions, cabinets must be located by them. You can specify whether cabinets are located by dimensions in the **Dimension Defaults** dialog. See “Locate Objects Panel” on page 968.

Dimensions can be set to locate the sides and/or corners of cabinet boxes - not the countertop. If you wish, you can move a dimension's extension lines to locate the countertop after the dimension is drawn. See "Editing Extension Lines" on page 986.

Temporary Dimensions will locate the wall surface nearest the selected object edge or either cabinet boxes or Custom Countertops, depending on which type of object is selected:

- If a cabinet box is selected, Temporary Dimensions will locate the nearest wall surface or another cabinet box, but not Custom or automatically generated Countertops.
- If a Custom Countertop is selected, Temporary Dimensions will locate the nearest wall surface or another Custom Countertop, but not cabinet boxes or automatically generated counters.

Moving Walls with Cabinets Attached

When a cabinet is placed or moved against a wall, it will snap to the wall and become attached to it. When a wall is moved, all attached cabinets move with it.

Moving a wall to an unattached cabinet will not attach the cabinet to it: the cabinet must be moved to the wall. A cabinet can also be attached to a wall when **Plan Check**  is used. See "Plan Check" on page 1097.

When wall layers are resized or the wall layer definition redefined, the cabinets may become unattached. To reattach, select them, drag them away from the wall, and then drag them back again.

Editing Cabinet Styles

A variety of settings allow you customize the appearance of your cabinets to create styles ranging from traditional to contemporary.

If the desired style is known before cabinets are placed, you can save time by specifing that style in the **Cabinet Defaults** dialogs before you start drawing. See "Cabinet Defaults" on page 660.

Cabinet Face Items

A variety of different face items can be added to the front of any cabinet, including doors, drawers, cutting boards, and horizontal separations. Face items can also be moved, resized, as well as removed. See "Front Panel" on page 681.

When adding, removing, or resizing face items, it is helpful to keep a few rules in mind:

- When the overall height of a cabinet or the height of a face item is changed, the height of the lowest face item that is not a Separation is adjusted to accommodate the change.
- If you increase the height of the lowest face item, the non-Separation item directly above is adjusted; if you decrease its height, a Blank Area and Separation are created below it.

Note: To ensure that Face Item heights always equal the total cabinet front height, the program automatically adjusts the bottom Face Item as changes are made elsewhere. This means you should start editing Face Items at the top and work down.

Doors, Drawers and Panels

Cabinet doors, drawers, and panels can be applied in either of two ways:

- In the **Cabinet Specification** dialog. See “Door/Drawer Panel” on page 685 and “Sides/Back Panel” on page 686.
- Directly from the Library Browser.

Select a style in the library, then click on a cabinet to apply the selected style to that cabinet. In 3D views, click on a face item to apply the selected library object to that item. See “Placing Library Objects” on page 814.

A secondary door or drawer style can also be specified - for example, to create glass doors above solid doors in wall cabinets. See “Front Panel” on page 681.

Cabinet Hardware

Cabinet handles, pulls, and hinges can be assigned in the **Cabinet Specification** dialog. See “Door/Drawer Panel” on page 685.

In 3D views, pulls and handles can also be applied directly from the Library Browser. Select a hardware item, then click on the cabinet face item to apply it to that face item.

Pilasters, Feet, and Moldings

Pilasters can be applied to any cabinet in its **Cabinet Specification** dialog. Cabinet feet can also be applied to base and full height cabinets. See “Accessories Panel” on page 688.

Base cabinet with front pilasters and feet

Multiple molding profiles can also be applied around the perimeter of a cabinet at any height. For example, you may want a wood edge around base cabinet countertops and a crown molding that ties together the tops of the wall cabinets and full height cabinets. Moldings can be built up or stacked, and can be recessed, as well - for example, to produce light rails. See “Moldings Panel” on page 643.

Wall cabinet with crown molding and light rail

Framed and Frameless Cabinets

Both framed and European-style frameless cabinets can be specified in Chief Architect.

For both types of cabinet, you can define the door and drawer overlay or specify inset doors. On a traditional framed cabinet, you can also control the size of the rails and stiles. See “Front Panel” on page 681.

Countertops and Backsplashes

Countertop thickness, overhang, corner shape, and material for a selected base cabinet can be specified in the **Base Cabinet Specification** dialog. See “General Panel” on page 679.

Backsplashes can also be applied to base cabinets as well as down from wall cabinets, also on the General panel of their specification dialogs.

Custom Countertops, Counter Holes, and Backsplashes can also be created independent of base or wall cabinets. See “The Cabinet Tools” on page 661.

Cabinet Shelves

You can customize the shelves inside of base, wall, and full height cabinet boxes. See “Cabinet Shelf Specification Dialog” on page 690.

You can also specify the material assigned to a cabinet’s shelves on the Materials panel of the Cabinet Specification dialog. See “Cabinet Specification Dialog” on page 678.

Special Cabinets

There are a number of special cabinet shapes that can be specified. Certain requirements must be met before some special cabinet shapes can be specified. If the requirements are not met, a warning message will explain what is needed. See “Cabinet Specification Dialog” on page 678.

Note: Only Standard cabinets can be the default cabinet Type. See “Cabinet Defaults” on page 660.

Standard Cabinets

Select **Build> Cabinet> Base Cabinet** and click in floor plan view to place a standard, rectangular base cabinet.

Standard (default) cabinet

Corner Cabinets

To create a corner cabinet, click as close to an inside wall corner as possible in using either the **Base Cabinet**, **Wall Cabinet**, or **Full Height** cabinet tool. A corner cabinet remains a corner cabinet when it is moved, edited or copied.

Turn an existing cabinet into a corner cabinet by selecting Corner from the **Special** drop-down list in its specification dialog. See “General Panel” on page 679.

- Before a corner cabinet can be specified in the **Cabinet Specification** dialog, the cabinet’s Width must be greater than its Depth.
- The **Left** and the **Right Side Widths** can be set independently for corner cabinets.

Corner cabinet with sides of equal width

- You can specify a Diagonal Door on corner cabinets to create an angled corner cabinet. See “Front Panel” on page 681.

Corner cabinet with diagonal door

- The diagonal door on corner cabinets can be curved by entering a negative value in the second Right Side Width field. See “General Panel” on page 679.

Corner cabinet with curved door

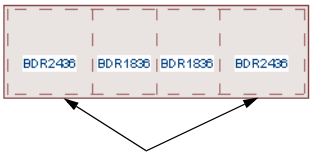
Exposed End Cabinets

A cabinet that is merged on one side but not the other is referred to as an exposed end. Pilasters, feet, countertop overhangs and closed toe kicks all behave differently when groups of cabinets are merged:

- If multiple cabinets are joined together, only exposed end (outside) cabinets have corner pilasters, cabinet feet, side counter overhangs and closed toe kicks.
- If multiple joined cabinets have both **Front Pilasters** and **Corner Pilasters** specified, the exposed end cabinets include corner pilasters and inside cabinets have front pilasters.
- If multiple cabinets are joined, inside cabinets share Front Pilasters.
- Corner pilasters and cabinet legs are eliminated on the back if the cabinet is

against a wall, and on either side if it's joined with another cabinet.

- For more information see "Cabinet Specification Dialog" on page 678.



Exposed End Cabinets

End Cabinets

Open a cabinet for specification and select Left or Right End Cabinet from the **Special** drop-down list to create an end cabinet.

Left End Cabinet

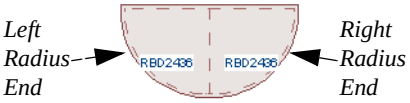
- End Cabinets have an angled front and side.
- The cabinet width must be no greater than its depth for an end cabinet to be specified.

Radius End Cabinets

Open a cabinet for specification and select Right or Left Radius End from the **Special** drop-down list to create a radius end cabinet.

Radius End cabinets have a 90° arch

As you face the cabinet, a right radius end curves to the right, and a left radius end curves to the left.



Peninsula Radius Cabinets

Open a cabinet for specification and select Peninsula Radius from the **Special** drop-down list to create peninsula radius cabinet.

Peninsula Radius Cabinet

The radius can be adjusted by changing the Depth/Bow Depth value. See "General Panel" on page 679.

Angled Front Cabinets

Open a cabinet for specification and select Angled Front from the **Special** drop-down list to create an angled front cabinet.

Angled Front Cabinet

- The length of the left and right side of an **Angled Front** cabinet can be defined by changing the Depth/Bow Depth value. See “General Panel” on page 679.

Bow Front Cabinets

Open a cabinet for specification and select Bow Front from the **Special** drop-down list to create a bow front cabinet.

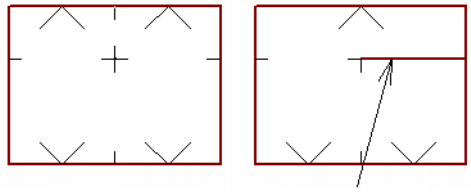
Bow Front Cabinet

- The bow depth of a **Bow Front** cabinet can be defined. See “General Panel” on page 679.
- The bow depth cannot exceed half the cabinet width.
- The doors and drawers on a **Bow Front** cabinet automatically match the curvature of the cabinet.

Kitchen Islands

To create a kitchen island, simply place several cabinets back-to-back and/or side-to-side. Match the widths so that each cabinet back or side meets the back or side of only one other cabinet. If this is not done, the lines separating the cabinets cannot be suppressed.

Two cabinets cannot merge with the same side of another cabinet. The picture shows two instances when cabinets are placed back-to-back. Cabinet fronts and joining surfaces are shown.



Correct - Widths of front and back cabinets match

Incorrect - Solid line here is not suppressed.

Blind Cabinets

Often, when two cabinets meet in a corner, one is partially hidden by the other. This partially hidden cabinet is called a “blind” cabinet. Chief Architect will resize and offset the front items of the partially hidden cabinet so that they are not located in the hidden portion of the cabinet face.

You can turn off this automatic behavior in the **General Cabinet Defaults** dialog. See “General Cabinet Defaults” on page 661.

You can also create a blind cabinet manually by controlling the widths of a cabinet’s left or right stile in its **Cabinet Specification** dialog. See “Front Panel” on page 681.

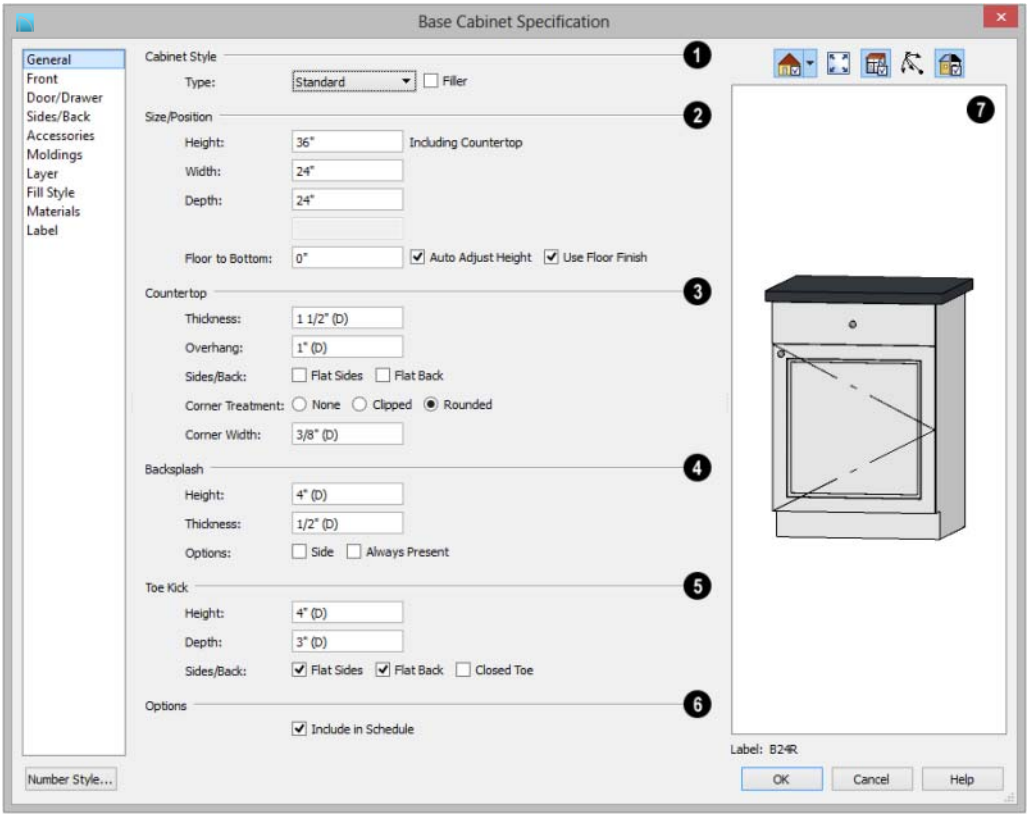
Cabinet Specification Dialog

Select one or more cabinet and click the **Open Object** edit button to open the **Cabinet Specification** dialog.

If the selected cabinet is an imported symbol, the **Cabinet Symbol Specification** dialog opens instead and has fewer options than the **Cabinet Specification** dialog. See “Symbol Specification Dialog” on page 1159.

The options in the **Cabinet Specification** dialogs are similar to the corresponding **Cabinet Defaults** dialog. See “Cabinet Defaults” on page 660.

General Panel



1 A number of **Cabinet Types** are available in the drop-down list. Certain requirements must be met before some types can be specified. Not available in the **Cabinet Defaults** dialogs. See "Special Cabinets" on page 675.

- Check **Filler** to specify the selected cabinet as a filler of the same type instead of a true cabinet. See "Cabinet Fillers" on page 664. Not available in the **Cabinet Defaults** dialogs.

2 **Size/Position** - The selected cabinet's dimensions and position relative to the floor can be specified here. Fractional values are supported to 1/16th of an inch (1 mm).

- Specify the **Height (Including Counter)** of the cabinet box, as measured from bottom to top. For base cabinets, this value includes the countertop thickness, but not the height of the backsplash.

> Note: Height refers to the height of the entire cabinet, including countertop and toe kick. If you change the Countertop Thickness or Toe Kick Height, the cabinet's total height is not altered. Instead, the cabinet face height and the heights of face items change in response.

- Specify the **Width** of the cabinet box, as measured across the front of the cabinet box from left to right. This does not include the countertop overhang.
- Specify the **Depth** of the cabinet box, as measured from front to back. It does not include the thickness of overlay doors or the countertop overhang.
- For Corner cabinets, the **Width** and **Depth** fields are instead named **Right Side Width** and **Left Side Width**.
- For Corner and Bow Front cabinets, specify the **Bow Depth**. A positive number creates a bow and a negative number, an inside bow. Not available for Corner cabinets if Diagonal is unchecked on the Front panel. See “Front Panel” on page 681.
- For Angled Front cabinets, specify the **Left Depth** and **Right Depth**.rather than the Depth and Bow Depth.
- Specify the **Floor to Bottom** distance. For base and full height cabinets, this is usually 0.
- When the selected cabinet is outside a room and **Auto Adjust Height** is checked, its Floor to Bottom height is measured relative to the terrain height. When this is unchecked, the Floor to Bottom height is measured from the default floor height of Floor 1. See “Terrain Height vs Floor Height” on page 697 of the Reference Manual.
- Check **Use Floor Finish** to measure the Floor to Bottom distance from the surface of the floor finish. When unchecked, this height is measured from the subfloor. Only available when Auto Adjust Height is checked.

❸ Specify the dimensions and style of the **Countertop** here. Only available for base cabinets and fillers.

- Specify the countertop **Thickness**. Changing this value does not alter the cabinet height, but it does affect the height of face items. See “Front Panel” on page 681.
- Specify the countertop **Overhang**. The Overhang is used for any side of a cabinet not against a wall or another cabinet.
- Check **Flat Sides** to eliminate the counter overhang on the cabinet’s exposed ends.
- Check **Flat Back** to eliminate the overhang on cabinets with an exposed back.
- **Corner Treatment** - Specify **Clipped** or **Rounded** countertop corners. The options here are the same as those for the Cabinet Corner Treatment, but affect the countertop rather than the cabinet box. See “Sides/Back Panel” on page 686.
- When Clipped or Rounded is selected, specify the **Corner Width**, which is measured from the original location of the corner to the point where the straight front edge ends.

❹ The dimensions and style of the **Backsplash** are specified here. The backsplash only displays when the cabinet is against a wall. Only available for base and wall cabinets.

- Specify the backsplash **Height** and **Thickness**. Height is only available for base cabinets - not wall cabinets.
- Check **Side** to add the backsplash to the side of the cabinet if it is against a wall or a taller cabinet. Not available for Corner cabinets.

- Check **Always Present** to display the backsplash at all times. If unchecked, a backsplash is present only when the cabinet is against a wall.
- Check **Backsplash to Base Below** to extend a backsplash from the selected wall cabinet down to the backsplash or countertop of the base cabinet below. Only available for wall cabinets.

Note that while a base cabinet's backsplash is measured from the countertop up, a wall cabinet's backsplash extends downward.

❺ The dimensions and style of the **Toe Kick** are specified here. Only available for base and full height cabinets.

- Specify the toe kick's **Height** and **Depth**. Changing the Height does not alter the cabinet height but does affect the heights of the cabinet face and face items.
- **Flat Sides** can be added to base and full height cabinets. Checking Flat Sides eliminates the toe kick area on the exposed end(s) of the cabinet.
- Check **Flat Back** to eliminate the toe kick on a cabinet with an exposed back. This does not eliminate the toe kick on the cabinet front.
- Check **Closed Toe** to extend the cabinet sides to cover the sides of the toe kick area. If pilasters that do not extend to the floor are specified, checking this places a support block under them at exposed corners.

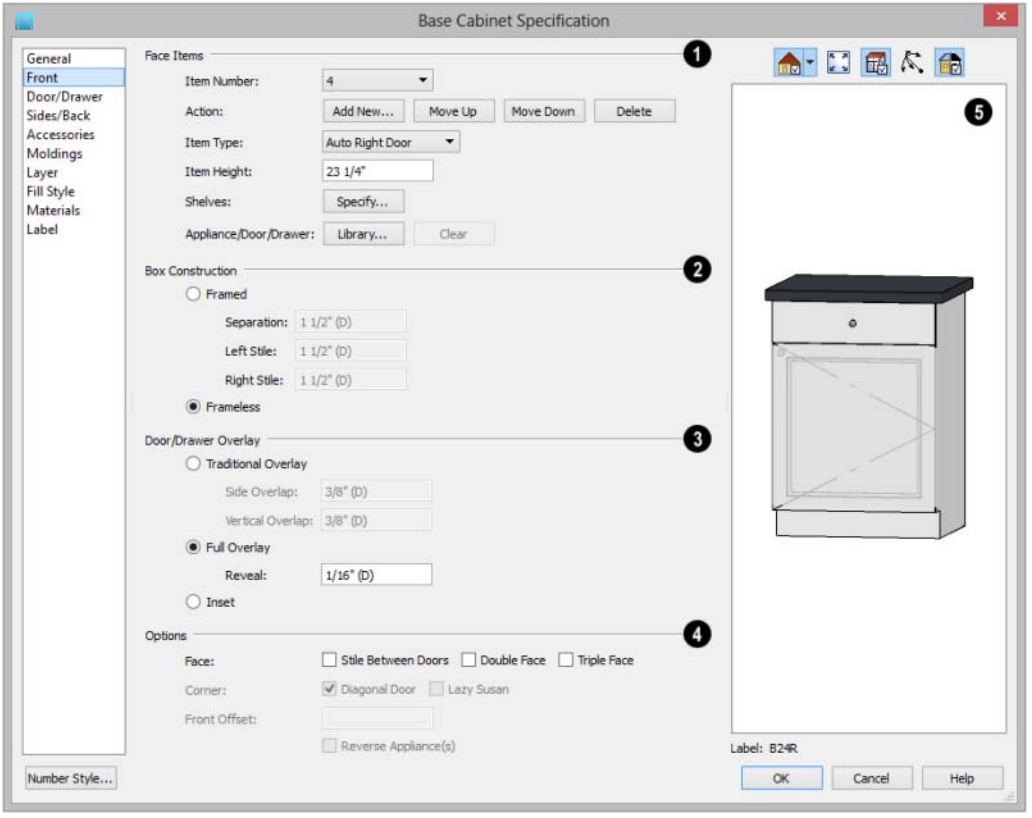
❻ Check **Include in Schedule** to include the selected cabinet(s) in the Cabinet Schedule. See "The Schedule Tools" on page 1232.

❼ A preview of the selected cabinet displays on the right side of the panel. See "Dialog Preview Panes" on page 38.

- The **Cabinet Label** displays below the preview pane. See "Cabinet Labels" on page 669.

Front Panel

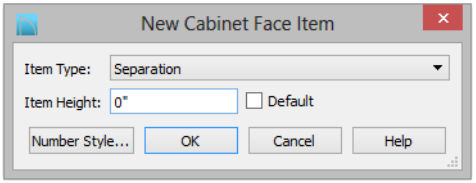
If you click on a cabinet face item in the preview on the right side of the dialog, the Front panel will become active and that face item will be selected.



1 Most of the **Face Items** settings are only active when a door, drawer, or other face item is selected. To select a face item, choose it from the Item Number drop-down list or click on it in the preview. When a face item is selected, it is highlighted in the preview, its attributes can be edited, and the drop-down list can be navigated using the arrow and number keys. The vertical frame pieces on the sides of the cabinet front are referred to as stiles and cannot be selected in the preview.

- The **Item Number** of the selected face item displays here. Click the drop-down list to select a different item. Item numbers start at the top of the cabinet and go down the face. Item Number 1 is usually the top face frame Separation, or rail.
- The **Action** buttons let you add, remove, and organize the cabinet's face items. See "Cabinet Face Items" on page 673.
- Click **Add New** to add a new face item directly below the currently selected item. When a face item is added, the height of the lowest item on the cabinet front is reduced to make room for the new item. If you click **Add New** with no face item selected, the new item is added to the bottom of the cabinet face.

- In the **New Cabinet Face Item** dialog, define the **Item Type**, **Item Height**, and click OK. If the Item Type is "Separation", you can check **Default** to use the default Separation Height.



- Click **Delete** to remove the selected face item. When an Auto Left, Auto Right, Left, Right, or Double Door is deleted, it is replaced by an Opening; when other face item types are deleted, the height of the lowest item is increased to make up the difference.

The program tries to maintain a single separation between all face items. When you add or delete a face item, separations are usually added or deleted with them.

- Click **Move Up** to move the currently selected item up one position, switching places with the item directly above.
- Click **Move Down** to move the currently selected item down one position, switching places with the item directly below.
- Choose the selected face item's **Item Type** from the drop-down list:

Item Type	Special Behaviors
Blank Area	Creates a solid, flat surface.
False Drawer and False Double Drawer	Assumes the appearance of specified the drawer style, including hardware.
Drawer and Double Drawer	As specified.
Cutting Board	As specified.
Auto Right and Auto Left Door	Become double doors when cabinet width is greater than 24" (600 mm).
Left, Right, and Double Door	As specified, regardless of cabinet width.
Door Panel	Assumes the appearance of the specified door style but with no hardware.
Opening	Creates an opening with shelves.
Separation	Creates a horizontal rail, or frame piece.
Appliance	Creates an opening with no shelves, for which an appliance can be specified.

- Specify the selected face item's **Item Height**. Fractional values are supported to 1/16th of an inch (1 mm). For best results, edit face item heights starting at the top of the cabinet and work down. See "Cabinet Face Items" on page 673.

Note: If the Height of an Appliance has been changed, entering a "d" restores its default height. See "Built-In Appliances" on page 663.

- **Shelves** - Click the **Specify** button to open the **Cabinet Shelves Specification** dialog and specify the shelf configuration for a selected Door or Opening Face Item. See "Cabinet Shelf Specification Dialog" on page 690.

- When an **Appliance/Door/** or **Drawer** is selected, click the **Library** button to choose an appliance, secondary door style, or secondary drawer style for the selected face item from the library. The options available depend on the type of face item currently selected. See “Select Library Object Dialog” on page 816.
- Click the **Clear** button to remove the library appliance, door, or drawer from the selected face item.

❷ Define the **Box Construction** of the selected cabinet. Select **Framed** to create a traditional framed cabinet and enable the settings below, or choose **Frameless** for a European style cabinet.

- Specify the **Separation** value, which is the width of the horizontal face frame piece between doors, drawers, and other face items.
- Specify the widths of the **Left** and **Right Stiles**, which are the vertical frame pieces to the left and right of all face items. When set to default (D), the program uses the selected cabinet’s Separation value.

❸ Define the **Door/Drawer Overlay** of the selected cabinet.

- Select **Traditional Overlay**, then specify the **Side** and **Vertical Overlap** values.

  The **Side Overlap** is the distance that doors and drawers overlap the vertical stiles of the cabinet box and is applied to both sides of the doors and drawers.

  The **Vertical Overlap** is the distance that doors and drawers overlap the horizontal separations between front items and is applied to both the top and bottom of the doors and drawers.
- Select **Full Overlay**, then specify the **Reveal**, which is the distance between door and drawer front items.
- Select **Inset** to produce doors and drawers that are flush with the rails and stiles rather than overlaying it.

❹ Additional **Options** for **Face** items, **Corner** cabinets, and appliances inserted into the selected cabinet:

- Check **Stile Between Doors** to separate double doors and double drawers with a stile. Other face items types are not affected by this setting.
- Check **Double Face** to replace the cabinet’s face items with two side-by-side items, each approximately half as wide.
- Check **Triple Face** to replace the cabinet face items with three face items.
- Uncheck **Diagonal Door** to create double doors at right angles instead of a single diagonal door. This option is only available for Corner Cabinets and is checked by default in the **Cabinet Defaults** dialog. See “Corner Cabinets” on page 675.
- Check **Lazy Susan** to indicate a lazy Susan in the cabinet’s label and its appearance in floor plan view. This option does not display in 3D views.
- Select **Reverse Appliance** to reverse any appliances inserted into the selected cabinet from left to right: for example, to change a left hand door on a built-in refrigerator to a right hand door. This option is only available for cabinets with an inserted appliance. See “Inserted Objects” on page 815.

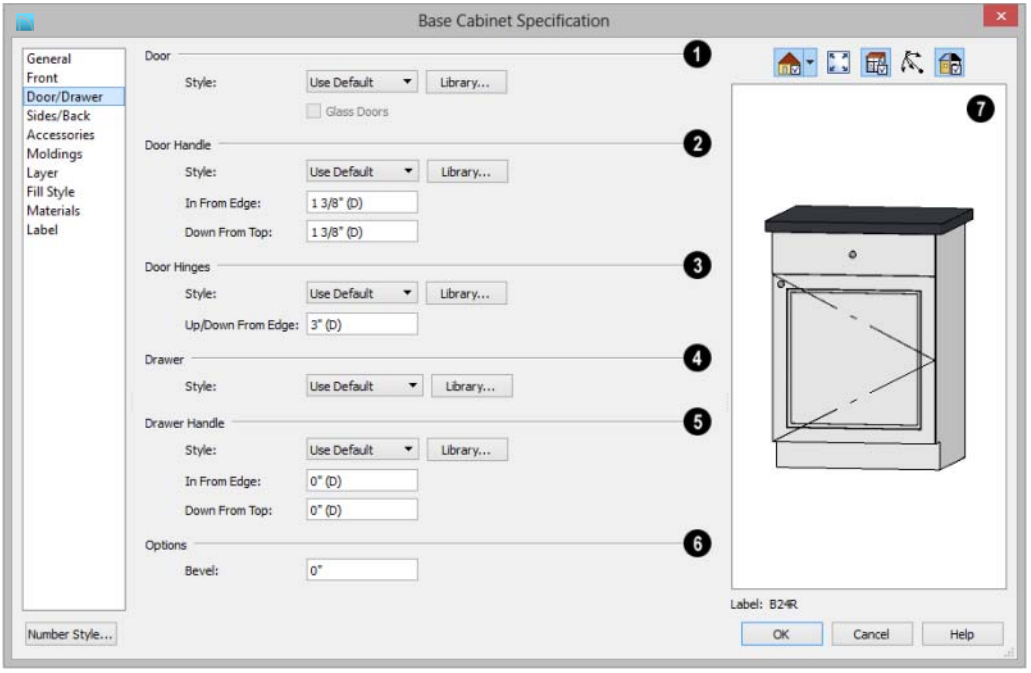
- Specify the **Front Offset**, which is the distance from the front of a top-mounted appliance to the counter edge. Only available for base cabinets with a top-mounted fixture, such as a sink or cooktop.

❺ A preview of the selected object displays on the right side of the panel. See “Dialog Preview Panes” on page 38.

- The **Cabinet Label** displays below the preview diagram. See “Cabinet Labels” on page 669.

Door/Drawer Panel

The settings on the Door/Drawer panel allow you to control the appearance of the selected cabinet’s doors, drawers, and hardware.



❶ Specify the appearance of the **Doors** applied to selected cabinet.

Select a door **Style** from the drop-down list. See “Doors, Drawers and Panels” on page 673.

- Select “Use Default” to apply the door style specified in the defaults dialog for the selected cabinet’s type. See “Cabinet Defaults” on page 660.
- Select “Slab Doors” to apply a flat door front or “Framed Doors” to apply a door with a frame and flat panel front.
- Select “Library” or click the **Library** button to select a cabinet door from the

library. If a library door has been previously selected, its name will display in the list. See “Select Library Object Dialog” on page 816.

- Check **Glass Doors** to use a glass material for the panel of Framed doors or for the entire door for Slab doors. Not available when “Library” is the selected door Style.

❷ Specify the characteristics of the selected cabinet’s **Door Handles**.

- Select a door handle **Style** from the drop-down list or choose one from the **Library**.
- Specify the position of the handle **In From Edge**, as measured from the edge of the door opposite the hinges.
- Specify the height of the handle **Down From Top**, as measured from the top edge of the door. For wall cabinets, this value is measured **Up From Bottom**.

❸ Specify the characteristics of the cabinet **Door Hinges**.

- Select a door hinge **Style** from the drop-down list or choose one from the **Library**.
- Specify the location of the hinges **Up/Down From Edge**, as measured from the door edge. If the cabinet door is more than 35 1/4” (880 mm) high, three hinges will be created instead of two.

❹ Select a **Drawer Style** from the drop-down list or choose one from the **Library**. For best results, “Framed” drawers should be at least 6” (150 mm) high.

❺ Specify the characteristics of the selected cabinet’s **Drawer Handles**.

- Select a drawer **Handle Style** from the drop-down list or choose one from the **Library**.
- The **In From Drawer Edge** setting creates two handles the specified distance from the left and right drawer edges. A value of 0 creates a single handle centered horizontally on the drawer.
- Specify the location of the handle **Down From Top**. A value of 0 centers the handle vertically on the drawer.

❻ **Options**

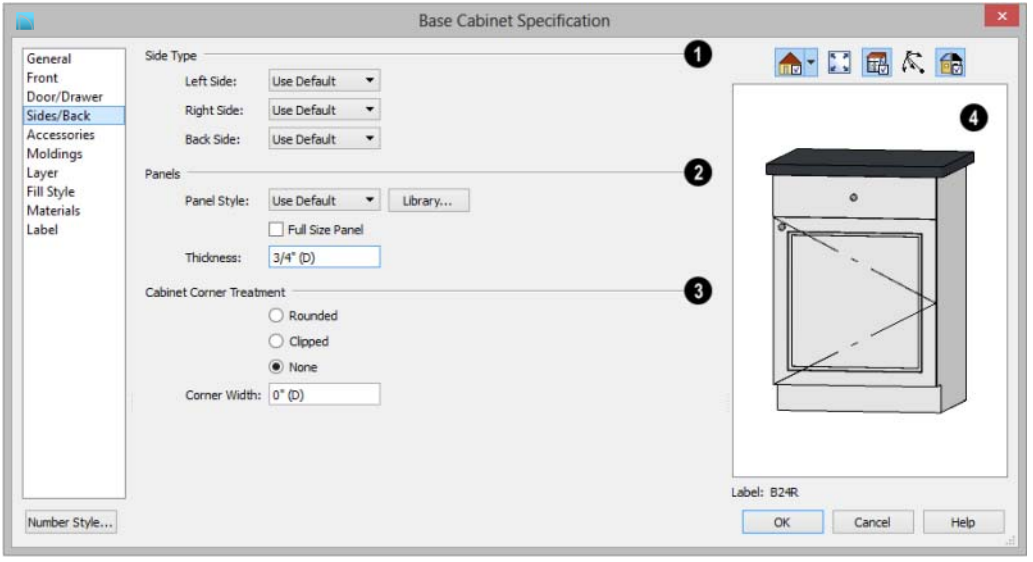
- Enter a **Bevel** width to create beveled edges on Slab drawers and doors. The bevel width, as viewed from the front, has a maximum value of 3” (75 mm). Framed and Library doors are not affected by this setting.

❼ A preview of the selected object displays on the right side of the panel. See “Dialog Preview Panes” on page 38.

- The **Cabinet Label** displays below the preview diagram. See “Cabinet Labels” on page 669.

Sides/Back Panel

The settings on the Sides/Back panel allow you to control the appearance of the selected cabinet’s side and back surfaces. See “Editing Cabinet Styles” on page 673.



1 **Side Type** - Specify the appearance of the **Left**, **Right** and **Back Sides** of the cabinet by selecting an option from the drop-down list for each:

- Select “Use Default” to use the default panel type set in the **Cabinet Defaults** dialog. See “Cabinet Defaults” on page 660.
- Select “Finished” to specify the side a finished.
- Select “Unfinished” to specify the side as unfinished
- Select :Auto Finished” to finish the side only when it is not adjacent to another cabinet or a wall.
- Select “Paneled” to apply a panel to the side.
- Select “Auto Paneled” to apply a panel to the side only when it is not adjacent to another cabinet or a wall.
- Select “Match Front” to apply the same face items as the cabinet front to its back. Only available for the Back Side.

2 Specify the characteristics of the selected cabinet’s **Panels**.

- Choose “Use Default” or select a Slab, Framed, or Library **Panel Style** from the drop-down list.
- Click the **Library** button to select a panel style from the Library Browser. Cabinet doors are typically used, although drawers can be used, as well. See “Select Library Object Dialog” on page 816.
- Check **Full Size Panel** to apply a single panel to the entire side. When unchecked, the panel uses the same Style and Overlap values as the front. If the cabinet has multiple levels of doors on its front, the side will have matching panels.
- Specify the selected panel’s **Thickness**.

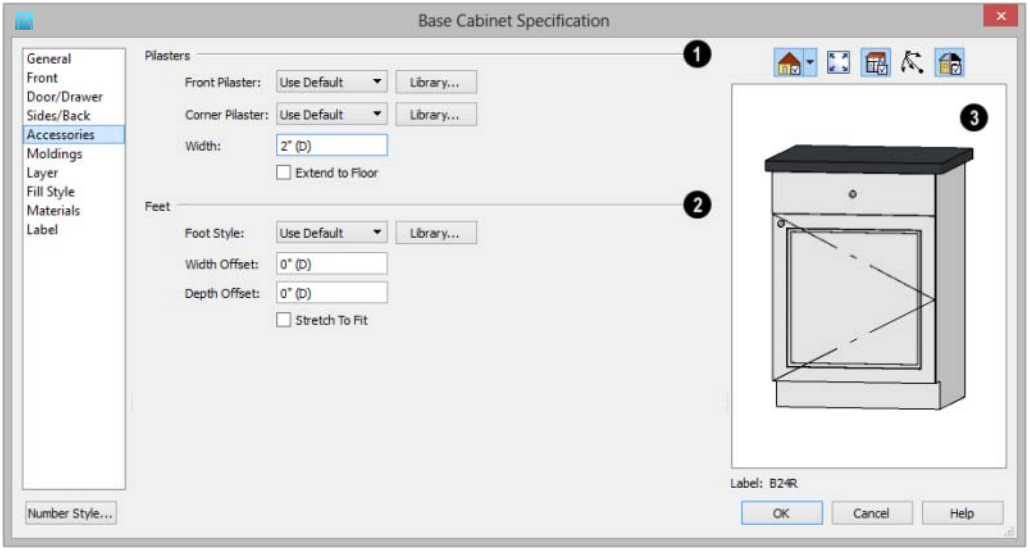
3 **Cabinet Corner Treatment** - Specify clipped or rounded corners for the selected cabinet's box. These settings are only available for Standard, Corner, and Bow Front cabinet types.

- Select **Rounded** to create rounded cabinet corners, then specify the length of the chords of those rounded corners.
- Select **Clipped** to create 45° angled edges at the cabinet corners, then specify the length of those angled edges.
- Select **None** for cabinet corners that are neither clipped nor rounded.
- Specify the **Corner Width** value, as measured from the original corner to the point at which the clip or curve begins. Only available if Clipped or Rounded is selected.

4 A preview of the selected object displays on the right side of the panel. To see cabinet's sides, and back, rotate the view. See "Dialog Preview Panes" on page 38.

Accessories Panel

The settings on the Accessories panel let you apply pilasters and feet to the selected cabinet(s). These options only apply to Standard and Corner cabinets. Cabinet feet can also be applied to Bow Front cabinets. See "Editing Cabinet Styles" on page 673.



1 Specify the desired **Pilasters** for the selected Standard or Corner cabinet(s).

- **Front Pilaster** - Select the default front pilaster, a pilaster from the library, or None.

- **Corner Pilaster** - Select the default corner pilaster, a pilaster from the library, or None. Specifying a corner pilaster automatically creates a flat corner surface and overrides the **Flat Corner** setting on the General Panel. Does not apply to Corner cabinets with Diagonal Doors selected.
- Specify the **Width** of the selected cabinet's pilasters. This value applies to both front and corner pilasters.
- Check **Extend to Floor** to extend front pilasters and corner pilasters to the floor. Removing the Toe Kick on the General panel also extends pilasters to the floor.

❷ Specify the desired **Cabinet Feet** for the selected Standard, Corner, or Bow Front cabinet(s). Select the default cabinet foot, a cabinet foot from the library, or None. Adjoining cabinets share cabinet feet. Not available for wall cabinets.

- Specify the **Width Offset**, which is the offset of the cabinet feet relative to the sides of the cabinet box.
- Specify the **Depth Offset**, which is the offset of the cabinet feet relative to the front and back of the cabinet box.
- Check **Stretch to Fit** to resize the cabinet feet so that they extend from each corner to the midpoint of each edge.

❸ A preview of the selected object displays on the right side of the panel. To see the cabinet's pilasters and feet, you may want to zoom in. See "Dialog Preview Panes" on page 38.

Moldings Panel

The settings on the Moldings panel allow you to assign one or more horizontal moldings around the selected cabinet. See "Editing Cabinet Styles" on page 673.

For information about the settings on this panel, see "Moldings Panel" on page 643.

Layer Panel

The Layer panel is found in the specification dialogs for many different objects. For more information, see "Layer Panel" on page 152.

Fill Style Panel

The settings on the Fill Style panel affect the appearance of the selected cabinet in floor plan view. For more information, see "Fill Style Panel" on page 1067.

Materials Panel

The settings on the Materials panel affect the appearance of the selected cabinet in 3D views. For information about these settings, see "Materials Panel" on page 831.

Some material options may be disabled if the selected cabinet is a manufacturer symbol.

Label Panel

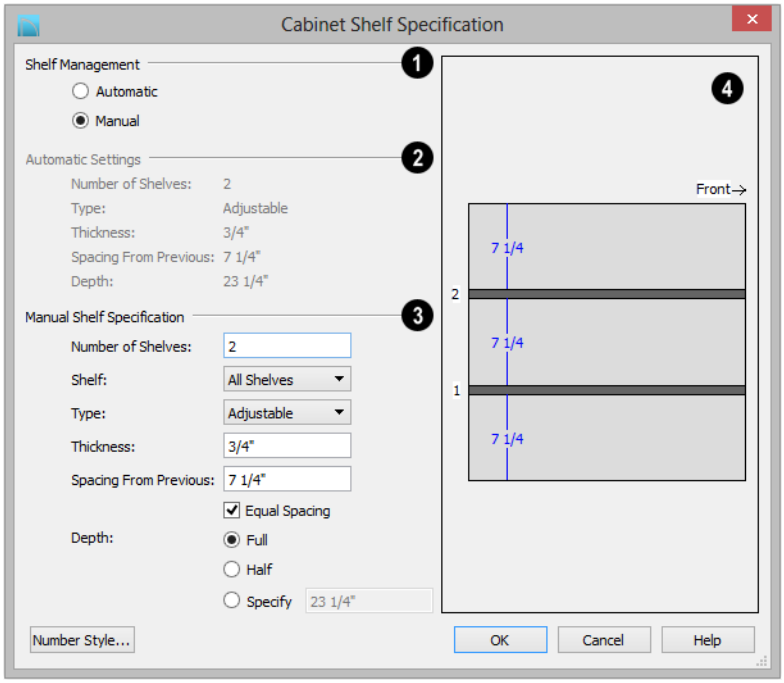
Cabinet labels display in floor plan view when the "Cabinets, Labels" layer is turned on and use the Text Style assigned to that layer. See "Cabinet Labels" on page 669.

For more information about the settings on this panel, see "Label Panel" on page 1243.

Note: If you choose a label shape in the Cabinet Schedule Specification dialog, the settings here are overridden and the schedule label is used instead.

Cabinet Shelf Specification Dialog

From the Front panel of the **Base Cabinet**, **Wall Cabinet**, or **Full Height Cabinet Specification** dialog, select a door or opening face item in the preview diagram and click the **Specify Shelves** button to open the **Cabinet Shelf Specification** dialog. See “Front Panel” on page 681.



Automatic

1 By default, cabinet shelves are specified automatically. The default number of shelves, shelf type, thickness, spacing, and depth display here.

Manual

2 Select the **Manual** radio button to specify cabinet shelving for the selected door or opening. If a cabinet is resized after shelving has been manually edited, the specifications are maintained, but all shelves may not be display in all situations.

The **Number of Shelves** can be specified. **Equal Spacing** is checked by default.

3 The shelf type, thickness, spacing, and depth can be specified on a per shelf basis or for all shelves at once. To determine which, select the shelf number or **All Shelves** from the drop-down list.

Note: If All Shelves is selected after changes have been made to any one shelf, “no change” displays, indicating that all shelves are not the same.

- Specify the shelf **Type** from the drop-down list.
- Enter a shelf **Thickness** in fractions or decimals.
- Changing the **Spacing From Previous** unchecks **Equal Spacing** above.
- You can select Full, Half or Specify the shelf **Depth** manually.

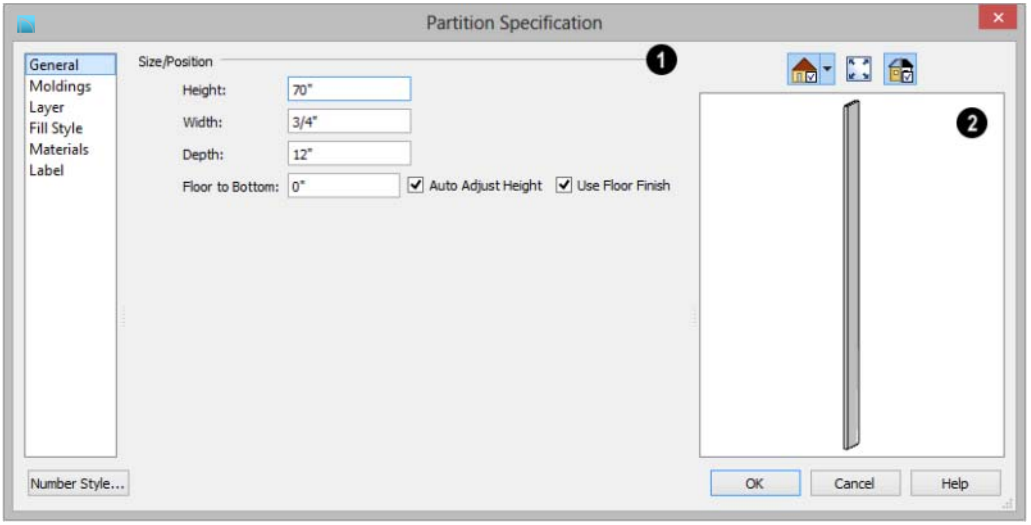
❹ The preview shows shelf numbers, thickness, depth, and spacing. Press the Tab key to update the preview as changes are made.

Shelf/Partition Specification Dialog

Select a shelf or partition and click the **Open Object** edit button to open the **Shelf Specification** or **Partition Specification** dialog.

The options in these specification dialogs are similar to the corresponding defaults dialogs. See “Cabinet Defaults” on page 660.

General Panel



❶ **Size/Position** - Specify the **Height, Width, Depth**, and the distance from the **Floor to Bottom** of the shelf or partition.

- When the selected object is outside a room and **Auto Adjust Height** is checked , its Floor to Bottom height is measured relative to the terrain height. When this is unchecked, the Floor to Bottom height is measured from the default floor height of Floor 1. See “Terrain Height vs Floor Height” on page 697 of the Reference Manual.
- Check **Use Floor Finish** to measure the Floor to Bottom distance from the surface of the floor finish. When unchecked, this distance is measured from the subfloor. Only available when Auto Adjust Height is checked.

❷ A preview of the selected object displays on the right side of the panel. See “Dialog Preview Panes” on page 38.

Fill Style Panel

The settings on the Fill Style panel affect the appearance of the selected object in floor plan view. For information about these settings, see “Fill Style Panel” on page 1067.

Moldings Panel

The settings on the Moldings panel allow you to apply molding to the selected object. For information about these settings, see “Moldings Panel” on page 689.

Layer Panel

For information about the settings on this panel, see “Layer Panel” on page 152.

Materials Panel

The settings on the Materials panel affect the appearance of the selected object in 3D views. For information about these settings, see “Materials Panel” on page 831.

Label Panel

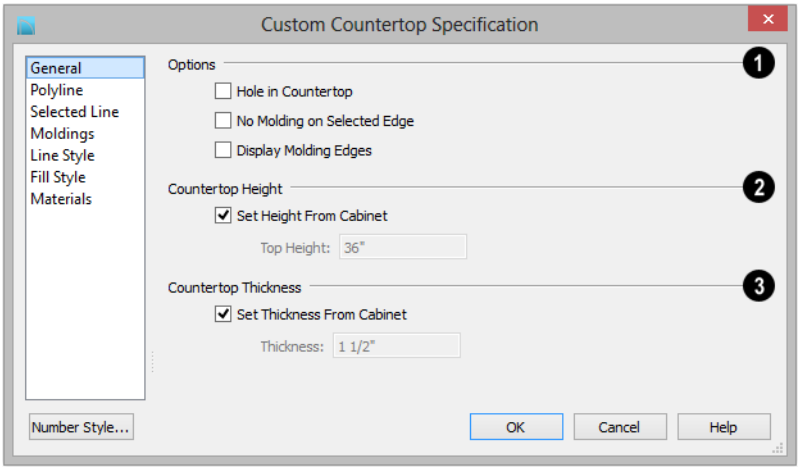
Shelf and Partition labels display in floor plan view when the “Cabinets, Labels” layer is turned on and use the Text Style assigned to that layer. The Automatic Labels for Shelves and Partitions re blank, but you can specify custom labels See “Cabinet Labels” on page 669.

For more information about the settings on this panel, see “Label Panel” on page 1243.

Custom Countertop Specification Dialog

Select a custom countertop and click the **Open Object** edit button to open the **Custom Countertop Specification** dialog.

General Panel



1 **Options** -

- Check **Hole in Countertop** to convert the selected countertop, which must be contained within another single Custom Countertop, into a countertop hole.
- Check **No Molding On Selected Edge** to turn off the display of molding on the selected edge. Only has an effect when a molding is specified for the countertop on the Moldings panel of this dialog.
- Check **Display Molding Edges** to display two edge lines instead of one, indicating the width of any molding applied to the countertop. Only has an effect when a molding is specified for the countertop.

2 Specify the **Countertop Height** -

- Uncheck **Set Height From Cabinet**, then specify the **Top Height** of the selected Custom Countertop. When this is checked, Countertop Height is determined by the cabinet below.

3 Specify the **Countertop Thickness** -

- Uncheck **Set Thickness From Cabinet**, then specify the **Thickness** of the selected Custom Countertop. When this is checked, Countertop Thickness is determined by the cabinet below.

Polyline Panel

The Polyline panel state's the length of the countertop's **Length/Perimeter**, its **Area**, and its **Volume**.

If the selected countertop has any Holes, they will be subtracted from the **Area** and **Volume** values. See "Custom Counter Holes" on page 663.

Selected Line/Arc Panel

The Selected Line panel is available when the selected edge is a line as opposed to an

arc. For more information, see “Line Panel” on page 1052.

The Selected Arc panel is available when the selected edge has been converted to an arc. For more information, see “Arc Panel” on page 1061.

See, too, “Selected Edge” on page 181 and “Change Line/Arc” on page 229.

Moldings Panel

The settings on the Moldings panel allow you to apply an edge profile to the selected countertop. For information about these settings, see “Moldings Panel” on page 689.

Line Style Panel

For information about the settings on this panel, see “Line Style Panel” on page 1053.

Fill Style Panel

The settings on the Fill Style panel affect the appearance of the selected countertop in floor plan view. For information about these settings, see “Fill Style Panel” on page 1067.

Materials Panel

The settings on the Materials panel affect the appearance of hte selected countertop in 3D views. For information about these settings, see “Materials Panel” on page 831.

Cabinet Schedules

The **Cabinet Schedule** tool allows you to produce customizable cabinet schedules as well as cabinet labels that display schedule numbers. See “Schedules and Object Labels” on page 1231.

Some cabinets with built-in appliances will not be included in a cabinet schedule, even if **Include in Schedule** is checked in the **Cabinet Specification** dialog. Examples include base cabinets with dishwashers or built-in ranges.

Built-in appliances can also be listed in customizable fixture schedules. Note that free-standing appliances can display schedule callout labels, but built-in appliances cannot because they share their label with the cabinet.

Chapter 21:

Terrain

Chief Architect allows you to model the terrain around a house. Begin by specifying elevation data that creates the surface contours, and then add surface features such as planting areas and water features.

You can import terrain data from a variety of sources and use this data to produce your 3D model.

Once the terrain is modeled, shadows that follow the terrain can be created using the Sun Angle tool. See “Sun Angles and Shadows” on page 921.

Roads and sidewalks as well as plants and sprinklers are among the objects that can be placed in your terrain and are discussed in “Plants and Sprinklers” on page 747 and “Roads, Driveways and Sidewalks” on page 735.

Chapter Contents

Terrain Toolbar Configuration

The Terrain and Road Tools can be accessed through the Terrain menu. You can also display these tools on your toolbar using the **Terrain Configuration**. See “Toolbar Configurations” on page 131.

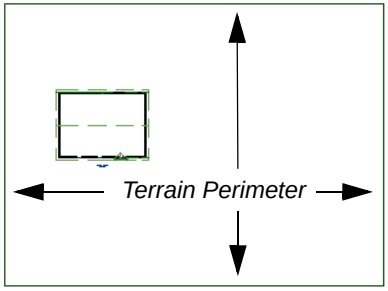
The Terrain Configuration and Terrain menu both display the following Terrain, Road, Plant, and Sprinkler parent tools:

- **Elevation Data Tools** allow you to add elevation data to your terrain.
- **Terrain Modifier Tools** model changes in elevation within a defined area.
- **Terrain Feature Tools** let you add materials over the top of the terrain.
- **Garden Bed Tools** create Terrain Features with a mulch material.
- **Water Feature Tools** create Terrain Features with a water material.
- **Stepping Stone Tools** are used to create paths composed of multiple Terrain Features.
- **Terrain Wall and Curb Tools** let you draw walls and curbs that follow the terrain.
- **Road, Driveway and Sidewalk Tools** allow you to create paved areas that can form intersections.
- **Plant Tools** allow you to place plant images and 3D plant symbols.
- **Sprinkler Tools** are used to lay out sprinkler symbols and irrigation lines.

Terrain Perimeter

The Terrain Perimeter is a closed polyline defining the boundary of the terrain that generates in 3D views and of the contour lines that generate in floor plan view. Select **Terrain> Create Terrain Perimeter** to create a terrain perimeter.

A CAD polyline can also be converted into a terrain perimeter. See “Editing Terrain Objects” on page 710.



If you create a terrain perimeter in floor plan view but do not see it, select **Window> Fill**

Window . See “Zoom Tools” on page 859.

When created in a new, blank plan, a new terrain perimeter will be 50’ x 100’. If you create a terrain perimeter after you have drawn all or part of a 3D model, it may increase in size as needed to encompass everything in floor plan view.

Once created, the terrain perimeter can be resized and edited like other polyline-based objects. See “Editing Closed-Polyline Based Objects” on page 198.

When a terrain perimeter is first created, it is completely flat and is placed at a height of 0’-0”, or sea level.

Terrain perimeter at 0' - 0" in a 3D view

The terrain perimeter by itself does not have elevation data associated with it. You can use the **Elevation Data** and **Terrain Modifier** tools to create terrain that slopes in a wide variety of ways. If you do not create elevation data within the terrain perimeter, the terrain remains flat at an elevation of 0' - 0". See “Elevation Data Tools” on page 698 and “Terrain Modifier Tools” on page 703.

Terrain Height vs Floor Height

Chief Architect always defines the default height of Floor 1 at 0’-0”. This height value is the constant by which the heights of architectural objects and structural elements in the program, including walls, floors, and ceilings, are measured.

The default height of Floor 1 is not, however, the absolute by which terrain elevation is measured. Instead, elevation data is measured relative to sea level. This means that if you want to, you can use real-world elevation data to generate a 3D terrain model without also having to measure floor and ceiling heights from sea level. See “Importing Elevation Data” on page 726.

The program automatically positions Floor 1 a set distance above the terrain. To do this, it first finds the center point of the building footprint. Then, it determines the elevation of the terrain at that point. Finally, it adds 6” (150 mm) plus the thickness of the floor platform and treated sill plate to this value. The resulting value, referred to as the Building Pad Elevation, is how far the default height of Floor 1 is above sea level in the current plan. See “Foundations and the Terrain” on page 450.

In a plan with a foundation present, the Elevation distance will equal the exact terrain elevation at the building footprint center point, plus 6” (150 mm), plus the thickness of the floor platform.

- In a plan with no elevation data, the terrain is assumed to be at sea level and this Elevation distance is 6” (150 mm) plus the thickness of the floor platform when a foundation is present.
- In a plan with flat terrain at 100’ (30 m) and a foundation present, the Elevation distance is 100’ 6” (30.468 m) plus the thickness of the floor platform.

Once terrain has been built, the Elevation distance is stated in the **Terrain Specification** dialog. You can specify a custom Elevation value to produce a daylight or walkout basement. See “General Panel” on page 712.

Note: When no foundation has been built, the distance from Floor 1 to the terrain is 12” (320 mm).

Build Terrain

Select **Terrain> Build Terrain** to generate the terrain surface based on the provided elevation data. Build Terrain also updates the Building Pad Elevation value in the **Terrain Specification** dialog. See “Building the Terrain” on page 709.

Clear Terrain

To remove the generated terrain contours, select **Terrain> Clear Terrain**. When the terrain is cleared, contours do not display in 3D and contour lines do not display in floor plan view.

Clear Terrain  does not remove the terrain perimeter, elevation data, or terrain features from the model. Rather it deletes all program-generated 2D contour lines and 3D contours.

The Terrain Perimeter has a variety of editable properties, including many that affect the appearance of the terrain in 2D and 3D views. See “Terrain Specification Dialog” on page 711.

Terrain Surface Triangles

Chief Architect generates 3D terrain surfaces by dividing them into triangles. The size of the triangles determines how detailed contour lines and terrain surfaces in the 3D model can be. You can specify triangle size in the **Terrain Perimeter Specification** dialog. See “General Panel” on page 712.

Increasing the triangle count decreases triangle size, yielding more detailed contour lines and a better 3D approximation of the terrain. Smaller triangles demand longer terrain generation time and increased memory requirements. If you select a large number of small triangles for a large site, you may wait a long time for the calculation.

Decreasing the triangle count increases triangle size. Elevation lines are sampled less frequently, speeding up terrain generation. If you specify a small number of triangles for a plan with detailed elevation data, contour lines and 3D surfaces may not generate correctly.

When a large terrain perimeter is used, consider increasing the Triangle Count to help make sure all Elevation Data and Terrain Modifiers generate contours.

Elevation Data Tools

Select **Terrain> Elevation Data** to add elevation information to your terrain.

When terrain is generated, this data is used to calculate the surface of your site and is represented by contour lines in floor plan

view and a curved surface in 3D. See “Displaying Terrain” on page 709.

Elevation data can be specified using the **Elevation Point**, **Elevation Line**, **Elevation Spline**, **Elevation Region**, and **Terrain Break** tools.

Elevation data can also be imported. See “Importing Elevation Data” on page 726.

The elevation of each Elevation Line, Spline and Region is specified relative to sea level.

In order to create rising and/or falling terrain, multiple terrain data objects with different elevation values must be used. If only one terrain data object is placed, the terrain will be flat regardless of the object’s specified elevation.

To avoid unexpected results, do not draw Elevation Data objects - including Terrain Breaks - with different elevation information at the same location.

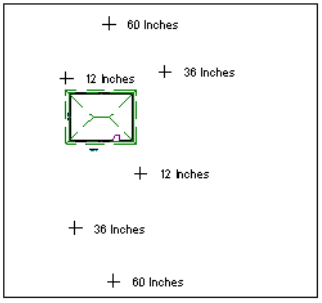
Elevation Points

An **Elevation Point** contains the absolute elevation data for one point in the terrain model. Typically, Elevation Points are imported rather than placed manually.

Chief Architect requires many points to make an accurate approximation of your site. Even small sites may require over a hundred points to generate an accurate model of the terrain if it is sloped. For the sake of illustration, the following example shows only a few elevation points.

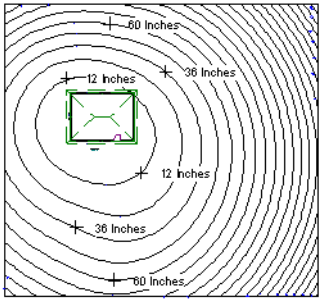
To place an elevation point

1. Select **Terrain> Elevation Data> Elevation Point** and click in floor plan view at the point where you would like to place elevation data. See “Place Point” on page 1044.
2. The **Elevation Point Specification** dialog opens. Enter an elevation value and click **OK**. See “Elevation Point Specification Dialog” on page 716.
3. Click somewhere else in floor plan view and the **Elevation Point Specification** dialog opens again with the last elevation value entered.



Elevation Points before terrain generation

4. Repeat steps 1, 2 and 3 to place additional elevation points with varied elevation values as needed.
5. Select **Terrain> Build Terrain**. See “Building the Terrain” on page 709.



Contour lines after terrain generation

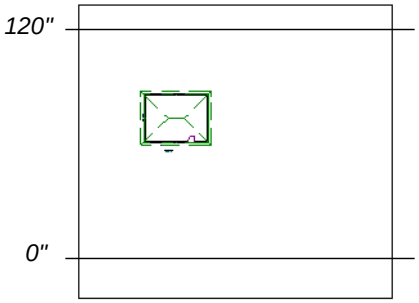
Elevation Points are most effective when they are imported. When adding elevation data manually, use Elevation Lines and Splines instead. See "Importing Elevation Data" on page 726.

Elevation Lines

An **Elevation Line** contains absolute elevation data for many points along a line at a constant elevation. Elevation lines can be connected to create a polyline with many straight sections. For the sake of illustration, the images in the following example show single-section elevation lines.

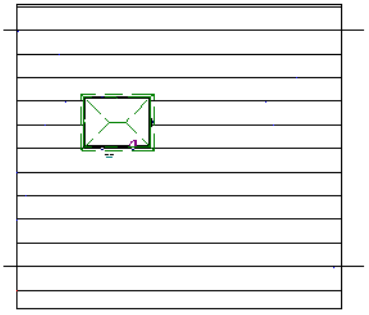
To draw an elevation line

1. Select **Terrain> Elevation Data**> **Elevation Line**, then click and drag a line inside the Terrain Perimeter in floor plan view.
2. Click on the elevation line to select it, then click the **Open Object** edit button.
3. At first, an elevation line is at elevation 0' - 0". In the **Elevation Line Specification** dialog, specify the desired elevation and click OK. See "Elevation Line/Region Specification Dialog" on page 717.
4. Repeat steps 2 and 3 to draw additional elevation lines as needed.



Elevation Lines before terrain generation

5. Select **Terrain> Build Terrain**. See "Building the Terrain" on page 709.



Contour lines after terrain generation

Full Overview after terrain generation

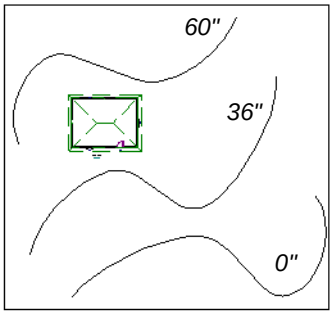
After it is drawn, an Elevation Line can be edited much the way other line-based objects can. See “Editing Line Based Objects” on page 184.

Elevation Splines

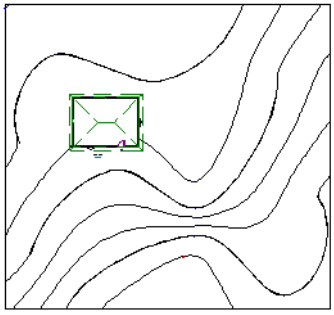
Elevation Splines can be used to form complex curves and shapes. Like elevation lines, elevation splines contain absolute elevation data for many points along a constant elevation.

To place an elevation spline, select **Terrain> Elevation Data> Elevation Spline** and click and drag multiple sections in floor plan view. See “Splines” on page 1073.

Elevation splines are initially placed at elevation 0' - 0"and must be opened and assigned an elevation. See “Elevation Line/ Region Specification Dialog” on page 717.



Elevation splines before terrain generation



Contour lines after terrain generation

After it is drawn, an Elevation Spline can be edited much the way other spline-based objects can. See “Editing Spline Based Objects” on page 206.

Elevation Regions

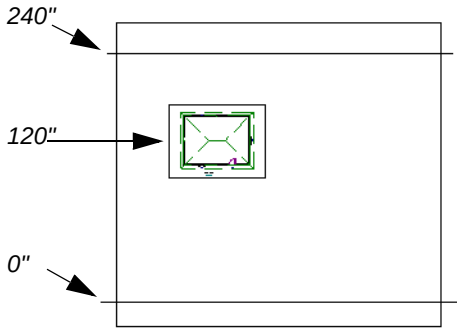
An **Elevation Region** contains absolute elevation data for an enclosed region and is ideal for creating a flat surface in your terrain.

Elevation Regions are similar to Flat Regions in that they produce an area with a flat surface; however, they differ in that an

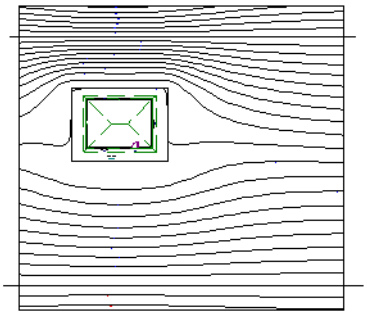
Elevation Region affects the contours of the terrain outside of its perimeter and may also have some sloping within its perimeter. See “Flat Regions” on page 704.

To create an elevation region

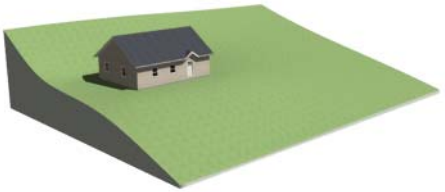
1. Select **Terrain> Elevation Data> Elevation Region** .
2. There are two ways to add a Terrain Modifier to your plan:
   - Click once to place an 8’ (0.6 m) square feature at that location.
   - Click and drag from end to end to draw a feature sized as needed. See “Rectangular Polyline” on page 1069.
3. Click on the region to select it, then click the **Open Object** edit button.
4. At first, an elevation line is at elevation 0' - 0". In the **Elevation Region Specification** dialog, specify the desired elevation and click OK. See “Elevation Line/Region Specification Dialog” on page 717.



Elevation lines create a terrain grade; an elevation region creates a building pad.



Contour lines after terrain generation



Full Overview after terrain generation

An **Elevation Region** can also be created by drawing a closed polyline using **Elevation Lines** .

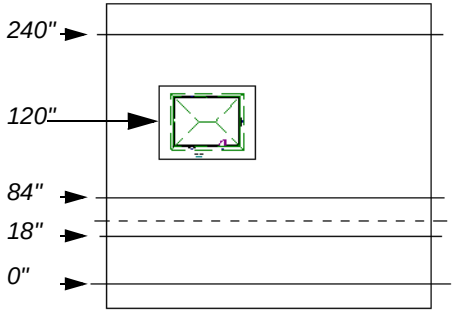
After it is drawn, and Elevation Region can be reshaped much the way other closed polyline-based objects can. See “Editing Closed-Polyline Based Objects” on page 198.

Terrain Breaks

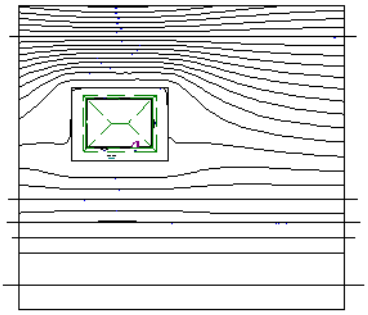
A **Terrain Break** creates a division along the terrain surface that affects terrain generation. Elevation data on one side of the terrain break does not affect the terrain generation on the other side, allowing you to create immediate drops in terrain.

To place a Terrain Break, select **Terrain> Elevation Data> Terrain Break** and click and drag a line in floor plan view.

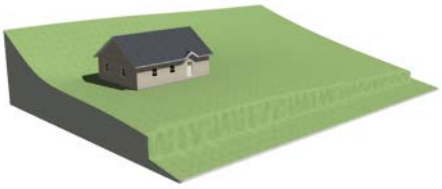
- If the Terrain Break divides the terrain perimeter into two separate pieces, the terrain data on either side is calculated independently and smoothed separately, resulting in sharp terrain contours.
- If the Terrain Break does not extend completely from one side of the terrain perimeter to the other, the areas near each end of the Terrain Break are blended.



A Terrain Break (dashed line) creates a vertical drop.



Contour lines after terrain generation



Full Overview after terrain generation

The **Retaining Wall** tool creates a similar effect by drawing a Terrain Break as well as a retaining wall that rests against the break. By default, the top height of the retaining wall matches the terrain on the high side of the break and the bottom matches the low side. See “Retaining Walls” on page 708.

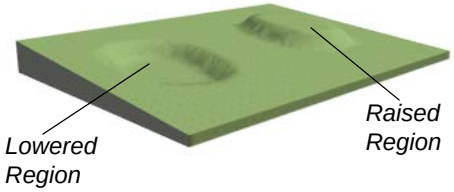
Terrain Modifier Tools

Select **Terrain> Modifier** to access tools that allow you to modify the existing elevation data by drawing a closed polyline. Their height is relative to the terrain surface generated from the Elevation Data provided in your plan.

The elevation data associated with a Terrain Modifier only affects the terrain within its perimeter. The rest of the terrain is unaffected.

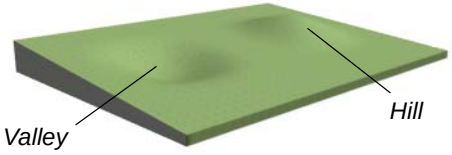
Raised and Lowered Regions

The **Raised Region** tool creates a raised area with a top surface that is flattened like a plateau but follows the surface of the terrain. The **Lowered Region** tool creates a depression with a bottom that follows the terrain and is flattened.



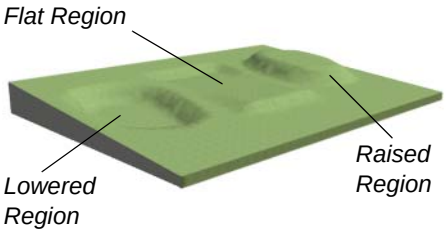
Hills and Valleys

The **Hill** and **Valley** tools create raised and lowered areas in the terrain that come to a point rather than flattening at their highest or lowest elevations.



Flat Regions

The **Flat Region** tool creates an area with a surface that is flattened like a plateau but is level rather than following the contours of the terrain.



There are two ways to add a Terrain Modifier to your plan:

- Click once to place a modifier with end-points that form a 10’ (4 m) square at that location.
- Click and drag from end to end to draw a feature sized as needed. See “Rectangular Polyline” on page 1069.

Terrain Modifiers can only be drawn when a Terrain Perimeter is present, and will only display in 3D when they are drawn within the perimeter. See “Displaying Terrain” on page 709.

Once created, Terrain Modifiers can be selected and edited in a variety of ways. See “Editing Spline Based Objects” on page 206.

Terrain modifiers can be blocked with images and stored in the library for future use. See “Creating Architectural Blocks” on page 790.

Terrain Feature Tools

Select **Terrain> Feature** to access tools for drawing bounded areas that follow the contours of the terrain rather than modifying them.

Terrain Features are useful for creating landscaping features because they have specified heights and materials. You can, for example, create paths and planting beds with

gravel or mulch materials that stand out in a grassy Terrain Perimeter. See “Adding Terrain Features” on page 158 of the User’s Guide.

In fact, **Garden Beds** , **Water Features** and **Stepping Stones** are special Terrain Features with material and height attributes already applied to them, saving you time when drawing these objects.

Terrain Features can only be drawn when a Terrain Perimeter is present, and will only display in 3D when they are drawn within the perimeter. See “Displaying Terrain” on page 709.

Terrain Features can be created in either of two ways:

- Click once to place a feature with end-points that form a 10’ (4 m) square at that location.
- Click and drag from end to end to draw a feature sized as needed. See “Rectangular Polyline” on page 1069.

Once created, Terrain Features can be edited into nearly any shape you require. See “Editing Closed-Polyline Based Objects” on page 198 and “Editing Spline Based Objects” on page 206.

Terrain Features can be drawn in 2D and 3D views.

Rectangular Features

The **Rectangular Feature** tool can be used to create straight-sided features that can be edited into a wide variety of shapes.

Rectangular Features can also be edited like other closed polyline-based objects. See “Editing Closed-Polyline Based Objects” on page 198.

Spline Feature

The **Spline Feature** tool can be used to create features with rounded edges and smoothly curved corners.

Spline Features can be edited like other closed spline-based objects. See “Editing Spline Based Objects” on page 206.

Kidney Shaped Features

The **Kidney Shaped Feature** tool allows you to quickly create features with curved edges, smooth corners and a right angle bend in its shape.

Kidney Shaped Features can be edited like other closed spline-based objects. See “Editing Spline Based Objects” on page 206.

Terrain features can also be converted from closed 2D polylines or splines using the **Convert Polyline** edit tool. See “Convert Polyline” on page 235.

For information about adding height and material information to Terrain Features, see “Terrain Feature Specification Dialog” on page 721.

Terrain Holes

A **Terrain Hole** is a region that cuts a hole in the terrain. Using this tool is the same as creating a Terrain Feature and checking **Make Hole** in the **Terrain Feature Specification** dialog. See “Terrain Feature Specification Dialog” on page 721.

Terrain Holes  are useful for manually clipping the terrain around a foundation that does not match the footprint of the first floor.

 Terrain features can be blocked with images and stored in the library for future use as planting beds. See “Creating Architectural Blocks” on page 790.

Garden Bed Tools

 Select **Terrain> Garden Bed** to access tools that can be used to place garden bed features in your terrain.

Garden Beds are basically **Terrain Features** with material and height attributes typical of planting beds. See “Terrain Feature Tools” on page 704.

In addition, you can choose to distribute copies of a plant image within a Garden Bed. See “Distributed Plant Panel” on page 721.

Polyline Garden Bed

 This tool draws a garden bed with straight sides and four right angles. See “Rectangular Features” on page 705.

Round Garden Bed

 Use this tool to draw garden beds with rounded edges and smoothly curved corners. See “Spline Feature” on page 705.

Kidney Shaped Garden Bed

 You can draw a kidney shaped garden bed with this tool. See “Kidney Shaped Features” on page 705.

Once drawn, Garden Beds can be selected and edited just like other Terrain Features.

Specify the material and set the height of Garden Beds in the **Terrain Feature Specification** dialog. See “Terrain Feature Specification Dialog” on page 721.

Water Feature Tools

 Select **Terrain> Water Feature** to access tools for drawing ponds and streams in your terrain.

Ponds are basically **Terrain Features** with material and height attributes typical of bodies of water. See “Terrain Feature Tools” on page 704.

Similarly, Streams are Terrain Curbs with a water material. See “Terrain Wall and Curb Tools” on page 707.

Round Pond

 Use this tool to draw a pond with rounded edges. See “Spline Feature” on page 705.

Kidney Shaped Pond

 This tool draws a kidney shaped pond. See “Kidney Shaped Features” on page 705.

Stream

Select the **Stream** tool, then click and drag to draw a stream. Streams are drawn and edited the same way that splines are. See “Splines” on page 1073 and “Editing Spline Based Objects” on page 206.

Click the **Advanced Splines**  edit button to activate additional edit handles that you can use to reshape the stream. See “Advanced Splines” on page 210.

Streams follow the contours of the terrain, so they may appear to flow uphill if they are not drawn correctly in the terrain. Try to draw them so that they follow a downward course for their entire length.

Once drawn, Water Features can be selected and edited just like any other Terrain Feature.

Specify the material and set the height of Water Features in their specification dialogs. See “Terrain Feature Specification Dialog” on page 721.

Stepping Stone Tools

Select **Terrain> Stepping Stone** to place a walkway made of individual stepping stones.

Stepping Stones are basically **Terrain Features** with material and height attributes typical of walking paths. See “Terrain Feature Tools” on page 704.

There are two ways to draw Stepping Stones:

- Click once to place a stepping stone with endpoints that form a 1’ (300 mm) square at that location.
- Click and drag from end to end to draw a stepping stone sized as needed. See “Rectangular Polyline” on page 1069.

Polyline Stepping Stone

The **Polyline Stepping Stone** tool draws rectangular stepping stones. See “Rectangular Features” on page 705.

Round Stepping Stone

The **Round Stepping Stone** tool draws stepping stones with rounded edges. See “Spline Feature” on page 705.

Once drawn, Stepping Stones can be selected and edited just like any other Terrain Feature.

By default, Stepping Stones have a concrete material; however, you can specify the material and set the height of Stepping Stones in the **Terrain Feature Specification** dialog. See “Terrain Feature Specification Dialog” on page 721.

Terrain Wall and Curb Tools

Select **Terrain> Terrain Wall and Curb** to draw landscaping walls and curbs that follow the contours of the terrain.

Straight and curved Terrain Walls and Curbs are drawn just as other walls are. See “Drawing Walls” on page 270.

Terrain Walls and Curbs are examples of Terrain Paths. Other examples include Sidewalks and Streams. See “Terrain Path Specification Dialog” on page 724.

Terrain Walls


Use the **Straight Terrain Wall** tool to draw a wall that sits on top of and follows the terrain.


Use the **Spline Terrain Wall** to draw a curved terrain wall. This wall is drawn the same way as a CAD Spline. See “Splines” on page 1073.

Once drawn, a Terrain Wall can be like other line-based objects. See “Editing Line Based Objects” on page 184 and “Editing Spline Based Objects” on page 206.

Terrain walls are 5’ (1500 mm) high and concrete by default, but you can specify the material, height and more in the **Terrain Path Specification**. See “Terrain Path Specification Dialog” on page 724.

Retaining Walls

The **Retaining Wall** tools function similarly to Terrain Breaks, but include a wall. See “Terrain Breaks” on page 702.


Use the **Straight Retaining Wall** tool draws a straight wall that holds back sloped terrain.


Use the **Curved Retaining Wall** tool to draw a curved retaining wall.

A Retaining Wall’s height is determined by the elevation of the terrain on each side. By default, the height of the wall matches the terrain on the high side of the break and the bottom matches the low side. If you insert a Retaining Wall into flat terrain, it looks like a concrete strip in 3D views.

Once drawn, a Retaining Wall can be edited much like other walls. See “Editing Walls” on page 278.

Terrain Curbs

Terrain Curbs are useful for creating curbs around planting beds and along paths.


Use the **Straight Terrain Curb** tool to draw a straight landscaping curb.


Use the **Spline Terrain Curb** tool to draw a curved landscaping curb. This curb is drawn the same way as a CAD Spline. See “Splines” on page 1073.

Once drawn, a Terrain Curb can be like other line-based objects. See “Editing Line Based Objects” on page 184 and “Editing Spline Based Objects” on page 206.

You can specify the height of straight and spline terrain curbs on the General panel of the **Terrain Path Specification**. See “Terrain Path Specification Dialog” on page 724.


You can also add Fencing to your terrain, complete with gates from the Doors Library. See “Fencing Tools” on page 263.

Sun Shadows

Sun shadows are computed based on the contour of the terrain. If a terrain perimeter exists, the sun shadow adjusts to the terrain.

The Sun Shadow is automatically rebuilt whenever terrain is rebuilt. If you generate a Sun Shadow and the terrain is not up-to-date, the terrain automatically rebuilds. You can turn off the automatic rebuild. See “Sun Angle Specification Dialog” on page 924.

Terrain Objects in the Library

The Library Browser contains a variety of objects that can be placed in a plan’s terrain, including plants, exterior fixtures, accessories and roadway objects. See “The Library Browser” on page 798.

Displaying Terrain

The display of terrain objects in 2D and 3D views is controlled in the **Layer Display Options** dialog. See “Layer Display Options Dialog” on page 148.

You can customize appearance of Terrain Features, Roads and other terrain objects in floor plan view by changing their line and fill styles.

Plant images are represented in floor plan view by 2D CAD symbols. You can select a plant’s symbol in the **Plant Image Specification** dialog. See “Image Panel” on page 752.

Contour Lines

When elevation data has been drawn or imported into a plan, contour lines will display in floor plan view. See “Elevation Data Tools” on page 698.

Chief Architect can produce both primary and secondary contours. They are on two different layers so you can control their display separately. Contour line labels use the Text Styles assigned to the “Terrain, Primary Contours” and “Terrain, Secondary Contours” layers.

By default, all contour lines are set to be primary, but you can specify secondary contours, frequency and other attributes of contour lines in the **Terrain Specification** dialog. See “Contours Panel” on page 713.

In 3D Views

In order for objects such as Terrain Features and Roads to be visible in 3D views, the Terrain Perimeter layer must also display. In addition, only the portions of these objects that are drawn within the Terrain Perimeter will be seen in 3D views. See “Terrain Feature Tools” on page 704.

A variety of tools are available to help you adjust the perspective of your 3D views. See “Editing 3D Views” on page 893.

Building the Terrain

When terrain is generated, Chief Architect gathers all elevation data that has been added to the model and creates a terrain surface. The program interpolates the data to produce smooth contours.

A terrain perimeter with no additional elevation data drawn within it generates

terrain that is flat at the elevation 0' - 0", or sea level.

By default, the terrain is automatically built before a 3D view is generated and when a sun shadow is created. This process takes a variable amount of time, depending on the amount of elevation data and number of terrain features in the plan. The **Building Terrain** progress dialog displays as terrain is generated, sometimes only briefly, indicating the progress.

You can turn off **Auto Rebuild Terrain** in the **3D View Defaults** dialog for 3D views and in the **Sun Angle Specification** dialog for sun shadows, and rebuild the terrain manually only when needed by selecting **Terrain> Build Terrain**  . When **Auto Rebuild Terrain** is turned off and the terrain is not up to date, the Rebuild Terrain  icon displays near your mouse pointer. See “Options Panel” on page 873 and “Earth Data Panel” on page 924.

Terrain and 3D Drawing Time

Terrain is typically large with many surface triangles, which often increases the drawing time of 3D views. The time required is affected by the quality of the terrain, the amount of elevation data and number of terrain features present. For information about surface triangles and how they influence terrain quality, see “General Panel” on page 712.

Lights and symbols can be placed outdoors and included in 3D views when the terrain is generated. These objects can also contribute to the time needed to generate 3D views. See “Rendering Tips” on page 912.

Editing Terrain Objects

Before a terrain object can be edited, it must be selected. All terrain objects can be selected in floor plan view. In addition, the Terrain Perimeter and Terrain Features can be selected in 3D views. See “Selecting Objects” on page 180.

A selected terrain object can be edited using its edit handles, edit tools and specification dialog. See “Specification Dialogs” on page 38.

Any time elevation data is changed, the terrain must be regenerated. This occurs automatically when a 3D view is created. It can also be done manually by selecting **Terrain> Build Terrain**  .

Using the Edit Handles

- The shape of the Terrain Perimeter can be edited like other polyline-based objects. See “Editing Closed-Polyline Based Objects” on page 198.
- Elevation Points can be moved in floor plan view using the Move edit handle.
- **Elevation Lines**, **Elevation Splines** and **Terrain Breaks** are edited like other line- and spline-based objects. See “Editing Line Based Objects” on page 184, “Editing Closed-Polyline Based Objects” on page 198, and “Editing Spline Based Objects” on page 206.
- The shape of a **Raised Region**, **Lowered Region**, **Hill**, **Valley**, and **Flat Region**

can be edited like a spline. See “Editing Spline Based Objects” on page 206.

- Terrain Features are edited like other spline- and polyline-based objects. See “Editing Closed-Polyline Based Objects” on page 198 and “Editing Spline Based Objects” on page 206.

Using the Edit Tools

A selected terrain object can be edited in a variety of ways using the buttons on the edit toolbar. The edit tools available for a terrain object depends on the type of terrain object selected. See “The Edit Toolbar” on page 35.

Note: If you copy terrain objects from one plan to another, you cannot view the pasted objects in 3D unless a Terrain Perimeter exists.

Moving Terrain Objects Using Dimensions

If dimensions display when a terrain object is selected, the object can be moved using the them. For more information see “Moving Objects Using Dimensions” on page 989.

Plot Plans and Plan Footprints

There are two different ways to create a plot plan in Chief Architect:

- In floor plan view using the Terrain and CAD Tools.
- In a CAD Detail using the **Plan Footprint**  tool and other CAD Tools.

Each method has its advantages. For more information, see “Creating a Plot Plan” on page 182 of the User’s Guide.

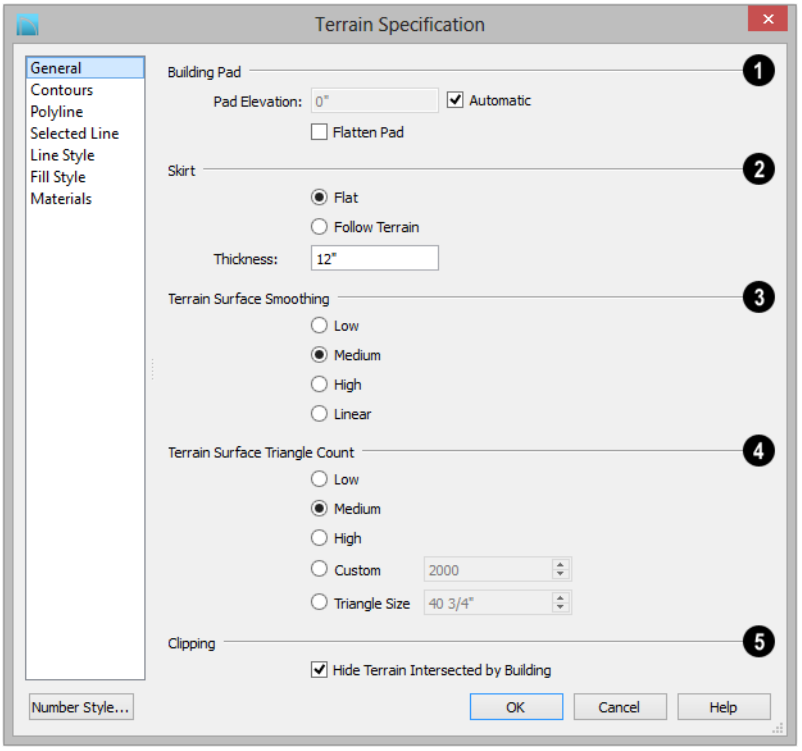
Terrain Specification Dialog

The **Terrain Specification** dialog controls how your terrain is modeled, as well as its appearance.

The **Terrain Specification** dialog can be accessed in any of three ways:

- Select **Terrain> Terrain Specification**  .
- Select the Terrain Perimeter and click the **Open Object**  edit button.
- Double-click the Terrain Perimeter using the **Select Objects**  tool.

General Panel



1 Specify how the **Building Pad** is generated beneath the structure. See "Foundations and the Terrain" on page 450.

- To specify the distance between Floor 1 and the terrain at the building footprint center, uncheck Automatic and enter a value in the **Pad Elevation** field.
- Check **Automatic** to have Chief Architect automatically lower the terrain relative to the first floor. See "Terrain Height vs Floor Height" on page 697.
- Check **Flatten Pad** to flatten the area beneath the building. To create a walkout basement, uncheck this box.

2 Define the thickness of the **Skirt** added to the terrain. The skirt is only visible in 3D views and gives the viewer a sense of depth when viewing the terrain.

- **Flat** specifies that the skirt be flat at its base. Chief Architect determines the lowest point in the terrain and then offsets this value by the user specified thickness value. The resulting value is used as a uniform elevation for the base of the skirt.
- **Follow Terrain** specifies that the skirt base maintains a consistent distance below the terrain. The distance is equivalent to the specified Thickness value.

❸ **Terrain Surface Smoothing** - Control the amount of rounding applied to terrain edges. A low value for smoothing produces terrain that has sharp peaks and abrupt changes in slope. A high value results in terrain that continuously flows from point to point.

❹ **Triangle Count** - Specify the number of surface triangles used to generate the terrain in 3D views. A lower count value will generate more quickly but with reduced quality.

- **Custom** - Specify a custom triangle count value.
- **Triangle Size** - Specify the maximum triangle size in the terrain surface. Smaller triangles produce better quality results in 3D but take longer to generate.

Chief Architect builds 3D terrain surfaces by splitting them into triangles. See “Terrain Surface Triangles” on page 698.

Triangles are computed roughly as follows:

Size of Triangle = Area of Terrain Perimeter / Number of Triangles

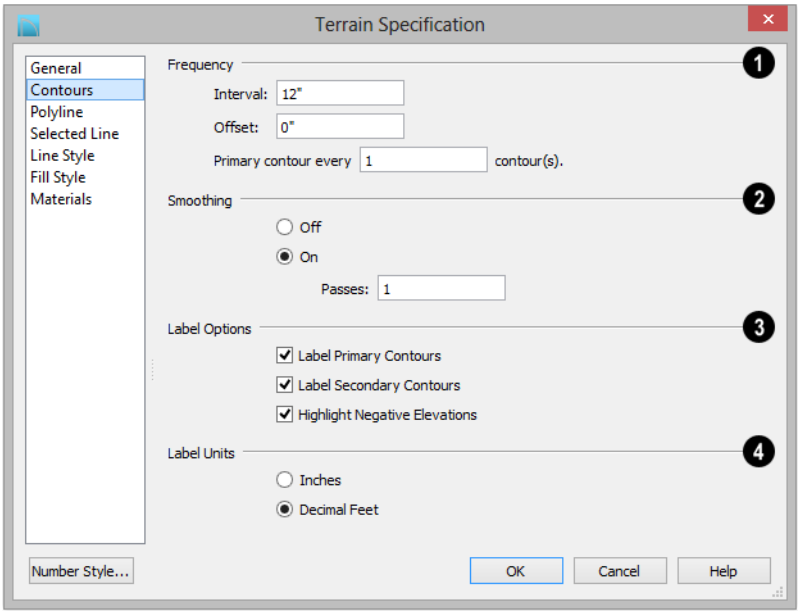
The Low (1000), Medium (2000), and High (4000) values work well for a terrain perimeter of approximately 20,000 sq ft (1858 m²). If your terrain perimeter varies greatly from this, consider defining the number of triangles using the **Custom** setting or the **Triangle Size** setting.

❺ **Clipping** - Check **Hide Terrain Intersected by Building** to cut out the portion of the terrain that is intersected by the first floor footprint. Checking this box prevents the generation of contour lines inside the house.

If your foundation footprint differs from your first floor footprint, you may need to use the **Terrain Hole**  tool for custom clipping instead. See “Terrain Feature Tools” on page 704.

Contours Panel

Chief Architect identifies two types of contour lines: Primary and Secondary. They are drawn on different layers, so you can control how they display in floor plan view. See “Contour Lines” on page 709.



1 Specify the **Frequency** at which contour lines are generated.

- Define the **Interval** between contour lines, which is the change in elevation between contours. If the interval is set to 12”, a contour line is computed for each elevation change of 12”.
- Specify the **Offset** value. When the Offset is 0, a contour line will be drawn at zero elevation and additional contours will generate based on the Interval value. If the Offset is changed to 5, a contour line will be drawn 5 units from zero elevation rather than at 0, and additional contours will generate from there.
- **Primary contour every__contours** - Specify the interval for primary contours. A value of 1 produces only primary contours, while a value of 5 defines every fifth contour line as a primary contour.

2 If contour **Smoothing** is turned on, Chief Architect attempts to remove sharp bends and jagged sections from the 2D contour lines.

- Specify the number of **Passes** to perform when smoothing. The more passes, the smoother the contour lines become, but contours become less accurate.

3 Control the display of **Contour Labels** in floor plan view.

- Check **Label Primary Contours** to label primary contour lines with their elevation data using the Units specified below.
- Check **Label Secondary Contours** to label secondary contour lines with their elevation data.
- Check **Highlight Negative Elevations** to display labels of contour lines with elevations below 0 in red. When unchecked,

they use the color set in the Text Style assigned to their layer.

Primary and secondary contour line labels use the Text Style assigned to their respective layers. See “Text Styles” on page 1030.

4. Specify the **Label Units** used by contour labels. Select either **Inches** or **Decimal Feet** (**Millimeters** or **Meters** for metric).

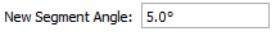
Polyline Panel

The Polyline panel indicates the polyline’s **Length/Perimeter**, its enclosed **Area**, and its **Volume**.

The settings on the this panel are available for a variety of other objects in the program. For information about these settings, see “Polyline Panel” on page 1066.

Spline Panel

The Spline panel has a single option and is only available if the Terrain Perimeter has been converted to a spline. See “Convert to Spline” on page 231.



New Segment Angle - Specify the angle between line segments that are used to draw the spline. Specifying a smaller angle makes the spline’s curvature smoother. Specify a larger angle to draw the spline faster.

Selected Line Panel

The Selected Line panel is available when the selected edge of the Terrain Perimeter is a line as opposed to an arc. See “Selected Edge” on page 181.

The settings on this panel are available for a variety of other objects in the program. For information about these settings, see “Line Panel” on page 1052.

Selected Arc Panel

The Selected Arc panel is available when the selected segment of the polyline is an arc as opposed to a line. See “Change Line/Arc” on page 229.

The settings on this panel are available for a variety of other objects in the program. For information about these settings, see “Arc Panel” on page 1061.

Line Style Panel

The settings on the Line Style panel are available for a variety of other objects in the program. For information about these settings, see “Line Style Panel” on page 1053.

Fill Style Panel

The settings on the Fill Style panel affect the appearance of the Terrain Perimeter in floor plan view. For information about these settings, see “Fill Style Panel” on page 1067.

Materials Panel

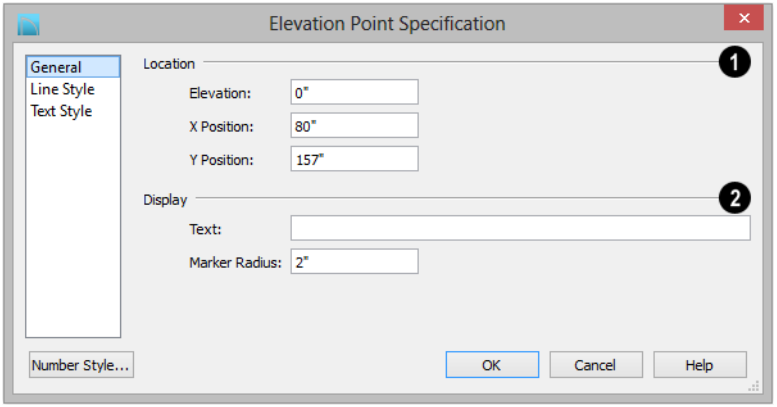
The settings on the Materials panel let you specify the terrain surface and terrain skirt materials used in 3D views. These materials are not calculated in the Materials List. See “Materials Panel” on page 831.

Elevation Point Specification Dialog

To open the **Elevation Point Specification** dialog, select an elevation point and click the **Open Object** edit button, or double-click on an Elevation Point using the **Select Objects** tool.

Use the **Elevation Point Specification** dialog to define the selected elevation point and control its appearance in floor plan view.

General Panel



1 **Location** - Specify the exact location of the elevation point.

- Specify the **Elevation** of the selected Elevation Point.

> Click the Number Style button to specify the units of measurement used in this and other dialogs. See “Dialog Number/Angle Style Dialog” on page 126.

- **X Coordinate** - Enter the x coordinate of the elevation point.
- **Y Coordinate** - Enter the y coordinate of the elevation point.

2 **Display** -

- In the **Text** field, type any notes that you would like to display beside the selected Elevation Point in floor plan view. You can also enter a pound (#) sign to display the point’s elevation value.
- Enter the **Marker Radius** , which is size of the point marker, measured from the center to an edge.

Line Style Panel

The settings on the Line Style panel are available for a variety of other objects in the program. For information about these settings, see “Line Style Panel” on page 1053.

Text Style Panel

The settings on the Text Style panel control the appearance of the selected Elevation Point's text. For more information, see "Text Style Panel" on page 1031.

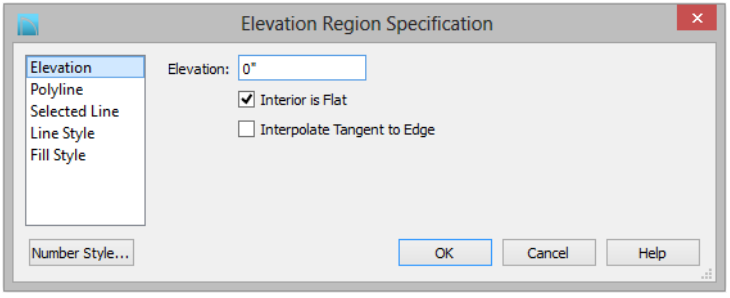
Elevation Line/Region Specification Dialog

To open the **Elevation Line** or **Elevation Region Specification** dialog, select one or more Elevation Line/Splines, or a polyline composed of elevation Lines/Splines, or an Elevation Region and click the **Open Object** edit button. You can also double-click an Elevation Line/Spline using the **Select Objects**  tool.

The **Elevation Line Specification** dialog is used to define the selected Elevation Line/Spline and controls its appearance in floor plan view.

The settings in this dialog are the same as those in the **Elevation Region Specification** dialog. See "Elevation Regions" on page 701.

Elevation Panel



- Specify the **Elevation** of the selected Elevation Line, Spline, or Polyline.

Click the Number Style button to specify the units of measurement used in this and other dialogs. See "Dialog Number/Angle Style Dialog" on page 126.

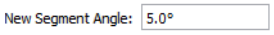
- Check **Interior is Flat** to maintain a flat surface at the specified Elevation. When unchecked, the perimeter of the region maintains the specified Elevation, but the interior elevation may vary depending on other elevation data in the drawing. Only available for closed Elevation Regions.
- Check **Interpolate Tangent to Edge** to flatten the terrain surface as it approaches the edges of the Elevation Region. This option is only available for closed Elevation Regions, and only when Interior is Flat is unchecked.

Polyline Panel

The Polyline panel indicates the line or polyline's **Length/Perimeter**. If multiple Elevation Line/Spline segments form a closed Elevation Region, its Area will be calculated. Elevation Lines/Splines do not have a thickness, so they have no Volume.

Spline Panel

The Spline panel has a single option and is only available when the selected object is an elevation spline. See "Splines" on page 1073.



New Segment Angle - Specify the angle between line segments that are used to draw the spline. Specifying a smaller angle makes the spline smoother. Specify a larger angle to draw the spline faster.

Selected Line Panel

The Selected Line panel is available when the selected object or segment is a line as opposed to one that has been converted to an arc. See "Selected Edge" on page 181.

The settings on this panel are available for a variety of other objects in the program. For information about these settings, see "Line Panel" on page 1052.

Selected Arc Panel

The Selected Arc panel is available when the selected object or segment is an arc as opposed to a line.

The settings on this panel are available for a variety of other objects in the program. For information about these settings, see "Arc Panel" on page 1061.

Line Style Panel

The settings on the Line Style panel are available for a variety of other objects in the program. For information about these settings, see "Line Style Panel" on page 1053.

Flat Region Specification Dialog

To open the **Flat Region Specification** dialog, select a Flat Region and click the **Open Object** edit button, or double-click a Flat Region using the **Select Objects** tool. See "Flat Regions" on page 704.

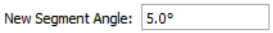
The options in the **Flat Region Specification** dialog are similar to those a number of other dialogs in the program.

Polyline Panel

The Polyline panel indicates the length of the polyline's **Length/Perimeter**, its enclosed **Area**, and the **Volume** of a closed polyline.

Spline Panel

The Spline panel has a single option and is only available when the selected object is a spline. See "Splines" on page 1073.



New Segment Angle - Specify the angle between line segments that are used to draw the spline. Specifying a smaller angle makes the spline smoother. Specify a larger angle to draw the spline faster.

Selected Line Panel

The Selected Line panel is available when the selected edge of the polyline is a line as opposed to an arc. See “Selected Edge” on page 181.

Moving the Start of a line segment moves the end of the previous connected line, if there is one. Similarly, moving the End of a line segment moves move the start of the next connected line, if there is one.

The settings on this panel are available for a variety of objects in the program. For information about these settings, see “Line Panel” on page 1052.

Selected Arc Panel

The Selected Arc panel is available when the selected segment of the polyline is an arc as opposed to a line. See “Change Line/Arc” on page 229.

The settings on this panel are available for a variety of objects in the program. For information about these settings, see “Arc Panel” on page 1061.

Line Style Panel

The settings on the Line Style panel are available for a variety of objects in the program. For information about these settings, see “Line Style Panel” on page 1053.

Fill Style Panel

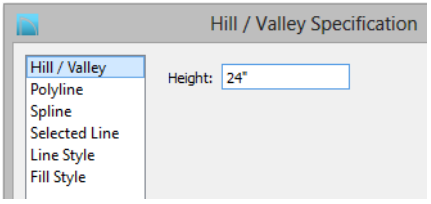
The settings on the Fill Style panel affect the appearance of the selected object in floor plan view. For information about these settings, see “Fill Style Panel” on page 1067.

Hill / Valley Specification Dialog

The **Hill/Valley Specification** defines the selected Hill or Valley and controls its appearance in floor plan view.

To open the **Hill/Valley Specification** dialog, select one or more Hill or Valley and click the **Open Object** edit button, or double-click the region(s) using the **Select Objects**  tool.

Hill / Valley Panel



- Enter a **Height** for the selected Hill or Valley. This height is relative to the terrain surface that is generated from the

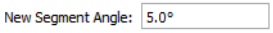
Elevation Data in your plan. See “Terrain Modifier Tools” on page 703.

Polyline Panel

The Polyline panel indicates the polyline’s **Length/Perimeter** and its enclosed **Area**. Hills and Valleys do not have a volume measurement.

Spline Panel

The Spline panel has a single option and is only available when the selected object is a spline. See “Splines” on page 1073.



New Segment Angle - Specify the angle between line segments that are used to draw the spline. Specifying a smaller angle makes the spline smoother. Specify a larger angle to draw the spline faster.

Selected Line Panel

The Selected Line panel is available when the selected edge of the polyline is a line as opposed to an arc. See “Selected Edge” on page 181.

Moving the Start of a line segment moves the end of the previous connected line, if there is one. Similarly, moving the End of a line segment moves move the start of the next connected line, if there is one.

This panel is similar to the Line panel of the **Line Specification** dialog. See “Line Panel” on page 1052.

Selected Arc Panel

The Selected Arc panel is available when the selected segment of the polyline is an arc as opposed to a line. See “Change Line/Arc” on page 229.

This panel is similar to the Arc panel of the **Arc Specification** dialog. See “Arc Panel” on page 1061.

Line Style Panel

The settings on the Line Style panel are available for a variety of other objects in the program. For information about these settings, see “Line Style Panel” on page 1053.

Fill Style Panel

The settings on the Fill Style panel affect the appearance of the selected object in floor plan view. For information about these settings, see “Fill Style Panel” on page 1067.

Raised / Lowered Region Specification Dialog

To open the **Raised/Lowered Region Specification** dialog, select one or more raised or lowered regions and click the **Open Object** edit button, or double-click the region(s) using the **Select Objects** tool.

The **Raised / Lowered Region Specification** dialog is similar to the **Hill / Valley Specification** dialog. See “Hill / Valley Specification Dialog” on page 719.

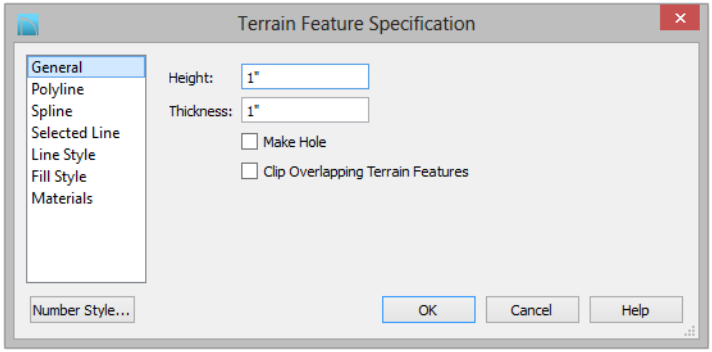
Terrain Feature Specification Dialog

To open the **Terrain Feature Specification** dialog, select a Terrain Feature or group of Terrain Features and click the **Open Object** edit button, or double-click the Terrain Feature(s) using the **Select Objects** tool.

Most of the panels in this dialog are similar to those for a variety of other objects in the program, including Water Features and Stepping Stones.

Garden Beds are also a type of Terrain Feature and have an additional Distributed Plant panel in their specification dialog. Garden Beds also have a preview pane on the right side of their specification dialog.

General Panel



- Specify the top **Height** of the Terrain Feature, relative to the terrain surface, using a positive or negative number.
- Specify the feature's **Thickness**.

If a feature's height above the terrain is greater than its thickness, the program will fill in the resulting gap.

- Check **Make Hole** to specify the selected Terrain Feature as a Terrain Hole. See "Terrain Holes" on page 705.
- Check **Clip Overlapping Terrain Features** to suppress the 3D display of any part of the selected Terrain Feature intersected by other Terrain Features with a lower Height value. Clipping is useful for creating features that contain other features such as planters or swimming pools.

Distributed Plant Panel

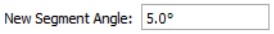
This panel is only available when the selected Terrain Feature is a Garden Bed. For information, see "Distributed Object Panel - Distribution Region" on page 784.

Polyline Panel

The Polyline panel indicates the polyline's **Length/Perimeter**, its enclosed **Area**, and the **Volume** of a closed polyline.

Spline Panel

The Spline panel has a single option and is only available when the selected object is a spline. See “Splines” on page 1073.



New Segment Angle - Specify the angle between line segments that are used to draw the spline. Specifying a smaller angle makes the spline smoother. Specify a larger angle to draw the spline faster.

Selected Line Panel

The Selected Line panel is available when the selected edge of the polyline is a line as opposed to an arc. See “Selected Edge” on page 181.

The settings on this panel are available for a variety of other objects in the program. For information about these settings, see “Line Panel” on page 1052.

Selected Arc Panel

The Selected Arc panel is available when the selected segment of the polyline is an arc as opposed to a line. See “Change Line/Arc” on page 229.

The settings on this panel are available for a variety of other objects in the program. For information about these settings, see “Arc Panel” on page 1061.

Line Style Panel

The settings on the Line Style panel are available for a variety of other objects in the program. For information about these settings, see “Line Style Panel” on page 1053.

Fill Style Panel

The settings on the Fill Style panel affect the appearance of the selected object in floor plan view. For information about these settings, see “Fill Style Panel” on page 1067.

Materials Panel

The settings on the Materials panel affect the appearance of the selected object in 3D views. See “Materials Panel” on page 831.

Garden Bed Specification Dialog

To open the **Garden Bed Specification** dialog, select a Garden Bed or group of Garden Beds and click the **Open Object** edit button or double-click the Garden Bed(s) using the **Select Objects** tool.

Because a Garden Bed is a type of Terrain Feature, the settings in this dialog are essentially the same as those in the **Terrain Feature Specification** dialog. See “Terrain Feature Specification Dialog” on page 721.

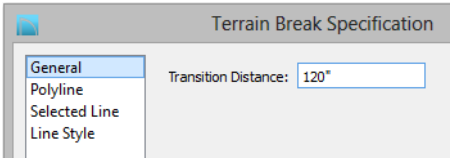
Garden Beds also include the Distributed Objects panel found in the **Distribution**

Region Specification dialog. See “Distribution Region/Path Specification Dialogs” on page 783.

Terrain Break Specification Dialog

To open the **Terrain Break Specification** dialog, select a Terrain Break or group of Terrain Breaks and click the **Open Object** edit button or double-click the Terrain Break(s) using the **Select Objects**  tool. See “Terrain Breaks” on page 702.

General Panel



- Define the **Transition Distance**, which is the distance from the edge of the terrain break to where the break stops affecting the terrain.

Polyline Panel

The Polyline panel indicates the line or polyline’s **Length/Perimeter**. Terrain Breaks do not have a thickness, so they have no **Volume**. If multiple Terrain Break segments form a closed polyline, its **Area** will be calculated.

Spline Panel

The Spline panel has a single option and is only available when the selected object was converted to a Terrain Break from a spline. See “Splines” on page 1073.

New Segment Angle - Specify the angle between line segments that are used to draw the spline. Specifying a smaller angle makes the spline smoother. Specify a larger angle to draw the spline faster.

Selected Line Panel

The Selected Line panel is available when the selected edge of the polyline is a line as opposed to an arc. See “Selected Edge” on page 181.

Moving the Start of a line segment moves the end of the previous connected line, if there is one. Similarly, moving the End of a line segment moves move the start of the next connected line, if there is one.

This panel is similar to the Line panel of the **Line Specification** dialog. See “Line Panel” on page 1052.

Selected Arc Panel

The Selected Arc panel is available when the selected segment of the polyline is an arc as opposed to a line.

This panel is similar to the Arc panel of the **Arc Specification** dialog. See “Arc Panel” on page 1061.

Line Style Panel

For information about the Line Style panel, see “Line Style Panel” on page 1053.

Fill Style Panel

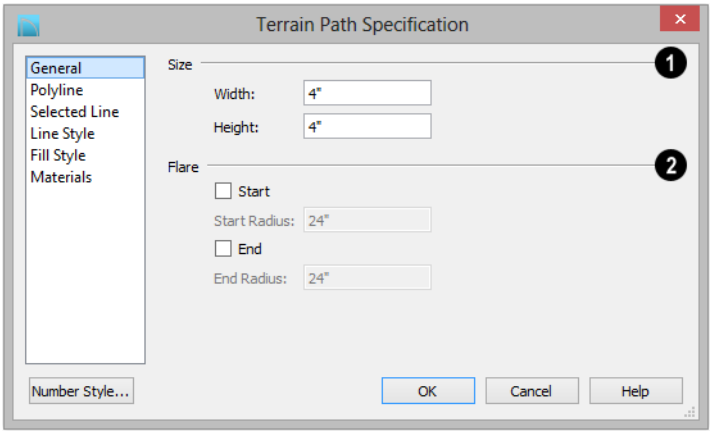
The Fill Style panel is only available when multiple Terrain Break segments enclose an area. The settings on this panel affect the appearance of the closed shape in floor paln view. For more information, see “Fill Style Panel” on page 1067.

Terrain Path Specification Dialog

To open the **Terrain Path Specification** dialog, select one or mores Streams, Terrain Walls or Terrain Curbs and click the **Open Object** edit button or double-click the terrain path(s) using the **Select Objects** tool.

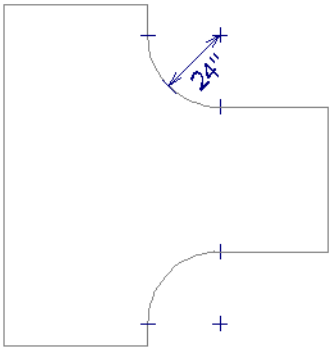
Most of the panels in this dialog are similar to those for a variety of other objects in the program.

General Panel



1. **Size** - Enter the **Width** of the object and the **Height** above the terrain. If the Height value is a negative number, the object sinks into the terrain.

2. When one terrain path joins another, you can **Flare** the intersection.
   - Check **Start** to create a flare at the starting end of the selected terrain path, then specify the **Radius** of that flare.
   - Check **End** to create a flare at that end of the terrain path, then specify the Radius of that flare.



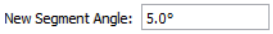
Sidewalk flares with 24" Radius

Polyline Panel

The Polyline panel indicates the Terrain Path polyline's **Length/Perimeter**, its enclosed **Area**, and the **Volume** of a closed polyline.

Spline Panel

The Spline panel has a single option and is only available when the selected object is a spline path. See "Splines" on page 1073.



- **New Segment Angle** - Specify the angle between line segments that are used to draw the spline. Specifying a smaller angle makes the spline smoother. Specify a larger angle to draw the spline faster.

Selected Line Panel

The Selected Line panel is available when the selected edge of the Terrain Perimeter is a line as opposed to an arc. See "Selected Edge" on page 181.

The settings on this panel are available for a variety of other objects in the program. For information about these settings, see "Line Panel" on page 1052.

Selected Arc Panel

The Selected Arc panel is available when the selected segment of the polyline is an arc as opposed to a line. See "Break Line" on page 228.

The settings on this panel are available for a variety of other objects in the program. For information about these settings, see "Arc Panel" on page 1061.

Line Style Panel

The settings on the Line Style panel are available for a variety of other objects in the program. For information about these settings, see "Line Style Panel" on page 1053.

Fill Style Panel

The settings on the Fill Style panel affect the appearance of the selected object in floor plan view. For information about these settings, see "Fill Style Panel" on page 1067.

Materials Panel

The settings on the Materials panel affect the appearance of the selected object in 3D views. See "Materials Panel" on page 831.

Importing Elevation Data

Elevation data can be added to a plan using the tools and techniques described in this chapter or it can be imported from a file.

Chief Architect can import elevation data saved in DXF/DWG, GPS Exchange (.**gpx**) and a variety of text file formats (.**txt**, .**csv**, .**prn**, .**xyz**, .**auf** and .**nez**). If your terrain data is not saved in one of these file formats, there are third party programs available that can convert to these formats.

DXF/DWG Files

If you have a model of your terrain created on another program that contains contour lines and elevation data, that information can be imported directly as elevation data into Chief Architect as a **.dxf** or a **.dwg** file. See "Importing DXF/DWG Elevation Data" on page 732.

Text Files

Elevation data can be saved in text files as x, y, and z coordinates where x and y define the location of a point on a Cartesian grid, and z defines the elevation for that point. Each data point must be on a separate line in the text file.

Importable text files can come from surveyors, other software programs, or you can create your own using a GPS system.

Elevation data saved in text files can be imported using the **Import Terrain Assistant**.

GPS Exchange Files

Elevation data in standard format **.gpx** files created using a GPS system can also be imported using the **Import GPS Data Assistant**. See "Import GPS Data Assistant" on page 729.

GPS data may include three types of points - Way, Track, and Route. Chief Architect can only import a **.gpx** file if it includes one or more Way Points, and cannot use Route Points at all. If a **.gpx** file does not include any Way Points, it will not be imported, and if it includes any Route Points, they will be ignored.

Chief Architect supports the import of data in standard **.gpx** files that adhere to the GPX 1.1 Schema. Files that do not follow this standard cannot be imported.

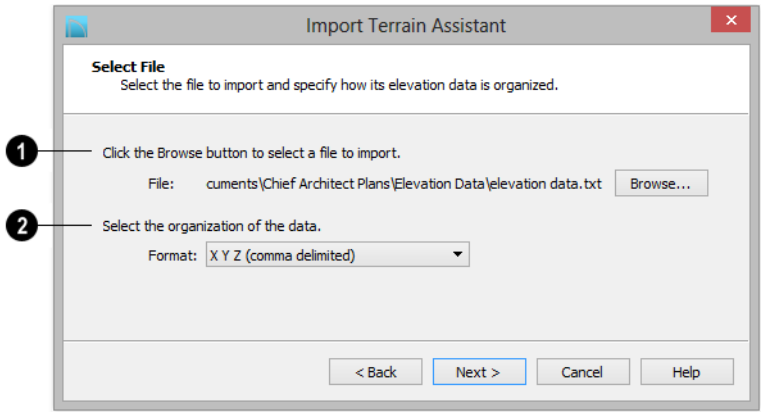
Import Terrain Assistant

The **Import Terrain Assistant** allows you to import elevation data saved in text (**.txt**) file format into a plan.

Each data point in this format has information about its X-axis (East to West location), Y-axis (North to South location), and Z-axis (elevation). It might also have a brief description. In order to import elevation data from a text file, you need to know how the data in the file is organized.

To launch the **Import Terrain Assistant**, select **File> Import> Terrain Data**  .
Click **Next**.

Select File



1 Select a file to import.

- Click the **Browse** button to locate a file on your computer. See “Importing Files” on page 61.
- If a file has been selected, its full path-name displays here for reference; if a file has not been selected, the directory of the last file imported displays. If the path-name is not that of a valid **.txt** file, this text will display in red.

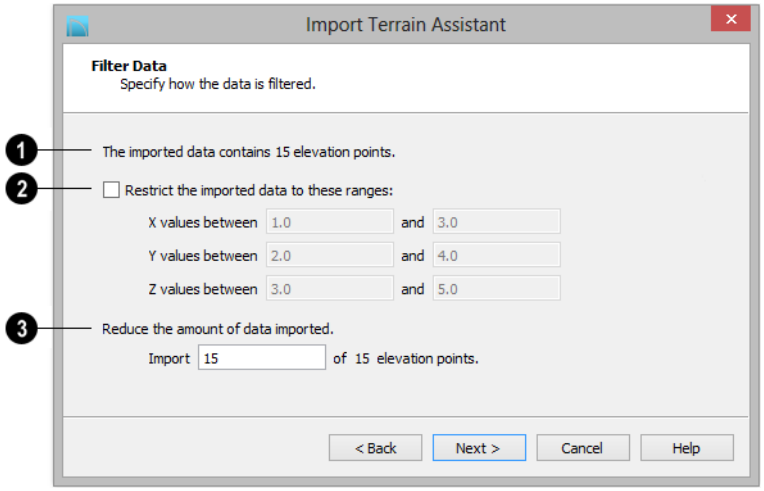
2 Select the organization of the data.

Elevation information can be organized in one of six different ways, and can be separated by either a comma (comma delimited) or a space (space delimited).

- **XYZ** - Information in this format begins with the X coordinate, followed by the Y coordinate and the Z coordinate.
- **#XYZ** - Information in this format begins with a number that belongs to each data point followed by the X coordinate, the Y coordinate, and the Z coordinate.
- **#XYZ Description** - Information in this format begins with a number that belongs to each data point followed by the X coordinate, the Y coordinate, the Z coordinate, and a description.
- **YXZ** - Information in this format begins with the Y coordinate followed by the X coordinate and the Z coordinate.
- **#YXZ** - Information in this format begins with a number that belongs to each data point followed by the Y coordinate, the X coordinate, and the Z coordinate.
- **#YXZ Description** - Information in this format begins with a number that belongs to each data point followed by the Y coordinate, the X coordinate, the Z coordinate, and a description.

Click **Next** to continue.

Filter Data



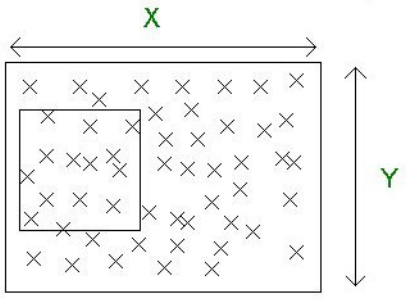
1 The number of elevation points that the text file contains displays here for reference. Building terrain with a lot of elevation data can take a long time.

If your text file has more than 1000 or 2000 elevation points, consider filtering it using the settings that follow or using the Linear Smoothing option in the **Terrain Specification** dialog. See “General Panel” on page 712.

2 **Restrict the imported data to these ranges:**

One way to filter the data used is to define a range for each axis: **X**, **Y**, and **Z**. Data within these ranges is imported, while data outside these ranges is not.

In the following diagram, the outer box and the points within it represent all of the data contained in a given text file. The smaller box represents a subset of this data, defined by ranges on the X and Yaxes.

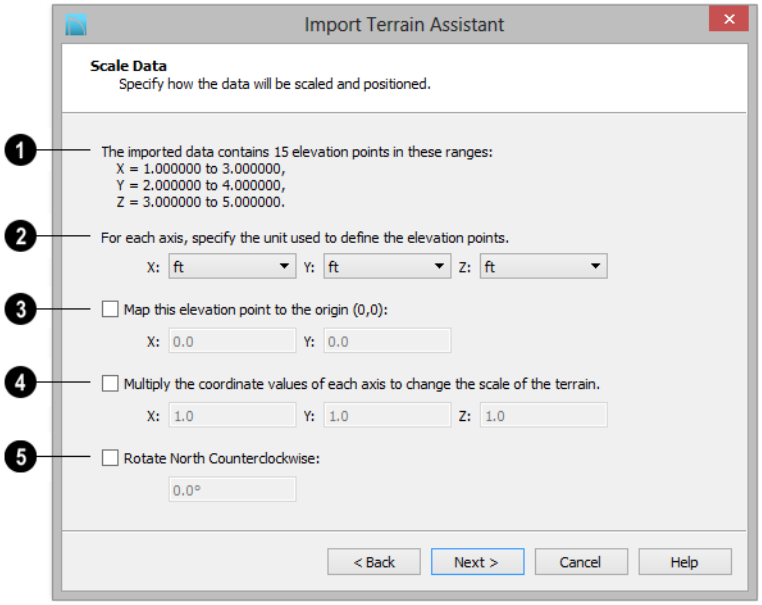


3 **Reduce the amount of data imported.**

Another way to filter the imported data is by skipping data points. Specify every 2 points to reduce this data by 50%; specify every 10 points to reduce the data by 90%.

Click **Next** to continue.

Scale Data



1 The total number of data points to be imported and the ranges of their coordinates are described here.

2 Select the **Units** of measurement used for each axis.

3 **Map** a data point in the file to the origin in Chief Architect to position the terrain data relative to your plan. See “3D Drafting” on page 29.

4 **Change the scale of the terrain.**

- Multiply the coordinates of each axis by a specific number to decrease or increase the relative size or relief of your terrain.

5 **Rotate North Counterclockwise:**

- Specify an amount to rotate the terrain data counterclockwise, or to the left.

Click **Next** to finish.

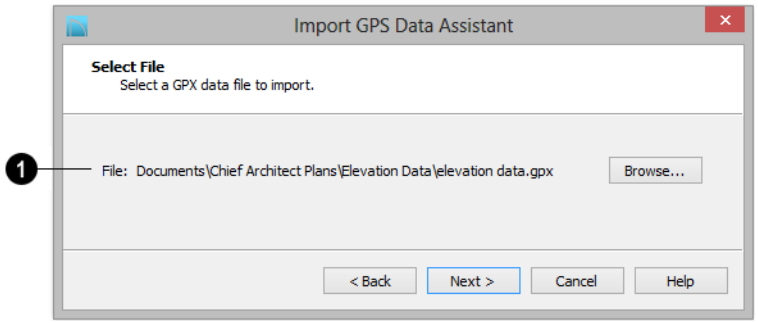
Import GPS Data Assistant

The **Import GPS Data Assistant** allows you to import terrain data from the standard **.gpx** file format. See “GPS Exchange Files” on page 726.

Select **File> Import> GPS Data** to open the **Import GPS Data Assistant**, then click **Next** to continue.

> ⚠ Due to the lack of accuracy in some GPS systems, exact distances using the Import GPS Data Assistant are not guaranteed.

Select File



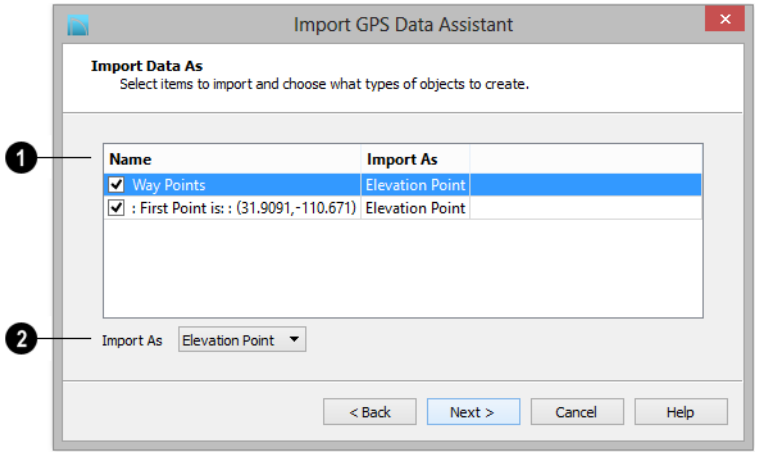
1 Select a file to import.

- Click the **Browse** button to locate a **.gpx** file on your computer. See “Importing Files” on page 61.
- If a file has been selected, its full pathname displays here for reference; if a file has not been selected, the directory of the last file imported displays. If the pathname is not that of a valid **.gpx** file, this text will display in red.

> Note: Not all GPS programs use the standard .gpx file format; however, only files using the standard format can be imported.

Click **Next** to continue.

Import Data As



1 Specify which items you want to import by checking the box to the left of the **Name**. Items with unchecked boxes are not imported.

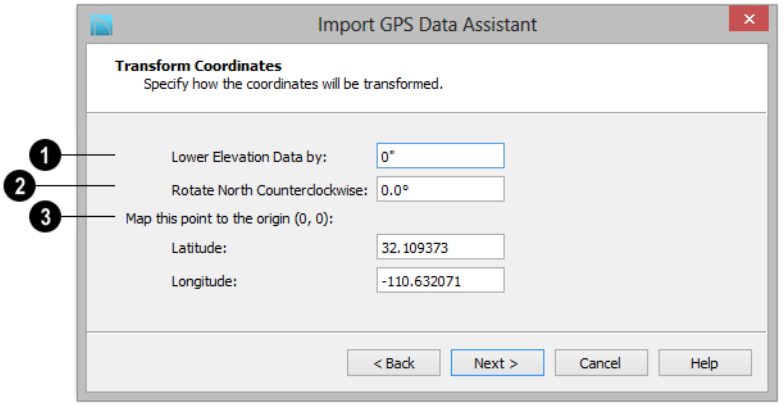
2 Specify what you would like the selected item to **Import As** from the drop-down list.

- Only Way Points have elevation data associated with them. To import this data, import them as “Elevation Points”.
- Select “Marker” to import either Way Points or Track Points as location markers. Markers have no elevation data associated with them.
- Select “Polyline” to create an open CAD polyline based on the position of Way Points or Track Points. The points themselves are not imported. Polylines have no elevation data associated with them.
- Select “Terrain Perimeter” to create a closed Terrain Perimeter polyline based on the position of either Way Points or Track Points. The points themselves are not imported. A Terrain Perimeter has no elevation data associated with it. See “Terrain Perimeter” on page 696.

Way Points are typically imported as “Elevation Data”, while Track Points are imported as “Markers”, “Polylines’, or “Terrain Perimeter”.

Click **Next** to continue.

Transform Coordinates



1 Lower Elevation Data by:

- Specify the amount that you would like to lower all imported elevation data.

2 Rotate North Counterclockwise:

- Specify an amount to rotate the terrain data counterclockwise, or to the left.

3 Map this point to the origin.

- Specify a point in the imported terrain data, defined by degrees **Latitude** and **Longitude**, that you would like to locate at the origin in the Chief Architect plan.

Click **Next** to finish.

If you do not see the imported terrain, select **Window> Fill Window** .

Importing DXF/DWG Elevation Data

Select **File> Import> Drawing (DWG/DXF)** to open the **Import Drawing Assistant**, which you can use to import elevation data in **.dwg**/**.dxf** format. See “Import Drawing Assistant” on page 1136.

By default, the Import Drawing Assistant imports entities as regular CAD objects; however, you can specify that any layer in the drawing be converted to either a Terrain Perimeter or Elevation Data. If a layer is converted to Elevation Data, any points and lines on that layer are converted to Elevation Points and Lines, and any elevation data associated with them is preserved.

- If an imported line has vertices with the same Z values, an Elevation Line is created.
- If the vertices have differing Z values, an Elevation Point is created for each vertex.
- Imported points are converted to Elevation Points.

- Other imported entities (solids, faces, etc.) are imported normally.

> To avoid unexpected results when importing a drawing, only convert layers with elevation information to Elevation Data.

If a Terrain Perimeter does not exist in the plan or if a layer in the **.dwg**/**.dxf** file is not converted to a Terrain Perimeter, a Terrain Perimeter is created around the extents of the Elevation Data when it is imported.

Converting CAD Objects to Terrain Data

CAD lines, splines, and polylines - either imported or drawn using Chief Architect's CAD Tools - can be selected and converted to terrain data using the **Convert Polyline** edit tool.

In floor plan view, select a CAD line, spline, or polyline and click the **Convert Polyline**  edit button to open the **Convert Polyline** dialog. See "Convert Polyline Dialog" on page 236.

A Terrain Perimeter must exist before any other types of terrain object can be created. If no Terrain Perimeter is present in the current plan, this will be the only terrain item available in the **Convert Polyline** dialog.

When you click **OK**, the terrain object's specification dialog opens, allowing you to specify elevation data or other attributes.

Roads, Driveways and Sidewalks

Roads and sidewalks are modeled in 3D like other terrain objects in Chief Architect. Because they have much in common with terrain objects and rely upon terrain data to be viewed in 3D, it is helpful to be familiar with terrain modeling before using these tools. See “Terrain” on page 695.

Chapter Contents

Road and Sidewalk Defaults

Default Settings can be accessed by selecting **Edit> Default Settings**. Click the + beside Roads, Sidewalks and Driveways to display the subheadings. See “Default Settings” on page 72.

The settings in the **Road Defaults**, **Driveway Defaults**, **Road Marking Defaults**, and **Sidewalk Defaults** dialogs determine the initial settings when the road and sidewalk tools are used. It is a good idea to check these

settings before placing any roads or sidewalks in your plan.

Road Defaults

You can access the **Road Defaults** dialog from the **Default Settings** dialog, or by double-clicking the **Road Tools** button.

The settings in this dialog are the same as those in the **Road Specification** dialog. See “Road Specification Dialog” on page 741.

Driveway Defaults

You can access the **Driveway Defaults** dialog from the **Default Settings** dialog, or by double-clicking the **Driveway** button.

The settings in this dialog are the same as those in the **Driveway Specification** dialog. See “Driveway Specification Dialog” on page 744.

Road Marking Defaults

You can access the **Road Marking Defaults** dialog from the **Default Settings** dialog, or by double-clicking the **Road Marking** button.

The settings in this dialog are the same as those in the **Road Marking Specification** dialog. See “Road Marking Specification Dialog” on page 744.

Sidewalk Defaults

You can access the **Sidewalk Defaults** dialog from the **Default Settings** dialog, or by double-clicking the **Sidewalk** button.

The settings in this dialog are the same as those in the **Terrain Path Specification** dialog, but only affect sidewalks and not other types of terrain paths. See “Terrain Path Specification Dialog” on page 724.

Road, Driveway and Sidewalk Tools

Road objects can be drawn in floor plan view, camera views and overviews, but only when a Terrain Perimeter exists in the plan. See “Terrain Perimeter” on page 696.

When road objects are first placed into your plan, their initial dimensions and properties are controlled by their default settings. See “Road and Sidewalk Defaults” on page 735.

Road objects created with the Road Tools have a consistent width that can be defined in their specification dialogs. See “Road Specification Dialog” on page 741, “Terrain Feature Specification Dialog” on page 721, and “Terrain Path Specification Dialog” on page 724.

Road objects are flat along their widths, which makes it easy to create roads on sloping terrain.

Roads have curbs, and Sidewalks and Driveways cut out curbs and gutters wherever they meet a Road or a Road Polyline.

Once road objects have been placed, they can be edited individually or as a group. See “Editing Road Objects” on page 740.

Straight Road

To place a road without any curves, select **Terrain> Road> Straight Road** and click and drag to draw a line in floor plan view. The ends of multiple road sections can be connected together.

Roads are edited alone their center line like CAD lines and polylines. See “Editing Line Based Objects” on page 184.

Spline Road

Use **Terrain> Road> Spline Road** to draw a curved road. Spline roads are drawn and edited like CAD splines. See “Splines” on page 1073.

Polyline Road

A polyline can be used to model roads of any shape. It is ideal for creating parking lots and other non-linear road surfaces. Roads created with the **Polyline Road** tool conform to the surface of the terrain beneath them.

To place a road polyline select **Terrain> Road> Polyline Road** and click and drag to draw a rectangular polyline in floor plan view.

Road Polylines are edited alone their center line like polylines. See “Polylines” on page 1065.

Median

A median is a polyline that can be used within a road. The median is made of the same material as the terrain beneath it and has a curb if the road that encompasses it has one.

To place a median select **Terrain> Road> Median** and click and drag to draw a rectangular polyline in floor plan view. Road median polylines must be contained within a road.

Road medians are edited just like CAD polylines. See “Polylines” on page 1065.

Polylines can be converted to road medians. See “Converting Objects” on page 235.

Cul-de-sac

A **Cul-de-sac** is a road object with a special, rounded shape that can be placed at the end of a Road object. Select **Terrain> Road> Cul-de-sac** and click on the end of a road to place a cul-de-sac at that location.

Culs-de-sac cannot be placed on road polylines.

Culs-de-sac can be edited just like CAD polylines. See “Editing Closed-Polyline Based Objects” on page 198.

Road Stripe

The **Road Stripe** tool allows you to paint lines on a road surface.

To place a road stripe, select **Terrain> Road> Road Stripe** and click and drag to draw a line within a road in floor plan view. Multiple road stripes can be connected together.

Road Stripes are edited like CAD lines. See “Editing Line Based Objects” on page 184.

Road Marking

A **Road Marking** paints polylines on a road surface, allowing any shape to be created.

To place a road marking select **Terrain> Road> Road Marking** and click and drag to draw a rectangular polyline within a road in floor plan view.

Road markings are edited like CAD polylines. See “Polylines” on page 1065.

A driveway is a road without a curb. A driveway cuts out a curb wherever it meets a road or a road polyline. Like a road, the elevation of a driveway is flat across its width.

Straight Driveway

To create a driveway, select **Terrain> Driveway> Straight Driveway**, then click and drag to draw a line. Multiple driveway sections can be connected together.

Height, thickness and material information can be specified in a driveway’s specification dialog. See “Driveway Specification Dialog” on page 744.

Driveways are edited like other line-based objects. See “Editing Line Based Objects” on page 184.

Spline Driveway

Use the **Spline Driveway** tool to create a curved driveway. Select **Terrain> Driveway> Spline Driveway**. Spline driveways are drawn and edited like CAD splines. See “Splines” on page 1073.

Polyline Driveway

Use the **Polyline Driveway** tool to create a sidewalk of any shape. Driveway polylines conform to the surface of the terrain beneath them.

To place a driveway polyline, select **Terrain> Driveway> Driveway Polyline** and click and drag to draw a rectangular polyline in floor plan view.

Driveway polylines are edited just like CAD polylines. See “Polylines” on page 1065.

Straight Sidewalk

To create a sidewalk with no curves, select **Terrain> Sidewalk> Straight Sidewalk**, then click and drag from end to end to draw a line. The ends of multiple sidewalk sections can be connected together.

Sidewalks are edited along their center line like line- and polyline- based objects. See “Editing Line Based Objects” on page 184.

Sidewalks can be edited in their specification dialog. See “Terrain Path Specification Dialog” on page 724.

Spline Sidewalk

Use the **Spline Sidewalk** tool to create a curved sidewalk. Select **Terrain> Sidewalk> Spline Sidewalk**. Spline roads are drawn and edited like CAD splines. See “Splines” on page 1073.

Polyline Sidewalk

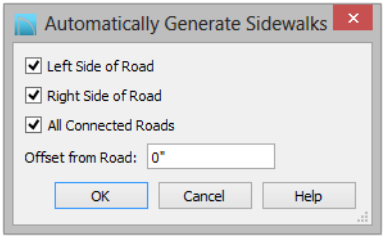
Use the **Polyline Sidewalk** tool to create a sidewalk of any shape. Sidewalk Polylines conform to the surface of the terrain beneath it.

To create a **Sidewalk Polyline**, select **Terrain> Sidewalk> Sidewalk Polyline** and click and drag to draw a rectangular polyline in floor plan view.

Sidewalk polylines are edited just like CAD polylines. See “Polylines” on page 1065.

Auto Generate Sidewalks

Select a road or median and click the **Auto Generate Sidewalk** edit button to open the **Auto Generate Sidewalks** dialog.



- **Left/Right Side of Road -** Check one or both boxes to generate a sidewalk on the selected road object.
- Check **All Connected Roads** to generate a sidewalk along all other roads connected to the selected road object.
- **Offset From Road -** Specify a gap between the generated sidewalk and the selected road object.

Driveway Area

A **Driveway Area** is a terrain feature with a concrete material assignment. To create a driveway, select **Terrain> Road and Sidewalk> Driveway Area**, then click and drag from corner to corner to draw a rectangle. See “Polylines” on page 1065.

Height, thickness and material information can be specified in a driveway’s specification dialog. See “Terrain Feature Specification Dialog” on page 721.

Driveways can be edited like other closed polylines. See “Editing Closed-Polyline Based Objects” on page 198.

Parking Lot

A **Parking Lot** is a terrain feature with an asphalt material assignment. To place a parking lot, select **Terrain> Road and Sidewalk> Parking Lot**, then click and drag from corner to corner to draw a rectangle. See “Polylines” on page 1065.

Height, thickness and material information can be specified in a parking lot’s specification dialog. See “Terrain Feature Specification Dialog” on page 721.

Note: The Driveway Area and Parking Lot tools are only available in Chief Architect Lite. See “Chief Architect Premier vs Interiors vs Lite” on page 27.

Displaying Road Objects

Roads and sidewalks display in floor plan and 3D views based on the settings for their layers in the **Layer Display Options** dialog. See “Layers” on page 143.

In 3D Views

Road objects display in 3D views within the Terrain Perimeter. If the display of the Terrain Perimeter is turned off in 3D views, roads and sidewalks will not display, either: even if their layers are turned on.

By default, terrain rebuilds automatically when road objects are added, removed or edited. If it does not, you can select **Terrain> Build Terrain**  . See “Terrain Perimeter” on page 696.

Editing Road Objects

Road objects can be selected individually and as a group in 2D and 3D views and edited using the edit handles, the edit toolbar and their specification dialogs.

Using the Mouse

The edit handles available for a selected road object depend on the type of object selected.

- **Straight Roads**  , straight **Driveways**  , straight **Road Stripes**  , and

Straight Sidewalks are edited along their centerline like a line or open polyline. See “Editing Line Based Objects” on page 184.

- **Spline Roads** and **Spline Sidewalks** are edited along their centerline like CAD splines. See “Splines” on page 1073.
- **Polyline Roads**, **Cul-de-sacs**, **Medians**, **Road Markings** **Polyline Driveways** and **Polyline Sidewalks** are edited along their perimeter, like standard polylines. The width is determined by the polyline’s shape. See “Editing Closed-Polyline Based Objects” on page 198.
- **Medians** are also edited like polylines.

In the Specification Dialog

Road objects can be customized in their specification dialogs. See “Road Specification Dialog” on page 741, “Terrain Feature Specification Dialog” on page 721, and “Terrain Path Specification Dialog” on page 724.

Using the Edit Tools

A selected road object can be edited in a variety of ways using the buttons on the edit toolbar. See “The Edit Toolbar” on page 35.

Convert to Polyline Object

A selected Straight or Spline Road, Sidewalk or Driveway can be converted into a Polyline Road, Sidewalk or Driveway by clicking the **Convert to Polyline Object** edit button.

Polyline Roads, Sidewalks and Driveways display the same edit handles as closed polylines, allowing you to edit their shapes as much as needed.

Adding Road Objects to the Library

You can create your own road objects and save them to the library. Select any combination of elevation points, elevation lines, terrain features, roads, sidewalks, road markings, or even the terrain perimeter itself and send them to the library as one unit.

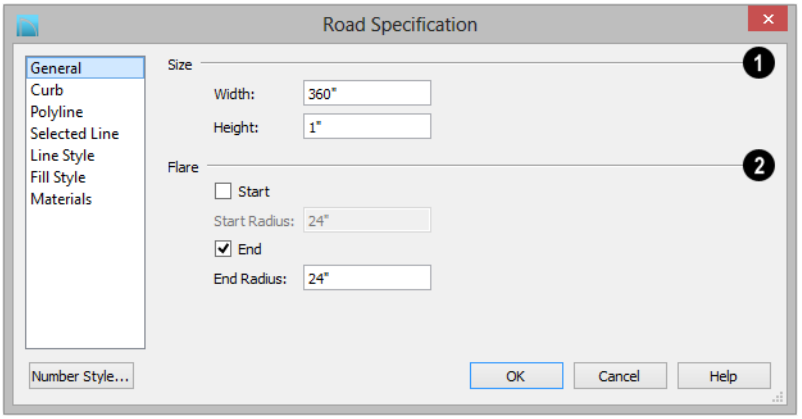
When a group of terrain objects from the library is placed into a plan, each object becomes independent and can be edited individually. See “Adding Library Content” on page 807.

Road Specification Dialog

To open the **Road Specification** dialog, select a Straight Road, Spline Road, Polyline Road, Median or Cul-de-sac and click the **Open Object** edit button.

Many of the settings in this dialog are similar to those in the **Terrain Path Specification** dialog.

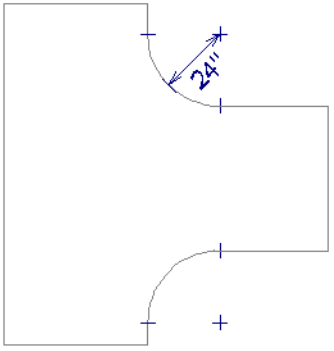
General Panel



1 **Size** - Specify the **Width** and **Height** of the road relative to the terrain. The **Width** option is not available for culs-de-sac and non-centerline roads.

2 When one road joins another, you can **Flare** the intersection.

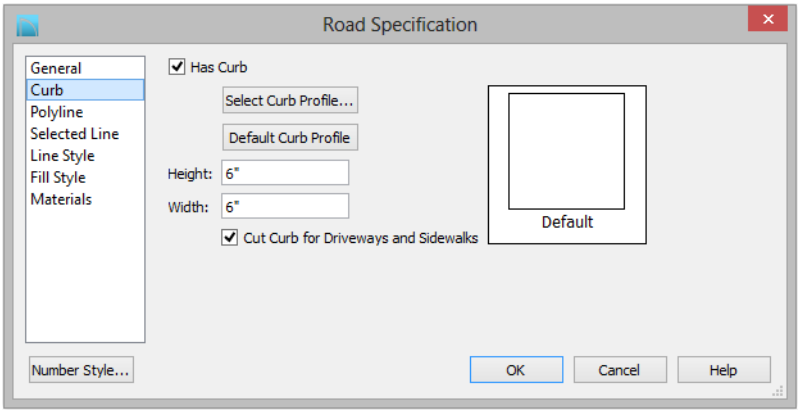
- Check **Start** to create a flare at the starting end of the selected road, then specify the **Radius** of that flare.
- Check **End** to create a flare at the end of the selected road, then specify the **Radius** of that flare.



Road flares with 24" Radius

Flaring is not available for culs-de-sac or non-centerline roads.

Curb Panel



- Check **Has Curb** if you want the selected road to include a curb.
- Click **Select Curb Profile** to apply a different curb profile to the selected road.
- Click **Default Curb Profile** to use the default curb profile.
- Enter a **Width** value for the curb.
- Enter a **Height** value for the curb.
- Check **Cut Curb for Driveways and Sidewalks** to cut the curb for driveways and sidewalks.

Polyline Panel

The Polyline panel lists the length of the road's Perimeter, Area and Volume. Not available in the **Road Defaults** dialog. For more information, see "Polyline Panel" on page 1066.

Selected Line/Arc Panel

The Selected Line panel is available when a Straight Road is selected. For more information, see "Line Panel" on page 1052.

The Selected Arc panel is available when the curved segment of a Straight Road is selected. See "Arc Panel" on page 1061.

Spline Panel

The Spline panel is available when a Spline Road is selected. Specify the angle between the line segments used to draw the spline. For more information, see "Spline Panel" on page 1066.

Line Style Panel

This panel is the same as the Line Style panel in many other specification dialogs. See "Line Style Panel" on page 1053.

Fill Style Panel

The settings on the Fill Style panel affect the appearance of the selected object in floor plan view. For information about these settings, see "Fill Style Panel" on page 1067.

Materials Panel

The settings on the Materials panel affect the appearance of the selected object in 3D views. For information about these settings, see “Materials Panel” on page 831.

The material selected here is not calculated in the Materials List. See “Materials Lists” on page 1247.

Median Specification Dialog

Select a median and click the **Open Object** edit button to open the **Median Specification** dialog.

The settings in this dialog are similar to those in the **Road Specification** dialog.

Driveway Specification Dialog

Select a driveway and click the **Open Object** edit button to display the **Driveway Specification** dialog.

The settings in this dialog are also found in the **Driveway Defaults** dialog and are similar to those in the **Road Specification** dialog. See “Road Specification Dialog” on page 741.

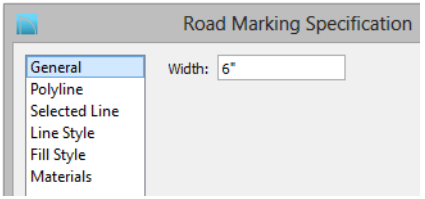
Road Marking Specification Dialog

Select a Road Marking or Road Stripe and click the **Open Object** edit button to open the **Road Marking Specification** dialog.

The settings in this dialog are also found in the **Road Marking Defaults** dialog and are similar to those in the **Road Specification** dialog. See “Road Specification Dialog” on page 741.

General Panel

The **Width** setting on the General panel is only available for Road Stripes.



Enter a **Width** value for the selected Road Marking.

Polyline Panel

The Polyline panel lists the Length/Perimeter of the selected Road Marking, its Area, and its Volume. Not available in the **Road Marking Defaults** dialog. For more

information, see “Polyline Panel” on page 1066.

Selected Line/Arc Panel

The Selected Line panel is available when the straight segment of a road marking is selected. See “Line Panel” on page 1052.

The Selected Arc panel is available when the curved segment of a road marking is selected. See “Arc Panel” on page 1061.

Line Style Panel

This panel is the same as the Line Style panel in many other specification dialogs and affects the appearance of the selected object in floor plan view. See “Line Style Panel” on page 1053.

Fill Style Panel

The settings on the Fill Style tab affect the appearance of the selected object in floor plan view. For information about these settings, see “Fill Style Panel” on page 1067.

Materials Panel

The settings on the Materiasl tab affect the appearance of the selected object in 3D views. For information about these settings, see “Materials Panel” on page 831.

The material selected here is not calculated in the Materials List. See “Materials Lists” on page 1247.

Chapter 23:

Plants and Sprinklers

The Plant Tools and sprinklers from the Library Browser allow you to create planting designs and irrigation systems in your terrain.

The Terrain Tools are discussed in their own chapter. See “Terrain” on page 695.

Chapter Contents

Plant Tools

Select **Terrain> Plant** to add plants to your landscaping plan. Plants can also be placed in a plan directly from the library. See “Placing Library Objects” on page 814.

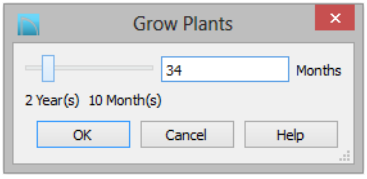
Plant objects are actually images, which provide realism while avoiding high 3D surface count. Once created, plant images can be selected and edited much like other image objects. See “Editing Images” on page 1104.

Plants have labels which you can display in floor plan view. You can also create a Plant Schedule. See “Schedules and Object Labels” on page 1231.

Select **Terrain> Plant> Plant Chooser** to open the **Plant Chooser** dialog and find plants based on their characteristics and requirements. See “Plant Chooser Dialog” on page 749.

Select **Terrain> Plant> Create Plant Image** to create a plant image. Once a plant image is created, it can be added to the library for future use. See “Creating Images” on page 1102.

Choose **Terrain> Plant> Grow All Plants** to open the **Grow Plants** dialog.



Click and drag the slider bar and select a growth period from zero to twenty years. This only works for plants that have a mature height and mature age specified in the **Plant Image Specification** dialog. See “Plant Information Panel” on page 754.

Select **Terrain> Plant> Show Hardiness Zones** to access regional climate zone maps. See “Hardiness Zones” on page 751.

Garden Beds

Garden Beds are special **Terrain Features** with material and height attributes typical of planting beds. In addition, you can choose to distribute copies of a plant image within a Garden Bed. See “Garden Bed Tools” on page 706.

Plants Library Catalogs

In the Library Browser, browse to Chief Architect Core Catalogs> Plants to access a selection of plant images and symbols. Select the library object you want, then click in any view to place it in the plan. See “The Library” on page 797.

A selection of Bonus Catalogs of plants is also available for download. See “Chief Architect Bonus Catalogs” on page 803.

In addition, you can add single plants and blocked groups of plants to the library. See “Adding Library Content” on page 807 and “Architectural Blocks” on page 789.

Plant Schedules

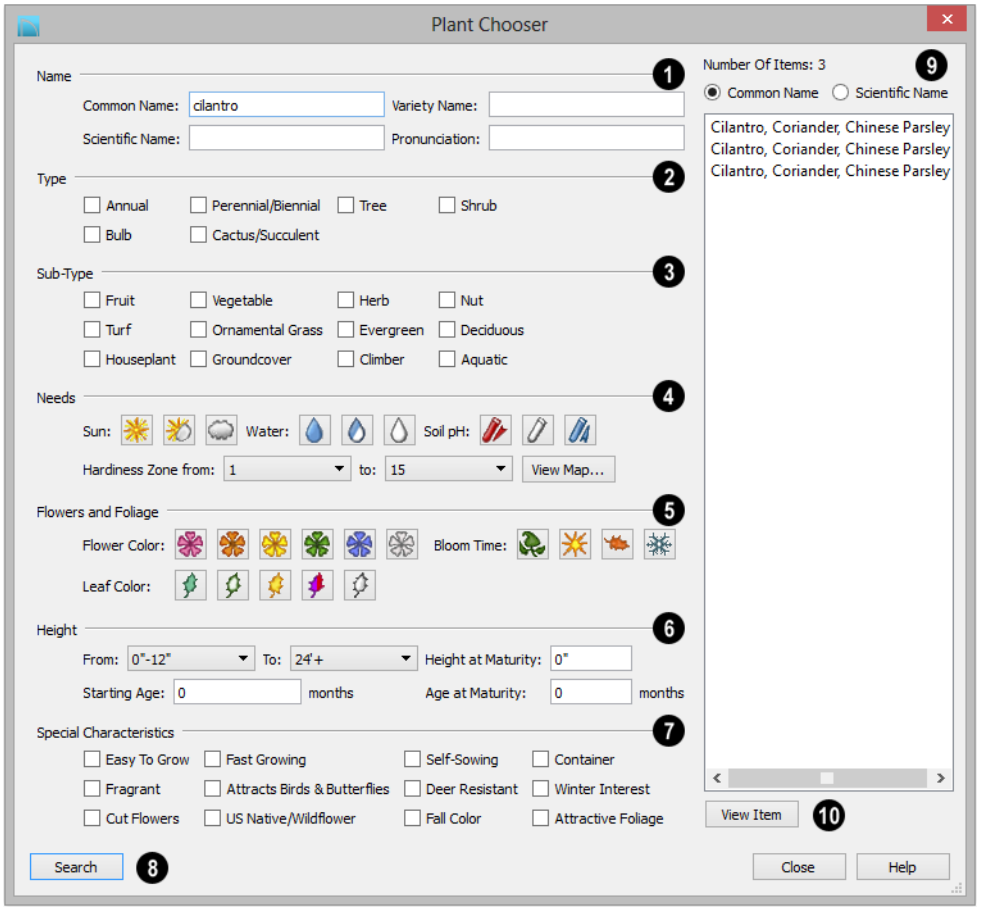
The **Plant Schedule** tool allows you to create customizable plant schedules and plant labels that display schedule numbers. See “Schedules and Object Labels” on page 1231.

Plant Chooser Dialog

Select **Terrain**> **Plant**> **Plant Chooser** to open the **Plant Chooser** dialog or click the **Plant Chooser** button at the bottom of the Library Browser window.

Use the **Plant Chooser** to search the library for plant images and symbols that meet your search parameters. You can search using any or all of the options in this dialog.

The search parameters in the **Plant Chooser** dialog correspond to the settings on the Plant Information panel of the **Plant Image Specification** dialog. See “Plant Information Panel” on page 754.



1 Type the **Name** of a plant that you would like to find..

- Specify the plant's **Common Name, Scientific Name**, or its **Variety Name**.
- A **Pronunciation** field is also provided. In the Plant Image Specification dialog, it is populated with a phonetic pronunciation guide for the plant's scientific name.

2 Check one or more boxes to indicate selected plant **Type** to search for.

3 Check one or more boxes to specify the selecte **Sub-Type** to search for.

4 Specify the plant **Needs** to search for. These include the **Sun**, **Water**, **Soil pH**, and **Hardiness Zone** range. See "Hardiness Zones" on page 751.

5 **Flowers and Foliage** -

- Specify the **Flower Color** to search for. Multiple colors can be selected.

- Specify the **Leaf Color** to search for. Multiple colors can be selected
- Specify the **Bloom Time** to search for, which is the season when the plant produces flowers.

6 Specify the plant **Height** at maturity to search for. This is used with the Grow Plants feature. See “Plant Tools” on page 748.

- An average mature height range can be entered using the **From** and **To** drop-down lists.
- A specific **Height at Maturity** to search for can be entered in the text field.
- A specific **Starting Age**, in months, can be entered in the text field.
- A specific **Age at Maturity**, in months, can be entered in the text field.

7 Check one or more boxes to search for plants with **Special Characteristics**.

8 Click the **Search** button at the bottom of the dialog to search for plants that meet your search criteria. The search results display to the right.

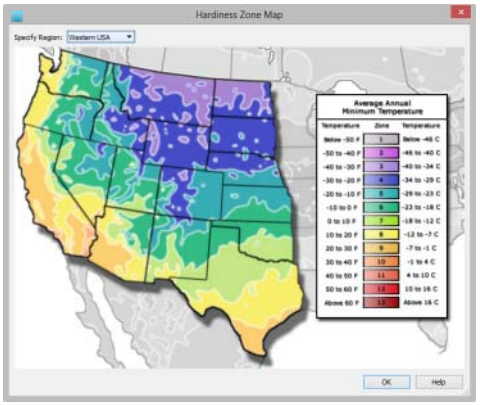
9 Your search results display here.

- The **Number of Items** that match your search criteria is stated.
- Specify whether you want the search results to use the **Common Name** or **Scientific Name**.
- Click on the name of a plant in the list to see its location in the Library Browser.

10 Click the **View Item** button to see more information about the selected plant in the **Plant Information** dialog. See “Plant Image Specification Dialog” on page 752.

Hardiness Zones

Select **Terrain> Plant> Show Hardiness Zones** to view a selection of regional **Hardiness Zone Maps**. Click the drop-down list at the top left to select various regions.



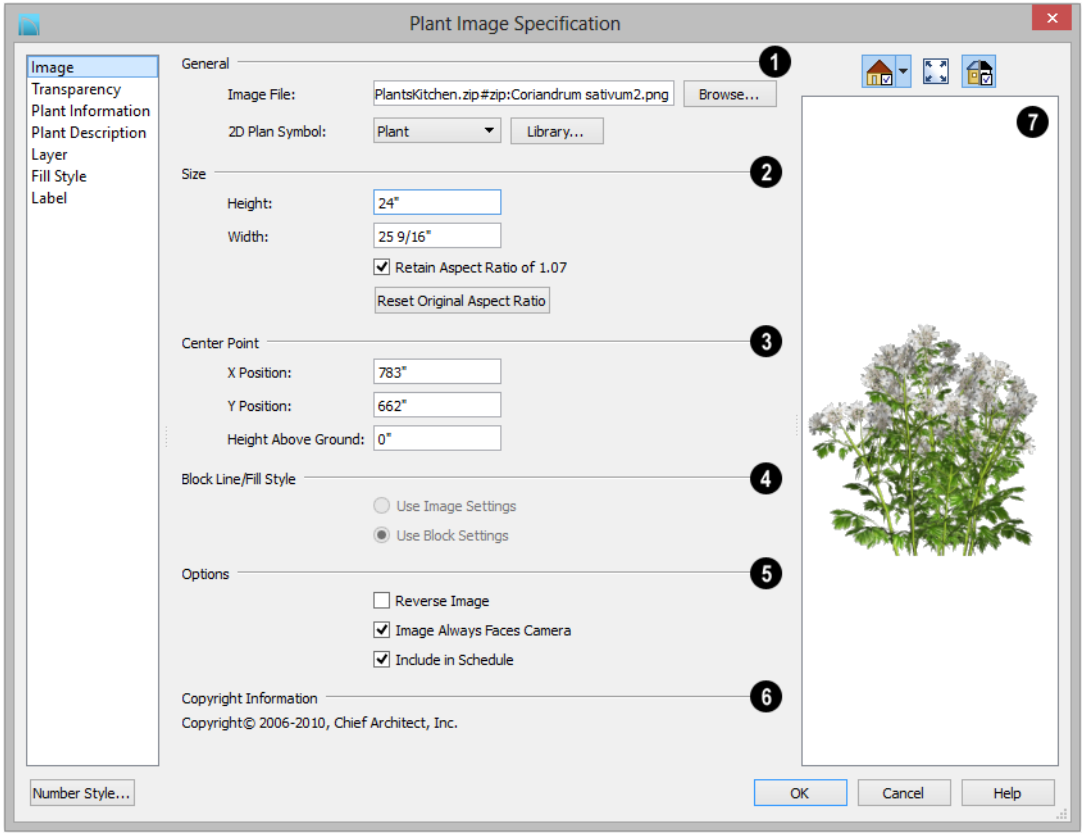
Plant Image Specification Dialog

Select one or more plant in a floor plan or 3D view and click the **Open Object** edit button to open the **Plant Image Specification** dialog.

This dialog can also be accessed by selecting **Terrain> Plant> Create Plant Image** .

The Plant Information and Plant Description panels are also found in the **Plant Information** dialog, which can be accessed from the **Plant Chooser** dialog. See “Plant Chooser Dialog” on page 749.

Image Panel



1 **General** -

- The path and name of the selected plant’s **Image File** displays here.

- Click **Browse** to specify the saved location on your computer of the image that represents the plant in 3D views.
- A number of **2D Plant Symbols** are available to represent the image in floor plan view. Select one from the drop-down list or click the Library button to choose a CAD block from the Library Browser.

❷ Specify the **Size** of the plant image, as seen in 3D views.

- Enter a **Height** for the image.
- Enter a **Width** for the image.
- When **Retain Aspect Ratio of** is checked, if you change either the Height or Width, the other value changes to maintain this ratio. If this is unchecked and you resize the plant image, it may become distorted.
- Click **Reset Original Aspect Ratio of** to reset the image's original aspect ratio and remove any distortion caused by resizing.

❸ Specify the location of the selected plant image's **Center Point**.

- Position the selected plant image in reference to the plan coordinates by specifying its **X Coordinate** and **Y Coordinate**.
- Specify the selected plant image's **Height Above Ground**.

❹ Specify the **Block Line/Fill Style** of the selected plant image's 2D symbol in floor plan view. Only available when a CAD block from the library is selected as the image's 2D Plan Symbol.

- Select **Use Image Settings** to use the image's line style, which is set by layer, and its fill style, which is "None (Transparent)".
- Select **Use Block Settings** to use the 2D CAD block's line and fill styles. See "Custom 2D Symbols" on page 1080.

❺ **Options** -

- Check **Reverse Image** to reflect the appearance of the image about an imaginary vertical line through its center.
- Check **Do not rotate in 3D view** to prevent the plant image from rotating with the camera.
- Check **Include in Schedule** to include the selected plant in the Plant Schedule. See "Schedules and Object Labels" on page 1231.

❻ If the selected plant image has been copyrighted, its **Copyright Information** displays here.

❼ A preview of the selected sprinkler symbol displays here. The Glass House Rendering Technique is not available for plant images. See "Dialog Preview Panes" on page 38.

Transparency Panel

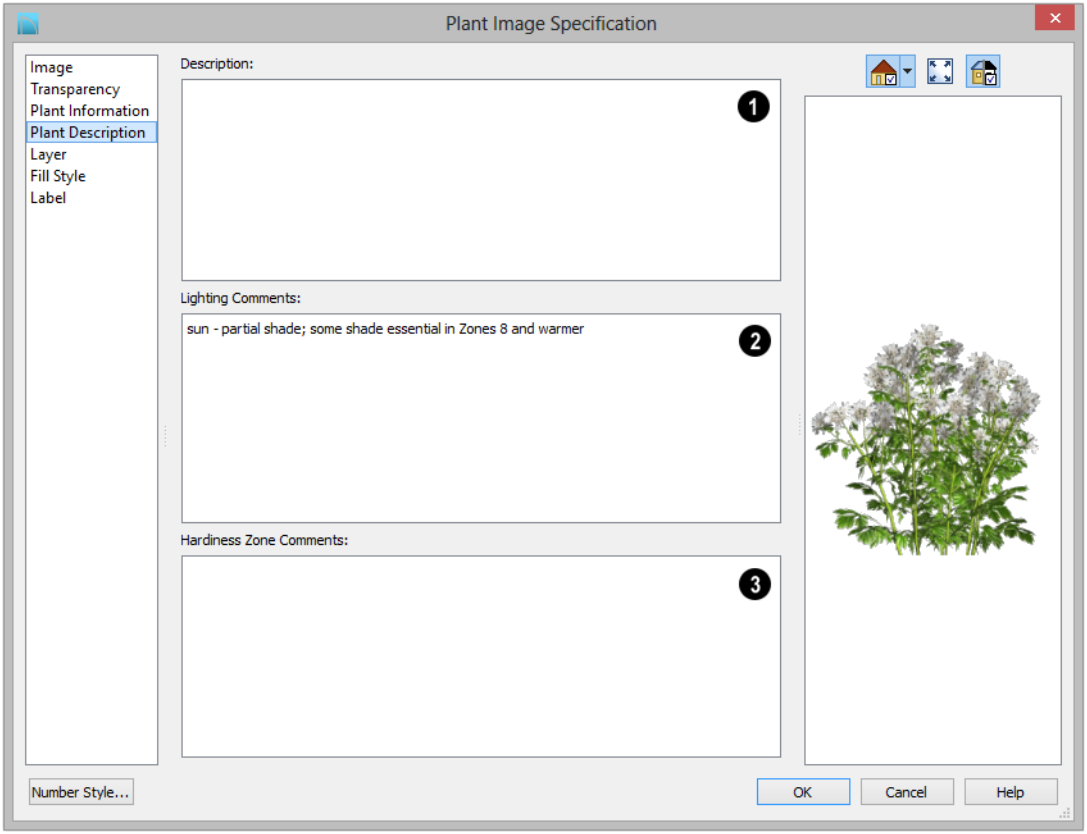
The settings on the Transparency panel of this dialog are similar to those on the same panel of the **Image Specification** dialog. For more information, see "Transparency Panel" on page 1107.

Plant Information Panel

The settings on the Plant Information panel correspond to the search parameters in the **Plant Chooser**. See “Plant Chooser Dialog” on page 749.

When multiple plants with differing attributes are selected, some button icons may be replaced by an X symbol, which signifies “No Change”.

Plant Description Panel



1. A detailed **Description** of the plant displays in this text field.

2. Information in the **Lighting Comments** fields describes the plant’s light requirements.

❸ **Hardiness Zone Comments** are given here. See “Hardiness Zones” on page 751.

Layer Panel

For information about the Layer panel, see “Layer Panel” on page 152.

Fill Style Panel

The Fill Style panel controls the appearance of the selected plant’s 2D Plant Symbol in floor plan view. By default, plant images’ fill style is None (Transparent). For information about the settings on this panel, see “Fill Style Panel” on page 1067.

If the plant’s 2D Plan Symbol does not form a closed shape or is a CAD block is selected from the library, the settings on the Fill Style panel will have no effect on the appearance of the plant in floor plan view. If you wish, you can create a custom CAD block with the desired fill pattern. See “CAD Blocks” on page 1078.

Label Panel

Plant labels display in floor plan view when the “Plants, Labels” layer is turned on and use the Text Style assigned to that layer. See “Object Labels” on page 1241.

For information about the settings on this panel, see “Label Panel” on page 1243.

Plant Specification Dialog

Select a 3D plant symbol and click the **Open Object** edit button to open the **Plant Specification** dialog. This dialog is the same as that for a variety of symbol objects in the program. See “Symbol Object Specification Dialogs” on page 823.

3D plants also have a **Symbol Specification** dialog, which can be accessed by clicking the **Open Symbol**  edit button. See “Symbol Specification Dialog” on page 1159.

Sprinkler Tools

Use the **Sprinkler Tools** to design a sprinkler system in your plan.

Select **Terrain> Sprinkler> Sprinkler Head** to open the **Select Library Object** dialog. Browse to a sprinkler type in the library, click OK, then click in the drawing area to place as many as you need. Once drawn, sprinkler heads can be selected and edited. See “Sprinkler Specification Dialog” on page 756.

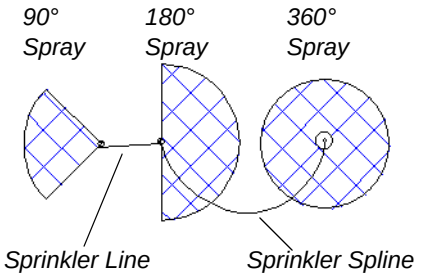
Select **Terrain> Sprinkler> Sprinkler Line** to draw sprinkler lines in your plan. Sprinkler lines are 2D objects and are drawn and edited much like CAD Lines. See “Line Tools” on page 1048.

Select **Terrain> Sprinkler> Sprinkler Spline** to draw curved sprinkler lines in your plan. Sprinkler splines are 2D objects and are drawn and edited like CAD Splines. See “Splines” on page 1073.

Displaying Sprinklers

The display of Sprinkler Heads, Lines and Splines can be controlled in the **Layer Display Options** dialog. See “Displaying Objects” on page 144.

In floor plan view, Sprinkler Head symbols indicate the spray angle.



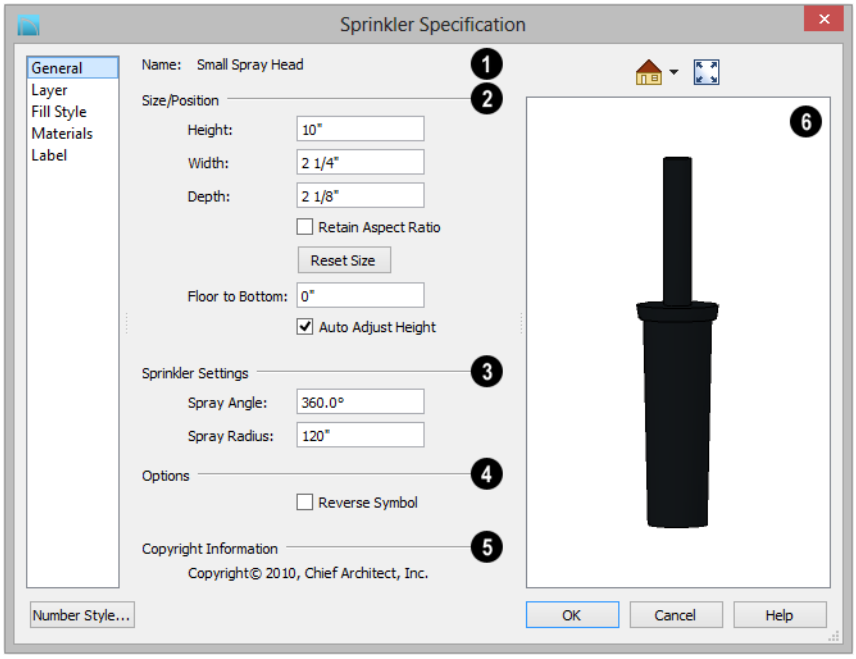
Sprinkler head display in 3D views; however, Sprinkler Lines and Splines do not.

Sprinkler Heads are counted in the Materials List, as is the total length of Sprinkler Lines and Splines. See “Materials Lists” on page 1247.

Sprinkler Specification Dialog

To open the **Sprinkler Specification** dialog, select a sprinkler or group of sprinklers and click the **Open Object** edit button. You can also double-click the sprinkler(s) using the **Select Objects** tool.

General Panel



1 The **Name** of the selected sprinkler symbol displays here.

2 Specify the selected sprinkler's **Size/Position**.

- Enter the **Height**, **Width**, and **Depth** of the sprinkler.
- When **Retain Aspect Ratio** is checked, if you change either the Height, Width, or Depth, the other value changes to maintain their ratio. If this is unchecked and you resize the sprinkler in this dialog, it may become distorted.
- Click the **Reset Size** button to return the sprinkler values to the defaults.
- Enter a **Floor to Bottom** value to define the distance from the bottom of the sprinkler to elevation 0 of Floor One.
- Uncheck **Auto Adjust Height** if you wish to specify an absolute Floor to Bottom height measured from the default floor height of Floor 1, rather than have the sprinkler follow the surface of the terrain. When this is checked, the sprinkler's Floor to Bottom height is measured relative to the terrain surface See "Terrain Height vs Floor Height" on page 697.

The elevation of a sprinkler can be edited in cross section/elevation views.

3 **Sprinkler Settings** -

- Specify the **Spray Angle**, which is the angle within which the sprinkler sprays. An angle of 360° sprays in a complete circle.

- Specify the **Spray Radius**, which is the distance from the sprinkler head that the spray reaches.

❹ Check **Reverse Symbol** to reverse the sprinkler from left to right.

❺ Any **Copyright Information** about the selected sprinkler symbol displays here.

❻ A preview of the selected sprinkler symbol displays here. See “Dialog Preview Panes” on page 38.

Layer Panel

For information about this panel, see “Layer Panel” on page 152.

Fill Style Panel

The Fill Style panel controls how the area within the sprinkler’s spray radius displays in floor plan view and is similar to the Fill Style panel found in many dialogs. See “Fill Style Panel” on page 1067.

Materials Panel

The Materials panel lets you control the appearance of the selected object in 3D views. For more information, see “Materials Panel” on page 831.

Label Panel

Sprinkler labels display in floor plan view when the “Sprinklers, Labels” layer is turned on and use the Text Style assigned to that layer. For information about the settings on this panel, see “Label Panel” on page 1243.

Chapter 24:

Other Objects

Chief Architect has additional objects that can be used to customize your design.

Chapter Contents

Primitive Tools

The Primitive Tools allow you to create basic solid geometric shapes, which can be combined to create a wide variety of custom solid objects. Select

Build> Primitive to display the Primitive Tools.

With the exception of Faces, objects made with the Primitive Tools are included in materials list calculations, although it is best that their specified materials are either Concrete or Volume material types. See “Define Material Dialog” on page 841.

Box

Select the **Box** tool, then click and drag to draw a solid 3D box.

Sphere

Select the **Sphere** tool, then click and drag to draw a solid 3D sphere.

Cylinder

Select the **Cylinder** tool, then click and drag to draw a solid 3D cylinder.

Cone

Select the **Cone** tool, then click and drag to draw a solid 3D cone.

Pyramid

Select the **Pyramid** tool, then click and drag to draw a solid 3D pyramid.

Polyline Solid

Select the **Polyline Solid** tool, then click and drag to draw a polyline solid. Despite their name, polyline solids are not true solids; however, they can be converted into solids. See “Polyline Solids” on page 771.

Face

Select the **Face** tool, then click and drag to draw the edges of a two-dimensional surface. Faces are two-sided, can display in 3D views and be used to create custom Solid objects. See “Face Objects” on page 761.

Creating Primitives

Primitive solids are drawn similar to the way CAD boxes and circles are. Depending on the view in which they are created, however, the method may differ somewhat.

In Floor Plan View

In floor plan view, primitive solids are drawn much the way boxes and circles are. Select a tool, then click and drag to define an area.

- To create 3D **Box**  , click and drag in any direction other than vertical or horizontal to define the width and depth of the box’s base. Its initial height is 1”.
- To create a **Sphere**  , **Cylinder**  , **Cone**  , or **Pyramid**  , click and drag in any direction to define the radius.
- As it is drawn, the height of a **Cylinder**  , **Cone**  or **Pyramid**  is equal to its radius.

Initially, the bottom surface of boxes, cylinders and cones, and the center point of

spheres, are all set at 0” on the Z axis. See “Entering Coordinates” on page 166.

In 3D Views

In 3D views, the height of boxes, cylinders and cones can be defined as they are drawn.

- To create 3D **Box**, **Cylinder** or **Cone**, click and drag to define the width and depth of the box’s base, then drag upward or downward to define its height.
- Drag upward to set the height of the bottom surface at 0”, or drag downward to set the top surface at 0”.
- To create a **Sphere** or **Pyramid**, click and drag in any direction to define its radius.

In Cross Section/Elevation Views

With the exception of **Polyline Solids** and **Faces**, primitives cannot be created in cross section/elevation views. See “Polyline Solids” on page 771.

Convert to Solid

Click the **Convert To Solid** edit button to convert the selected polyline solid or slab into a solid so that it can be used with other solids to create complex structures.

Face Objects

Regardless of the view, primitive faces are drawn the way line-based objects are when the **Alternate** edit behavior is active. See “Alternate” on page 177.

To draw a Face

1. Select **Build> Primitive> Face**, then click, drag and release the mouse button to draw the first edge.
2. Click to define the endpoints of additional edges. A Face must have at least three edges.
3. To finish drawing, click at the original starting point. This is easiest to do when **Endpoint** snapping is enabled. See “Object Snaps” on page 160.

Once drawn, Faces can be extruded to create Solid objects. See “Extrude Object” on page 763.

Editing Primitives

Primitives can be selected individually and as a group and edited using the edit handles, the edit toolbar, dimensions, and their respective specification dialogs.

Using the Mouse

Objects drawn using the Primitive Tools can be edited similar to CAD boxes or circles. When selected, a Primitive displays six edit handles: a Move handle, a Rotate handle and

a Resize handle on each edge. Unlike CAD boxes or circles, Primitives do not have corner Resize edit handles.

Faces are the exception to this statement. Like Polyline Solids, they have Resize edit handles on each edge and can be edited like closed polylines. See “Editing Closed-Polyline Based Objects” on page 198.

Using the Edit Tools

A selected Primitive can be edited in a variety of ways using the buttons on the edit toolbar. See “The Edit Toolbar” on page 35.

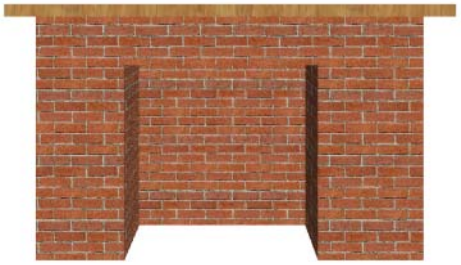
Using Dimensions

Like various other objects, Primitives can be moved and resized using dimensions. See “Moving Objects Using Dimensions” on page 989.

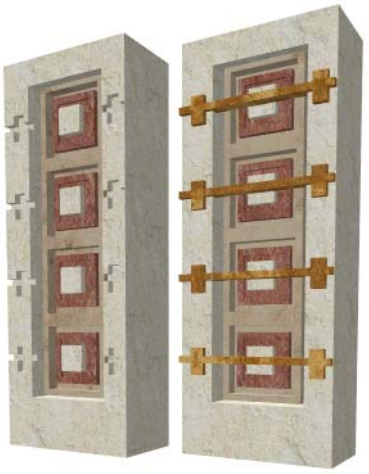
Creating Complex Structures with Primitives

Primitive objects can be manipulated and combined to produce complex structures. Use the **Union**, **Intersection** and **Subtract** edit tools to create unique 3D shapes and combine shapes into **Architectural Blocks**. See “Architectural Blocks” on page 789.

A simple fireplace, for example, can be created by arranging 3D **Boxes**.



Decorative stone columns can be modeled using 3D **Boxes** and the **Union**, and **Subtract** edit tools.



A custom chimney can be designed using 3D **Boxes** and **Cylinders** and the **Union** and **Subtract** edit tools.

A detailed model truck can be created using 3D **Boxes** and **Cylinders** and the **Union**, **Intersection**, and **Subtract** edit tools.

When a primitive has been manipulated using the **Union**, **Intersection** and **Subtract** edit tools, it is no longer a primitive that can be resized or reshaped using the edit handles or specification dialog. Instead, it is a considered a solid. See “Shape Specification Dialog” on page 770.

Structures created using the Primitive Tools can be converted to symbols. See “Convert to Symbol” on page 1173.

Explode Shape

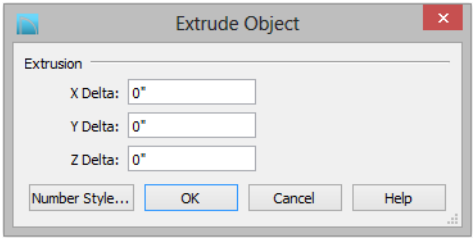
The **Explode Shape** edit tool allows you to explode a selected Solid object into a collection of faces.

Extrude Object

The **Extrude Object** edit tool allows you to produce a Solid object by extruding a selected **Face** object in any direction. See “3D Drafting” on page 29.

To use Extrude Object

1. Select a **Face** object and click the **Extrude Object** edit button.



2. In the **Extrude Object** dialog, specify the **Extrusion Delta**, which is the direc-

tion and distance that the object is extruded.

- Specify the distances that the object should extrude in the directions of each of the three axes.

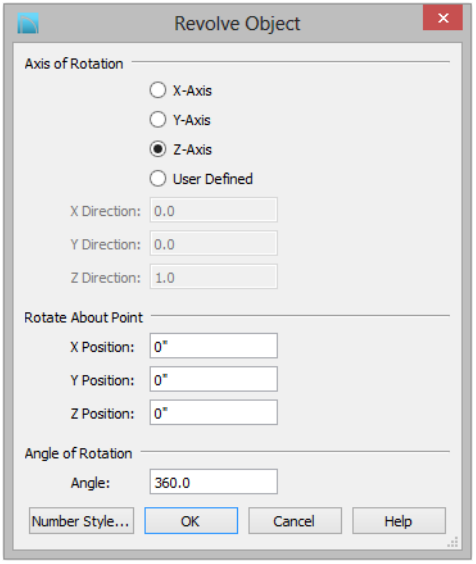
3. Click OK.

Revolve Object

The **Revolve Object** edit tool allows you to produce a Solid object by extruding a selected **Face** object around an axis or point that you specify.

To use Revolve Object

1. Select a **Face** object and click the **Revolve Object** edit button.



2. In the **Revolve Object** dialog, specify the **Axis of Rotation**, which determines the direction that the object will rotate.

The Axis of Rotation is a line that is perpendicular to the direction in which the object will rotate.

- Select **X-Axis** to revolve the object around a line that runs parallel to the X Axis in the current plan. The object will revolve in the Y and Z axes.
- Select **Y-Axis** to revolve the object around a line that runs parallel to the Y Axis in the current plan. The object will revolve in the X and Z axes.
- Select **Z-Axis** to revolve the object around a line that runs parallel to the Z Axis in the current plan. The object will revolve in the X and Y axes.
- Select **User Defined** to define the axis around which the object will revolve.

> The Axis of Rotation cannot be normal, or perpendicular, to the plane of the selected Face object. If it is, a warning message will display and the object will not be revolved.

3. When User Defined is selected, the **X**, **Y** and **Z Direction** fields become active. Type a length value in each field to specify the direction of a custom Axis of Rotation. All three values cannot be 0. No specific unit is used: instead, the ratio between these numbers is used to define an axis of rotation.
4. Specify the **Rotate About Point**, which is the point around which the object will rotate.
5. Specify the **Angle of Rotation**, which is how far around the axis of rotation that the object will rotate. A value of 180° will rotate the object half-way around

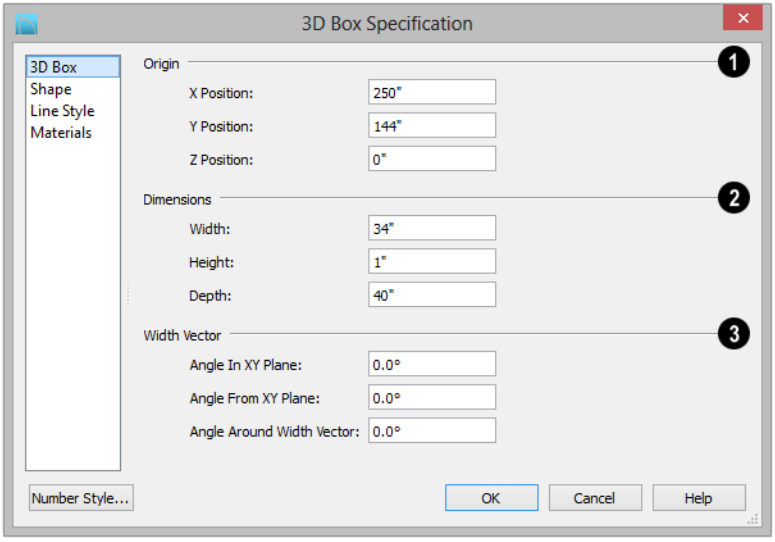
the axis, while 360° will rotate it in a complete circle.

6. Click OK.

3D Box Specification Dialog

Select a 3D box and click the **Open Object** edit button to open the **3D Box Specification** dialog.

When you first draw a 3D box, the origin of the box is the point where you start drawing it; the width of the box is the X axis dimension.



1 Specify the **Origin** of the selected box in relation to the origin point of your plan. See “Entering Coordinates” on page 166.

- Enter the **X**, **Y**, and **Z Position** coordinates of the box’s origin.

2 The **Dimensions** settings control the size of the selected box.

- Specify the **Width**, **Height**, and **Depth**.

3 A **Width Vector** is an invisible line that runs the width of the box. Use these settings to control the rotation of the box.

- **Angle in XY Plane** - Enter a value from 0 to 360° to specify the rotation of the box on the horizontal XY plane.
- **Angle From XY Plane** - Enter a value from 0 to 360° to specify the rotation of the box off of the horizontal XY plane. When this value is 0°, the base of the box is horizontal; when greater than 0°, the box is tilted.
- **Angle Around Width Vector** - Enter a number from 0 to 360° to specify the rotation of the box off of the horizontal XY plane.

Shape Panel

For information about the settings on this panel, see “Shape Panel” on page 771.

Line Style Panel

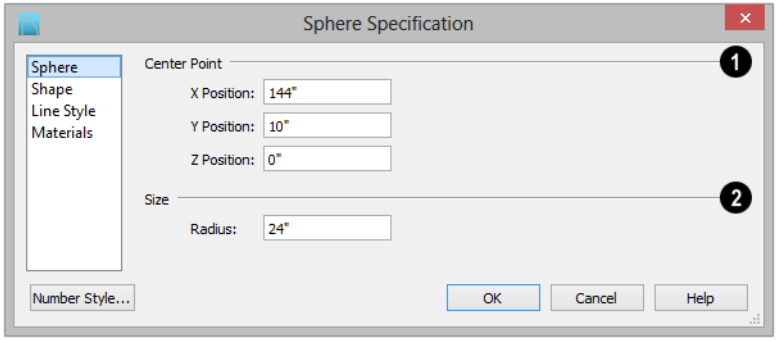
For information about the settings on this panel, see “Line Style Panel” on page 1053.

Materials Panel

For information about the settings on this panel, see “Materials Panel” on page 831.

Sphere Specification Dialog

Select a sphere and click the **Open Object** edit button to open the **Sphere Specification** dialog.



1. Specify the **Center Point** of the selected sphere in relation to the origin point of your plan. See “Entering Coordinates” on page 166.

- Enter the **X**, **Y**, and **Z Position** coordinates of the sphere’s center point.

2. **Size** - Specify the **Radius** of the selected sphere.

Shape Panel

For information about the settings on this panel, see “Shape Panel” on page 771.

Line Style Panel

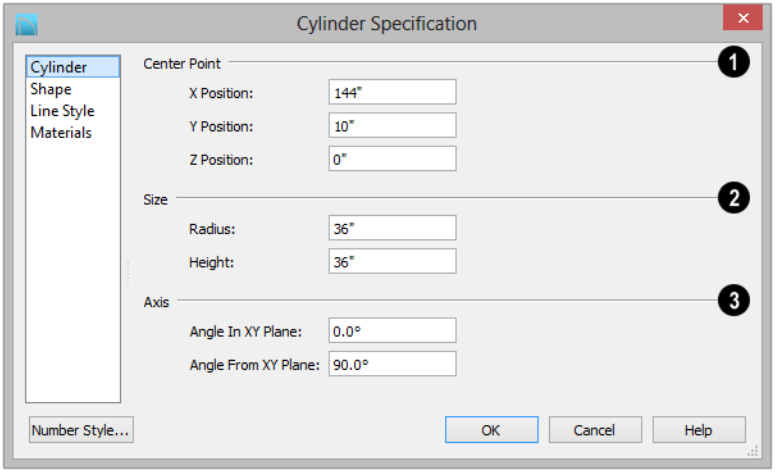
For information about the settings on this panel, see “Line Style Panel” on page 1053.

Materials Panel

For information about the settings on this panel, see “Materials Panel” on page 831.

Cylinder Specification Dialog

Select a cylinder and click the **Open Object** edit button to open the **Cylinder Specification** dialog.



1 Specify the **Center Point** of the selected cylinder in relation to the origin point of your plan. See “Entering Coordinates” on page 166.

- Enter the **X**, **Y**, and **Z Position** coordinates of the cylinder’s center point.

2 **Size** - Specify the **Radius** and **Height** of the selected cylinder.

3 The **Axis** is an invisible line that runs the length of the cylinder. By default, this axis is vertical. Use the Axis settings to control the rotation of the cylinder in free space.

- The **Angle in XY Plane** setting controls the rotation on the X axis. Because the cylinder is round, it only changes appearance if you also enter a number in **Angle From XY Plane**.
- The **Angle From XY Plane** setting controls the rotation of the cylinder on the Y axis.

Shape Panel

For information about the settings on this panel, see “Shape Panel” on page 771.

Line Style Panel

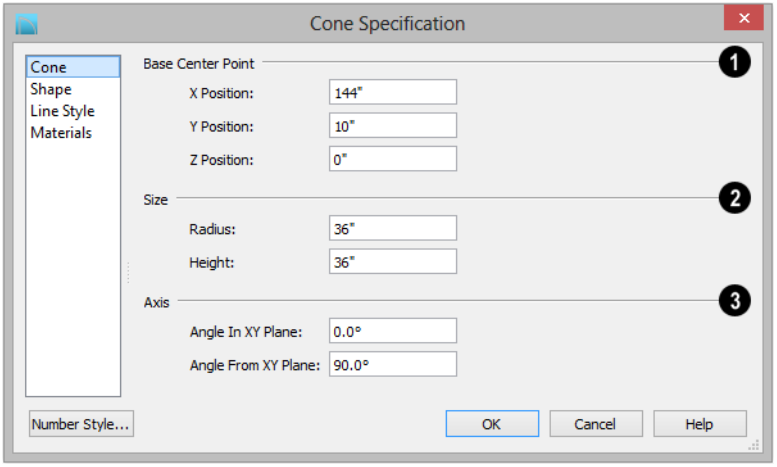
For information about the settings on this panel, see “Line Style Panel” on page 1053.

Materials Panel

For information about the settings on this panel, see “Materials Panel” on page 831.

Cone Specification Dialog

Select a cone and click the **Open Object** edit button to open the **Cone Specification** dialog.



1 Specify the **Base Center Point** of the selected cone in relation to the origin point of your plan. See “Entering Coordinates” on page 166.

- Enter the **X**, **Y**, and **Z Position** coordinates of the center point of the cone’s base.

2 **Size** - Specify the **Radius** and **Height** of the selected cone.

3 The **Axis** is an invisible line that runs the length of the cone. By default, this axis is vertical. Use the Axis settings to control the rotation of the cone in free space.

- The **Angle in XY Plane** setting controls the rotation on the X axis. Because the cone is round, it only changes appearance if you also enter a number in **Angle From XY Plane**.
- The **Angle From XY Plane** setting controls the rotation of the cone on the Y axis.

Shape Panel

For information about the settings on this panel, see “Shape Panel” on page 771.

Line Style Panel

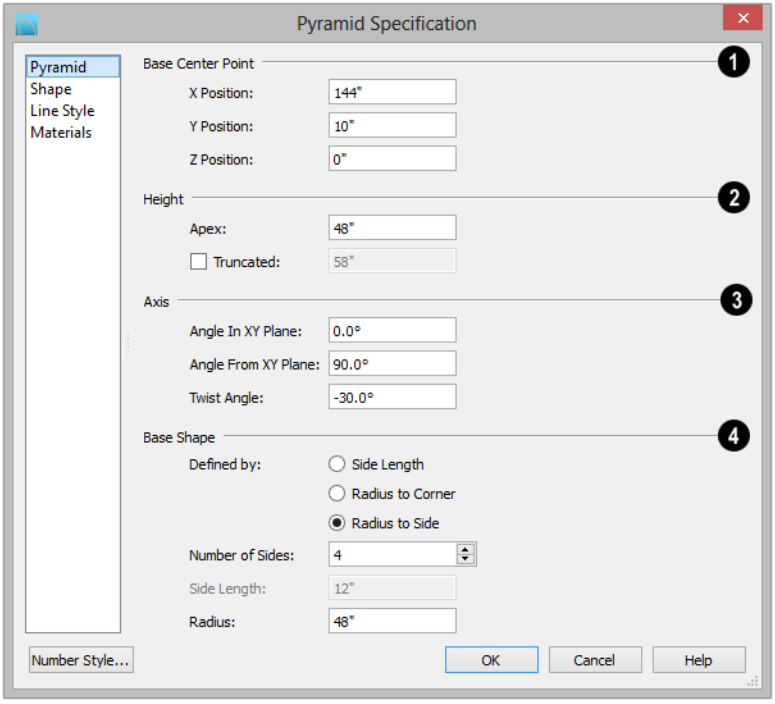
For information about the settings on this panel, see “Line Style Panel” on page 1053.

Materials Panel

For information about the settings on this panel, see “Materials Panel” on page 831.

Pyramid Specification Dialog

Select a pyramid and click the **Open Object** edit button to open the **Pyramid Specification** dialog.



1 Specify the **Base Center Point** of the selected pyramid in relation to the origin point of your plan. See “Entering Coordinates” on page 166.

- Enter the **X**, **Y**, and **Z Position** coordinates of the center point of the pyramid’s base.

2 Specify the **Height** of the selected pyramid.

- Specify the height of the **Apex**, measured from the base to the peak.
- Check **Truncated** to cut off the top of the pyramid and create a flat top.
- Specify the **Height** of a truncated pyramid, measured from the base to the flat truncated top.

3 The **Axis** is an invisible line that runs the length of the pyramid. By default, this axis is vertical. Use the Axis settings to control the rotation of the pyramid in free space.

- The **Angle in XY Plane** rotates the horizontal direction of the pyramid’s axis.

When the Angle From XY Plane is 90°, this value is always 0° and any changes to it will modify the Twist Angle.

- **Angle From XY Plane** - This setting rotates the pyramid off the horizontal XY plane. When this value is 90°, the pyramid's axis points straight up and the Angle in XY Plane is always 0°.
- **Twist Angle** - This setting specifies the pyramid's rotation on its axis.

4. Specify the selected pyramid's **Base Shape**.

- Specify what you would like the pyramid's size to be **Defined By**:
- Select **Side Length** to enable the Side Length field to the right and specify the length of each side of the pyramid's base.
- Select **Radius to Corner** to define the distance from the centerpoint of the pyramid's base to any of its corners.
- Select **Radius to Side** to define the distance from the centerpoint of the pyramid's base to the midpoint of any of its edges.
- Specify the **Number of Sides** that the selected pyramid has. The default value is 4.
- Specify the **Side Length**, which is the corner to corner length of one each side of the pyramid's base. Only available when **Define Polyline by Side Length** is selected to the left.
- Specify the **Radius** of the pyramid's base, as measured from its centerpoint to a corner or to the midpoint of a side. Only available when **Define Polygon by Radius to Corner** or **Radius to Side** is selected.

Shape Panel

For information about the settings on this panel, see "Shape Panel" on page 771.

Line Style Panel

For information about the settings on this panel, see "Line Style Panel" on page 1053.

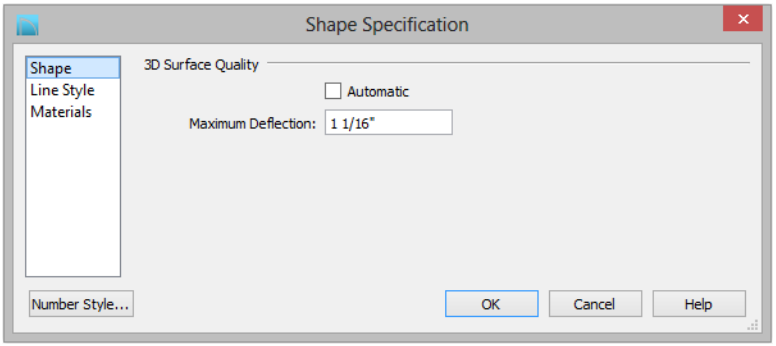
Materials Panel

For information about the settings on this panel, see "Materials Panel" on page 831.

Shape Specification Dialog

Select a Face, a solid created using the **Union**  , **Intersection**  and **Subtract**  edit tools, or a solid created by converting a slab or polyline solid and click the **Open Object** edit button to open the **Shape Specification** dialog.

Shape Panel



The **3D Surface Quality** settings control how any curved surfaces on the selected object are rendered in 3D views.

- Check **Automatic** to have the program define the Maximum Deflection, which is the amount each flat, triangular surface used to represent a curved surface in 3D can deviate from the true curvature of the object. For more information about triangles, see “Higher Quality Rendering” on page 914.
- Specify the **Maximum Deflection** in plan inches (mm). This value is the maximum distance that a point on a triangle can be from the true location of the curved surface. Lower values produce more triangles and a smoother appearance in 3D views.

Line Style Panel

For information about the settings on this panel, see “Line Style Panel” on page 1053.

Materials Panel

For information about the settings on this panel, see “Materials Panel” on page 831.

Polyline Solids

Polyline Solids are polyline shaped 3D objects with a specified thickness. They can be oriented either horizontally or vertically and are useful for creating custom details anywhere in your 3D model.

Creating Polyline Solids

A horizontal polyline solid can be created in floor plan view or any 3D view by selecting **Build> Primitive> Polyline Solid**, then either clicking clicking and dragging to draw a rectangle. See “Rectangular Polyline” on page 1069.

A vertical polyline solid can be created in a cross section/elevation view in the same manner as in floor plan view. The polyline solid is placed in front of any objects visble in the view. If no objects are behind, the

polyline solid is placed one foot in front of the camera.

Polyline solids can be edited the way other closed polyline-based objects are. See “Editing Closed-Polyline Based Objects” on page 198.

Holes in Polyline Solids

You can create a hole in a polyline solid by drawing one polyline solid entirely inside of another. Select the smaller of the two and check **Hole in Polyline Solid** in its specification dialog.

Both the larger and smaller polyline solid must be drawn in the same type of view in order for the smaller one to become a hole.

Converting CAD Polylines

A closed CAD polyline can be converted into a polyline solid in floor plan and cross section/elevation views using the **Convert Polyline** edit button. See “Convert Polyline” on page 235.

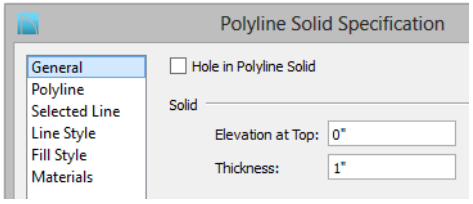
Convert to Solid

You can convert a polyline solid to a primitive in order to build complex solid structures. Select the polyline solid you want to convert and click **Convert to Solid** on the edit toolbar.

Polyline Solid Specification Dialog

To open the **Polyline Solid Specification** dialog, click on a polyline to select it, then click the **Open Object** edit button.

General Panel



- Check **Hole in Polyline Solid** to convert the polyline solid into a hole in a surrounding polyline solid.
- Specify **Elevation at Top**, which is the height of the top surface of the polyline solid. This property is not available for vertical polyline solids, which are drawn in a cross section/elevation view.
- Specify the **Thickness** of the polyline solid. Increasing the thickness will cause the polyline solid to grow upward (horizontal) or toward the elevation/cross section camera (vertical).

Polyline Panel

The Polyline panel indicates the length of the polyline solid’s **Length/Perimeter**, its enclosed **Area**, and its **Volume**. See “Polyline Panel” on page 1066.

If the selected Polyline Solid has any Holes in it, they will be subtracted from the **Area** and **Volume** values. See “Holes in Polyline Solids” on page 772.

Selected Line/Arc Panel

The Selected Line panel is available when the selected edge is a line as opposed to an arc. See “Line Panel” on page 1052.

The Selected Arc panel is available when the selected edge has been convered into an arc. See “Arc Panel” on page 1061.

Line Style Panel

For information about the settings on this panel, see “Line Style Panel” on page 1053.

Fill Style Panel

For information about the settings on this panel, see “Fill Style Panel” on page 1067.

Materials Panel

For information about the settings on this panel, see “Materials Panel” on page 831.

General Shapes

Items in the Chief Architect Core Catalogs> Shapes library catalog allow you to create a variety of custom objects using basic geometric shapes. These shapes can can be used individually or combined to create a wide variety of custom objects.

General Shape objects are placed and edited much like other library objects. See “Editing Box-Based Objects” on page 203.

Soffits

Soffits typically fill the space between the tops of wall cabinets and the ceiling, but they are very versatile and can be used to create almost any other object that can be modeled as a 3D box. Select **Build> Cabinet> Soffit** to activate this tool.

Soffit Defaults

The default settings for soffits are set in the **Soffit Defaults** dialog. The settings in this dialog are similar to those in the **Soffit Specification** dialog. See “Soffit Specification Dialog” on page 776.

For best results when placing soffits above wall cabinets:

- The default soffit should be the same width as and 1" (20mm) deeper than the default wall cabinet. See “Cabinet Defaults” on page 660.
- The default soffit **Floor to Bottom** value should equal the sum of the default wall cabinet’s Floor to Bottom value plus its Height. See “General Panel” on page 777.
- The default soffit **Height** should be equal to or greater than the space between the ceiling and the top of the wall cabinets.

If the sum of the default soffit’s Floor to Bottom value and Height is larger than the ceiling height of the room in which a soffit is

placed, the Floor to Bottom value will be retained and its Height will be adjusted so that it fits under the ceiling.

The maximum soffit width is 250 feet (48m), and the minimum width is 1/16" (1 mm).

Once a soffit is placed in a plan, you can change its size and position to meet a variety of needs.

Placing Soffits

Soffits can be created in both 2D and 3D views by simply clicking with the **Soffit** tool active. See “Click-to-Create” on page 165.

They can be assigned materials that are calculated in the Materials List, but by default they use the material assigned to the default wall. See “Wall, Railing, and Fencing Defaults” on page 254.

When positioned against a wall in a room, soffits will display any moldings present in that room that are at the same height as the soffit. See “Moldings Panel” on page 353.

Like cabinets, soffits can also have custom molding profiles specified. See “Moldings Panel” on page 689.

To create a corner soffit, click as close to an inside wall corner as possible. A corner soffit retains its shape when it is moved, edited, or copied.

When a soffit is created, it is placed on the “Cabinets, Soffits” layer. See “Displaying Objects” on page 144.

Special Applications for Soffits

Nearly any object with straight, flat sides can be represented by one or more Soffits. They can be resized to as small as 1/16" (1mm) per side, or as large as 250 feet (48m).

> Polyline Solids can be used to create irregular or curved shapes. See “Polyline Solids” on page 771..

Soffits can have materials applied to them to represent simple mirrors, posts, chimneys and so on. Following are some additional examples.

Roof Beams and Coffered Ceilings

Sloped soffits can be used to represent beams or rafters that follow the pitch of the roof in rooms with cathedral ceilings. See “Sloped Soffits” on page 778.

Soffits can also be used to create coffered ceilings. When placed against a wall, a soffit will display any moldings assigned to the room it is in that are at its height. In addition, you can assign moldings directly to a soffit in its specification dialog. See “Moldings Panel” on page 778.

Accent Tiles

A material such as ceramic tile can be assigned to one or more soffits applied to the walls above tubs or in showers.

Masonry Veneer

As an alternative to a pony wall, you can use a soffit to create a brick or stone veneer over part of a wall. Specify a soffit depth equal to the masonry material to be used.

Soffits automatically stop at the floor platform when moved downward or at the ceiling platform when moved upward - even when the soffit is not located in a room. To more or resize a soffit through a floor or

ceiling platform, select it and hold the Ctrl key down while dragging its edit handles. See “Unrestricted Movement” on page 218.

Calculating Materials on Soffits

The number of bricks, tiles, shingles, shakes or other materials applied to a soffit is calculated using the following rules:

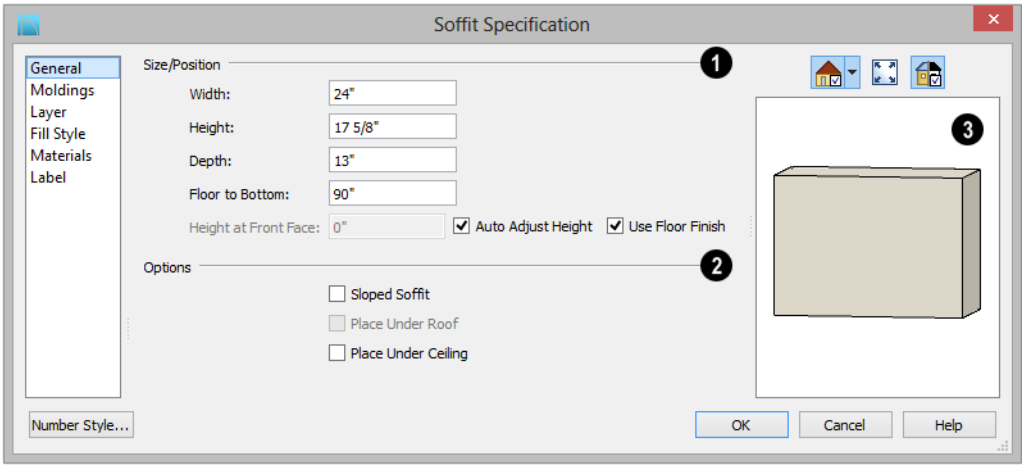
- If the soffit depth is less than the larger of 4 inches (10 mm) or 1 ½ times the material thickness, then only the front area of the soffit is used. Thus if a soffit is 48"x48”x4” thick, and the Dark Red brick material is used (3"x 8" with 3/8” mortar joint) the front of the soffit is 48"x48”=2304 square inches. Including the mortar joint, each brick requires 3 3/8” x 8 3/8” = 28.26 square inches. 2304 sq. in. divided by 28.26 sq. in. per brick gives 81.5 bricks.
- If the soffit depth is greater than both 4 inches (10 mm) and 1 ½ times the material thickness, then the surface areas of the soffit back, sides and top are used in addition to the front, if these surfaces are not attached to a wall or other soffit. However, only those portions of the sides, top and bottom remaining after subtracting twice the material thickness are used. So, for Dark Red brick, which has a depth of 4", the sides, top and bottom surface areas cannot contribute to the brick count unless the soffit depth is greater than 8 inches.
- If surface materials such as brick are applied to a large soffit, the soffit center is assumed to be hollow, with only a single layer of the material applied to each applicable face.
- For shingles and shakes, the overlap amount should be subtracted from the height, as opposed to brick or tile, where the joint width is added to the size.
- For materials in the area category, the soffit area calculation above is used, with the material thickness treated as zero.
- For materials in the volume, concrete or earth categories, the true volume of the soffit is used.

Soffit Specification Dialog

To open the **Soffit Specification** dialog, select the soffit and click the **Open Object** edit button or double-click on a soffit using the **Soffit** tool.

The settings in this dialog are similar to those in the **Soffit Defaults** dialog, but affect only the selected object(s).

General Panel



1 Define the **Size** and **Position** of the selected soffit relative to the floor or terrain.

- Specify the **Width** of the soffit.
- Define the vertical **Height** of the soffit.
- **Depth** - Define the distance between the front and the back of the soffit. When selected in floor plan view, the front of a soffit has a "V," and the back of the soffit has a triangular rotation handle.
- If the selected soffit is a corner soffit, the **Width** controls its left side width, and **Depth** controls its right side width.
- **Floor to Bottom** - Specify the distance from the bottom of the soffit to the floor. This is sometimes more easily done by positioning the soffit in a 3D view.
- **Height at Front** applies to sloped soffits and becomes enabled when Sloped Soffit is checked. See "Sloped Soffits" on page 778.
- When the selected soffit is outside a room and **Auto Adjust Height** is checked , its Floor to Bottom height is measured relative to the terrain height. When this is unchecked, the Floor to Bottom height is measured from the default floor height of Floor 1. See "Terrain Height vs Floor Height" on page 697 of the Reference Manual.
- Check **Use Floor Finish** to measure the Floor to Bottom distance from the surface of the floor finish. When unchecked, this height is measured from the subfloor. Only available when Auto Adjust Height is checked.

2 **Options** - Specify a sloped soffit and/or position relative to the roof or ceiling.

- Check **Sloped Soffit** to slope the soffit vertically from the back up towards the front. When you specify a soffit as sloped, the options on the General panel change. See "Sloped Soffits" on page 778.

- Check **Place Under Roof** to have the soffit's slope follow that of the roof. The soffit moves up and the top of the soffit is in the same plane as the roof, at the same pitch as the roof. Be sure to place the front of the soffit toward the high side of the roof. Only available when **Sloped Soffit** is checked. Not available in the **Soffit Defaults** dialog.
- Check **Place Under Ceiling** to move the soffit vertically until the top contacts the ceiling plane. Not available in the **Soffit Defaults** dialog.

❸ A preview of the soffit displays on the right side of the dialog box. See "Dialog Preview Panes" on page 38.

Moldings Panel

For information about the settings on this panel, see "Moldings Panel" on page 689.

Layer Panel

For information about the settings on this panel, see "Layer Panel" on page 152.

Fill Style Panel

The settings on the Fill Style panel affect the selected soffit's appearance in floor plan view. For information about the settings on this panel, see "Fill Style Panel" on page 1067.

Materials Panel

For information about the settings on this panel, see "Materials Panel" on page 831.

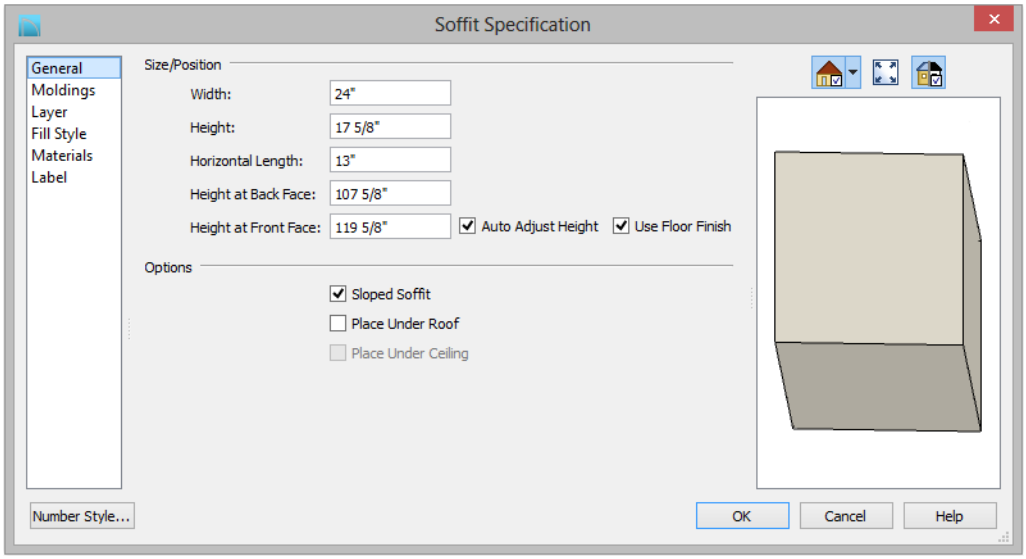
Label Panel

Soffit labels display in floor plan view when the "Cabinets, Labels" layer is turned on and use the Text Style assigned to that layer. The Automatic Label for Soffits is blank, but you can specify a custom label. See "Cabinet Labels" on page 669.

For more information about the settings on this panel, see "Label Panel" on page 1243.

Sloped Soffits

When a soffit is specified as a sloped soffit, the options on the General panel of the **Soffit Specification** dialog change.



- **Width** is measured left to right across the soffit, parallel to the front of the soffit.
- **Thickness** is measured perpendicular to the slope of the soffit.
- **Horizontal Length** is measured from back to front in floor plan view. Since the soffit is sloped, this measurement is not the actual length of the soffit. It cannot, for example, be used to determine the length of a sloped beam.

Both the front and back heights of a sloped soffit must be defined.

- **Height at Back** is measured from the finished floor to the lowest point at the back of the soffit.
- **Height at Front** is measured from the finished floor to the underside of the soffit at the upper end.

Floor and Wall Material Regions

Floor and Wall Material Regions allow you to create areas within a wall or floor that use different materials than the parent object. There are three types of Material Regions:

- Floor Material Regions
- Wall Material Regions
- Custom Backsplashes

Materials Regions are CAD-based objects composed of one or more layers. The thickness of these layers and their materials can be set in the **Material Region Specification** dialog. See “Material Region Specification Dialog” on page 781.

By default, a Materials Region cuts into the finish layers of its parent object and replaces

those layers with its own within its perimeter; it can, however, can be affixed to the parent's surface instead if you prefer.

In general, Material Regions are created and edited in the same manner that other closed polylines are. Bear in mind that Floor Material Regions cannot be moved in cross section/elevation views. See "Polylines" on page 1065 and "Editing Closed-Polyline Based Objects" on page 198.


You can also convert a closed CAD polyline into a Material Region in floor plan and cross section/elevation views. See "Convert Polyline" on page 235.

Like most other architectural objects, a Material Region can be added to the library. Its material layers and the information in its specification dialog are saved; however, the shape of its polyline is not. See "Add to Library" on page 807.

Material Regions can span multiple parent objects; however, for best results the parent objects should have structural, or Main, layer surfaces that are in alignment.

Floor Material Regions


To create a Floor Material Region, select **Build> Floor> Material Region**. Floor Material Regions must be drawn within a room area and are always drawn in floor plan view. If you create one by clicking once, it will fill the extents of the room.

Floor Material Regions set to cut the finish layers of their parent object will replace the layers of that floor's Finish Definition with its own layers. See "Floor and Ceiling Platform Definitions" on page 337.

Wall Material Regions


To create a Wall Material Region, select **Build> Wall> Material Region**. Wall Material Regions are drawn on the vertical surface of a wall and are always drawn in camera or elevation views. If you create one by clicking once, it will cut around doors, windows, and fireplaces but will otherwise fill the entire surface of the parent wall.

Wall Material Regions set to cut the finish layers of their parent object will replace the layers of the wall between itself and the wall's Main Layer with its own layers. See "Wall Type Definitions" on page 295.

Custom Backsplashes


To create a Custom Backsplash, select **Build> Cabinet> Custom Backsplash**. Custom Backsplashes are drawn on the vertical surface of a wall and are always drawn in camera or elevation views. If you create one by clicking once, it will behave the way a Wall Material Region would, provided that no cabinets or appliances are positioned against the wall.

By default, Custom Backsplashes use the backsplash material and thickness specified in the **Base Cabinet Defaults** dialog. See "Cabinet Defaults" on page 660.

If any cabinets and/or appliances are present, a Custom Backsplash will:

- Seek to fill the area between any base cabinets or floor appliances against that wall surface and any wall cabinets and/or windows above them.

- If nothing is above any base cabinets, it will fill the area between the cabinets and the ceiling; if nothing is below any wall cabinets, it will fill the area between the cabinets and the floor.
- Replace the backsplash associated with any base or wall cabinets.

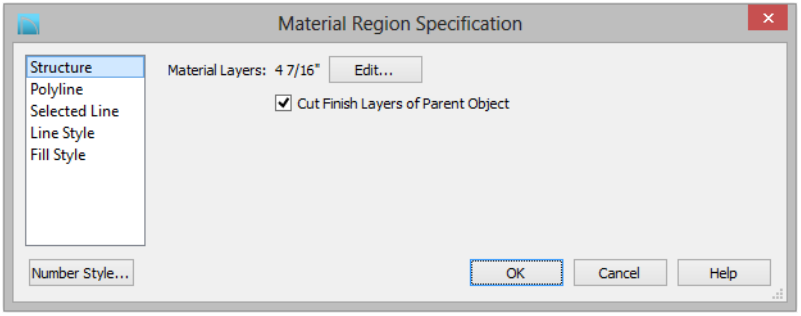
Like Wall Material Regions, Custom Backsplashes set to cut the finish layers of their parent object will replace the layers of the wall between itself and the wall's Main Layer with its own layers.

Material Region Specification Dialog

Select a Material Region or a Custom Backsplash and click the **Open Object** edit button to open the **Material Region** or **Custom Backsplash Specification** dialog.

The settings in these two dialogs are also found in the **Material Region Defaults** dialogs, and most of its panels are also found in the specification dialogs for a variety of other CAD-based objects.

Material Layers Panel



- Click the **Edit** button to open the **Material Layers Definition** dialog. See "Floor and Ceiling Platform Definitions" on page 337.
- Uncheck **Cut Finish Layers of Parent Object** to fix the selected Material Region to the surface of its parent floor platform or wall. When checked, it cuts into the finish layers of the polyline's parent object and replaces those layers with its own within its perimeter.

Polyline Panel

The Polyline panel indicates the length of the region's **Length/Perimeter**, its enclosed **Area**, and its **Volume**. See "Polyline Panel" on page 1066.

If the selected region has any Holes in it, they will be subtracted from the **Area** and **Volume** values. See "Polyline Holes" on page 203.

Selected Line/Arc Panel

The Selected Line panel is available when the selected edge is a line as opposed to an arc. See “Line Panel” on page 1052.

The Selected Arc panel is available when the selected edge has been convered into an arc. See “Arc Panel” on page 1061.

See, too, “Selected Edge” on page 181 and “Change Line/Arc” on page 229.

Line Style Panel

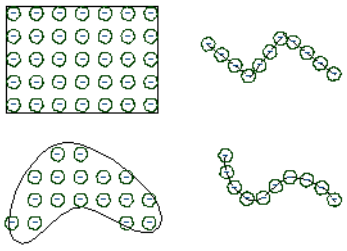
For information about the settings on this panel, see “Line Style Panel” on page 1053.

Fill Style Panel

The Fill Style panel is only available for Floor Material Regions. For information about the settings on this panel, see “Fill Style Panel” on page 1067.

Distributed Objects

The **Distributed Object** tools allow you to place multiple copies of an object in an evenly spaced array, either within a region or along a path. Select **Build> Distributed Object** to access these tools.



Distribution Regions

Distribution Paths

To create distributed objects

1. Select **Build> Distributed Object** and choose the desired Distributed Object tool.
2. Distribution regions are drawn like other closed polyline and spline-based objects.
   - Click once to place a region with end-points that form a 10’ (4 m) square.
   - Click and drag from end to end to draw a region sized as needed.
3. Distribution paths are drawn like other open polyline and spline-based objects.
   - Click and drag from end to end to draw one or more connected lines or spline segments.
4. Select the region and click the **Open Object** edit button.
5. In the **Distribution Region Specification** dialog:
   - Select the object to be distributed within the region.
   - Specify the distributed objects’ spacing, orientation and positioning.
   - Click **OK** to close the dialog.

Once created, Distribution Regions and Paths can be edited into nearly any shape you require. See “Editing Closed-Polyline Based Objects” on page 198 and “Editing Spline Based Objects” on page 206.

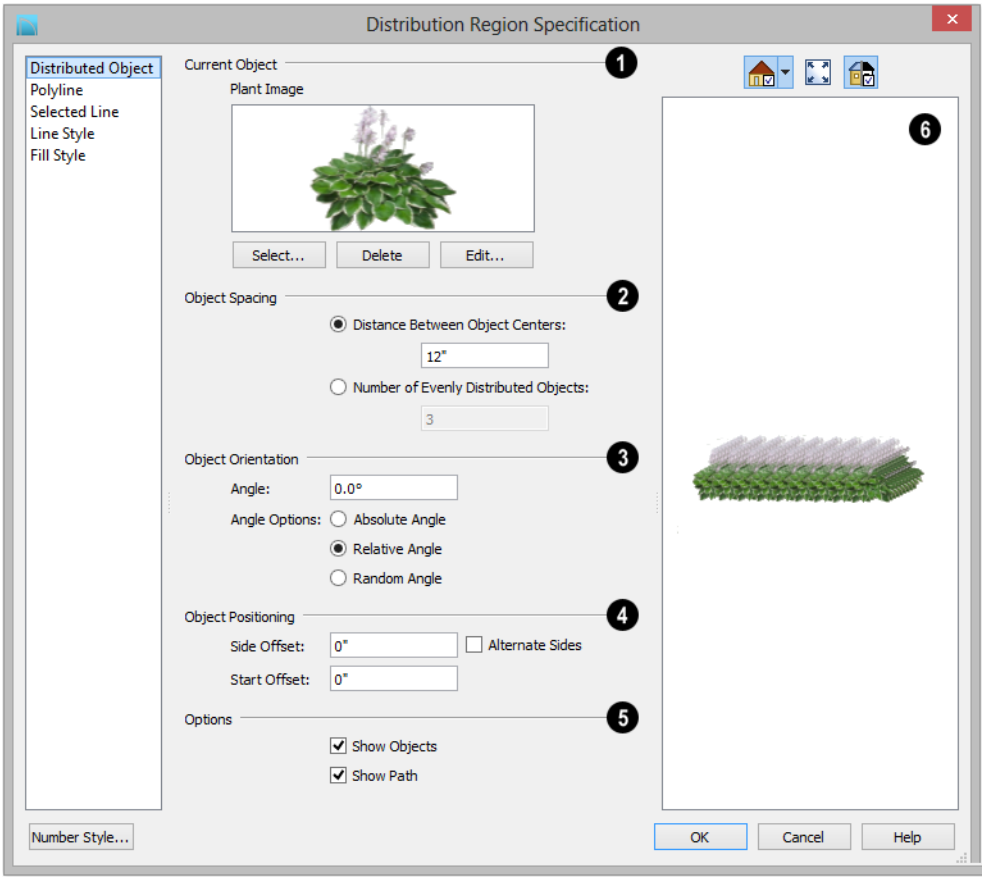
Explode Distributed Objects

Objects grouped in a Distribution Region or Path cannot be individually selected. You can, however, click the **Explode Distributed Object** edit button to separate a region or path into its individual components. Once exploded, a Distribution Region or Path cannot be regrouped.

Distribution Region/Path Specification Dialogs

Select a Distribution Region or Path and click the **Open Object** edit button to open the **Distribution Region** or **Distribution Path Specification** dialog. The settings in these two dialogs are similar and most panels are also found in the specification dialogs for a variety of other CAD-based objects.

Distributed Object Panel - Distribution Region



1 Specify the **Current Object** assigned to the selected region. When an objects is assigned, its name and a preview of a single instance of it display here.

- Click the **Select** button to choose an object from the library. When an object is selected, a description displays above. See “Select Library Object Dialog” on page 816.
- Click the **Delete** button to unassign the Current Object from the selected region.
- Click the **Edit** button to open the Current Object’s specification dialog. Changes made here affect all objects generated within the region. See “Specification Dialogs” on page 38.
- Check **Show Objects** to display the distributed objects in floor plan view.
- Check **Show Region** to display the edges of the distribution region in floor plan view.

❷ **Display Options** -

- Check **Show Objects** to display the distributed objects in floor plan view.
- Check **Show Region** to display the distribution region outline in floor plan view.

❸ **Object Spacing** - Specify how the objects in the region are spaced.

- Specify the **Distance** between the objects in the region, as measured from their center points.
- Select **Standard Grid** to position the objects in rows and columns based on the standard X/Y grid in the program. This grid is affected by **Rotate View**. See "Rotate Plan View" on page 233.
- Select **Alternate Grid** to position the objects in rows and columns based on the shape of the region.

❹ **Object Orientation** - Specify how or if the objects in the region are rotated. These settings do not affect the region itself or its edges.

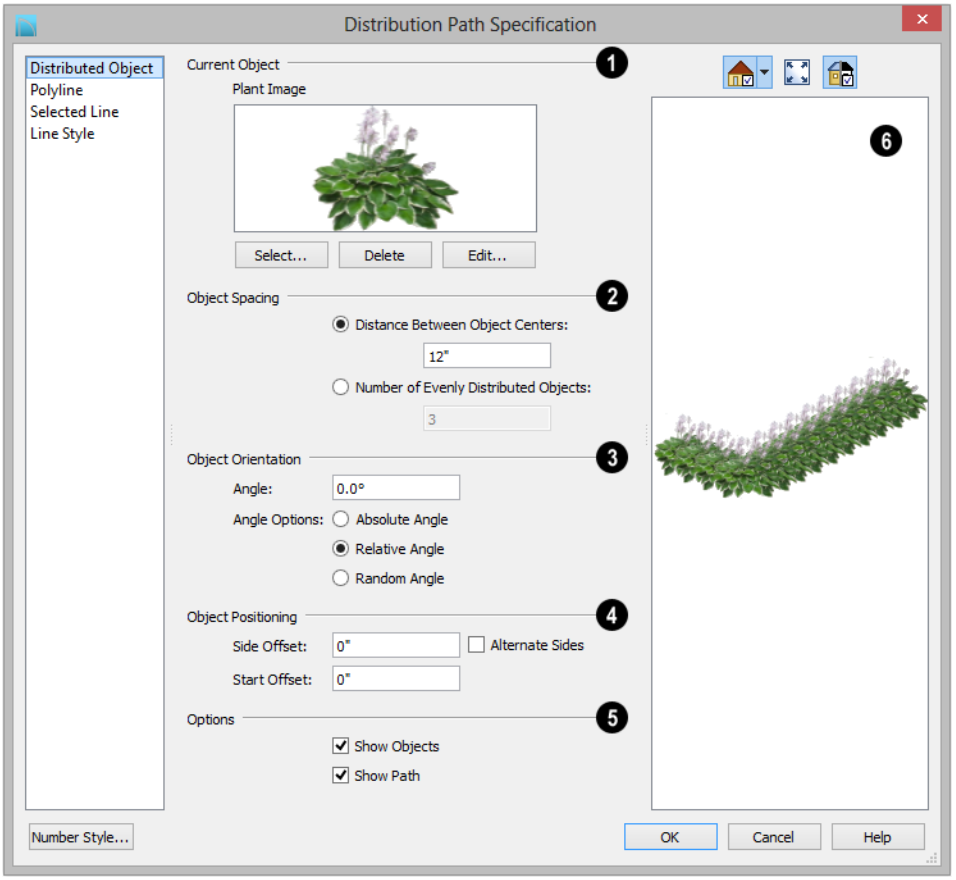
- Specify the **Angle** that the distributed objects should be placed at.
- Select **Absolute Angle** to rotate the objects relative to an imaginary horizontal line drawn in the positive X direction from the origin. See "3D Drafting" on page 29.
- Select **Relative Angle** to rotate the objects relative to the angle of the region's first edge or, if that edge is curved, to the angle of its chord. The first edge is typically located at the top of the region when it is first created; however, this can change as the region is edited.
- Select **Random Angle** to rotate the objects in the region at a variety of random angles.

❺ **Object Positioning** - Specify the positioning of the distributed objects relative to a point of origin within the region.

- Specify the **X Offset**, the horizontal distance in floor plan view from the region's specified point of origin.
- Specify the **Y Offset**, the vertical distance in floor plan view from the region's specified point of origin.
- Select **From Polyline Center** to measure the offset from the region's center point.
- Select **Polyline Start** to measure the offset from the region's start point. This start point is typically located at the top left of the region when it is first created; however, this can change as the region is edited.

❻ A preview of the region displays on the right side of the dialog box. If no object has been assigned to the selected region, Plan View will be the default preview type.See "Dialog Preview Panes" on page 38.

Distributed Object Panel - Distribution Path



1 **Current Object** - Specify the object assigned to the selected path. When an objects is assigned, its name and a preview of a single instance of it display here.

- Click the **Select** button to choose an object from the library. When an object is selected, its name displays above. See "Select Library Object Dialog" on page 816.
- Click the **Delete** button to unassign the Current Object from the selected path.
- Click the **Edit** button to open the Current Object's specification dialog. Changes made here affect all objects distributed along the path. See "Specification Dialogs" on page 38.

2 **Display Options** -

- Check **Show Objects** to display the distributed objects in floor plan view.
- Check **Show Path** to display the distribution path in floor plan view.

❸ **Object Spacing** - Specify how the objects along the path are spaced.

- Select **Distance Between Object Centers**, then specify the distance between all object centers. If the path is resized, the total number of objects may change.
- Select **Number of Evenly Distributed Objects**, then specify the number of objects. If the path is resized, the spacing between objects may change.

❹ **Object Orientation** - Specify how or if the objects on the path are rotated.

- Specify the **Angle** that the distributed objects should be placed at.
- Select **Absolute Angle** to rotate the objects to the specified Angle as measured from an imaginary horizontal line drawn from the origin towards the right.
- Select **Relative Angle** to rotate each object relative to the edge of the polyline or spline that it is located on.
- Select **Random Angle** to rotate the objects in the region at a variety of random angles.

❺ **Object Positioning** - Specify the positioning of the distributed objects relative to the path itself.

- Specify the **Side Offset**, the distance that the objects are offset to the side of the path, using positive or negative numbers to offset to one side or the other.
- Specify the **Start Offset**, the distance that the first object on the path is offset from the path's starting point.
- Check **Alternate Sides** to position objects on alternating sides of the path, creating a stepped pattern.

❻ A preview of the path displays on the right side of the dialog box. If no object has been assigned to the selected path, Plan View will be the default preview type.See "Dialog Preview Panes" on page 38.

Polyline Panel

The Polyline panel indicates the polyline's **Length/Perimeter**, its enclosed **Area**, and its **Volume**. See "Polyline Panel" on page 1066.

Spline Panel

The Spline panel has a single option and is only available when the selected object is spline-based. See "Splines" on page 1073.

New Segment Angle - Specify the angle between line segments that are used to draw the spline. Specifying a smaller angle makes the spline smoother. Specify a larger angle to draw the spline faster.

Selected Line Panel

The Selected Line panel is available when the selected edge of the region or path is a line as opposed to an arc. See "Selected Edge" on page 181.

Moving the Start of a line segment moves the end of the previous connected line, if there is one. Similarly, moving the End of a line segment moves move the start of the next connected line, if there is one.

The settings on the Line panel are found in a variety of specification dialogs throughout the program. See "Line Panel" on page 1052.

Selected Arc Panel

The Selected Arc panel is available when the selected edge of the region or path is an arc as opposed to a line. See “Change Line/Arc” on page 229.

The settings on the Arc panel are found in a variety of specification dialogs throughout the program. See “Arc Panel” on page 1061.

Line Style Panel

For information about the settings on this panel, see “Line Style Panel” on page 1053.

Fill Style Panel

For information about the settings on this panel, see “Fill Style Panel” on page 1067.

Chapter 25:

Architectural Blocks

An architectural block is a collection of individual 3D objects that are grouped together so that they can be placed and moved as a single object. Although blocked together, these objects retain many of their own attributes, such as materials.

Architectural blocks can also be exploded so that the individual sub-objects become independent of one another.

Chapter Contents

Architectural vs CAD Blocks

Just as there are two types of objects in Chief Architect, architectural and CAD, there are two types of blocks. See “Architectural vs CAD Objects” on page 158.

Architectural objects such as cabinets and fixtures can be included in architectural blocks, while CAD objects such as lines, arcs, text and dimensions can be included in CAD blocks. See “CAD Blocks” on page 1078.

Knowing the differences between these two types of blocks helps you decide which type of block can best meet your needs.

A CAD block can include and also be nested in a larger block with CAD objects, text and dimensions, but cannot include or be blocked with architectural objects.

An architectural block can include and also be nested in a larger block with architectural objects, but cannot include or be blocked with CAD objects, text or dimensions.

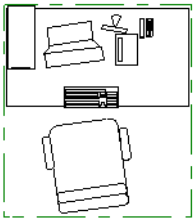
Creating Architectural Blocks

An architectural block is created by group-selecting multiple architectural objects and then clicking the **Make Architectural Block** edit button.

The following is a list of objects that can be included in architectural blocks:

- Cabinets (Base, Wall, Full Height)
- Soffits, Shelves, Partitions
- Fixture/Furniture Symbols
- Hardware Symbols
- Millwork Symbols
- Geometric Shape Symbols
- Electrical objects
- Images
- Custom Countertops and Counter Holes
- Slabs and Foundation Slabs
- Primitives and Polyline Solids
- Molding Polylines
- Roads, Driveways, Sidewalks
- Terrain Features and Terrain Modifiers

Once blocked, the set of blocked objects is contained in a bounding box, indicating that they are now an architectural block.



Architectural blocks can be created in any view.

Displaying Architectural Blocks

Architectural blocks are placed on the "Architectural Blocks" layer by default and can be displayed in all views. The display of architectural blocks, including their bounding box, is controlled in the **Layer Display Options** dialog. See "Displaying Objects" on page 144.

In Floor Plan View

The sub-objects of a block can use the layer attributes assigned to their current layer or the layer attributes assigned to the block. See "General Panel" on page 793.

You can control the appearence of the bounding box by changing the display properties of the architectural block's layer.

You can select an architectural block and click the **Move to Front of Group** edit button to make that block display in front of other objects in the same drawng group, including cabinets and some library symbols. See "Move to Front of Group" on page 216.

Architectural Block Labels

In floor plan view, architectural blocks can display labels for both the block and any component objects that have labels. Labels for architectural blocks are placed on the "Architectural Blocks, Labels" layer by default and use the Text Style assigned to that layer. See "Object Labels" on page 1241.

You can turn off the display of component labels either by layer or by checking **Treat as One Object** in the **Architectural Block Specification** dialog. See "General Panel" on page 793.

The label for an architectural block can be generated automatically, created manually, or suppressed. See "Label Panel" on page 1243.

In Materials Lists and Schedules

The display of an architectural block in materials lists and schedules can be turned off completely. The block can appear as a single unit or its sub-objects and components can be listed separately. See "Materials Lists" on page 1247 and "Schedules and Object Labels" on page 1231.

Editing Architectural Blocks

Architectural blocks can be selected and edited in 2D and 3D views. See "Selecting Objects" on page 180.

Note: Moving an architectural block in 3D view regenerates the view. If the architectural block contains terrain objects, the terrain is rebuilt.

Once selected, an architectural block can be edited using its edit handles, edit toolbar buttons, and specification dialog. See "Architectural Block Specification Dialog" on page 792.

Using the Edit Handles

A selected architectural block displays a Move handle and a Rotate handle. If the block has a label, it also has its own Move handle.

Architectural blocks cannot be resized, but the individual objects in the block can be.

In the Specification Dialog

Architectural blocks can be edited in their specification dialog.

Using the Edit Tools

A selected architectural block or blocks can be edited in a variety of ways using the buttons on the edit toolbar. See "The Edit Toolbar" on page 35.

Editing Sub-Objects

The individual objects included in an architectural block can also be selected and edited. See "To select a sub-object" on page 794.

Explode Architectural Block

You can break an architectural block to make its objects independent. Select the architectural block and click the **Explode Architectural Block** edit button.

> Note: If you open a plan created in the Premier version of Chief Architect and an architectural block includes an object that you cannot create in your version of the software, you cannot unblock it or edit its components.

Adding Architectural Blocks to the Library

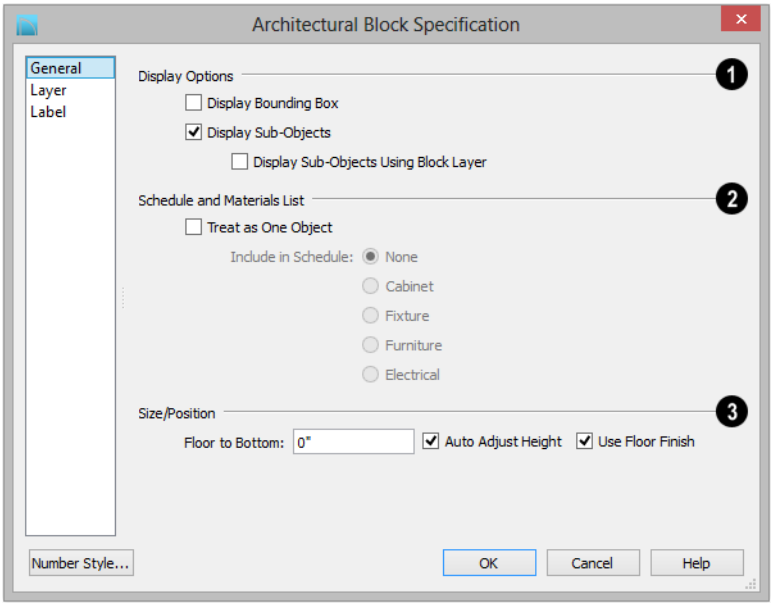
You can create your own architectural blocks and save them in the library. See "Add to Library" on page 807.

Architectural Block Specification Dialog

The **Architectural Block Specification** dialog controls the way architectural blocks display in floor plan view, in schedules, and in materials lists.

Select one or more architectural blocks and click the **Open Object**  edit button to open this dialog.

General Panel



1 The **Display Options** control the appearance of the selected architectural block in floor plan view. See “Displaying Architectural Blocks” on page 791.

- Check **Display Bounding Box** to show the bounding box of the objects in the architectural block.
- Uncheck **Display Sub-Objects** to suppress the display of the sub-objects and display only the bounding box. If Display Bounding Box is unchecked, it will become checked.
- Check **Display Sub-Objects Using Block Layer** to apply the display properties of the architectural block’s layer to its sub-objects. When this box is unchecked, sub-objects use the display properties set for their layers.

2 The **Schedule and Materials List** settings control how the selected architectural block appears in schedules and the materials list.

- Check **Treat as One Object** to treat the architectural block as a single unit in materials lists and schedules.

Include in Schedule - Specify which schedule the architectural block appears in when **Treat as One Object** is checked.

> Note: "Other" must be checked in the Schedule Specification dialog for the architectural block to appear in the schedule. See “General Panel” on page 1237.

3 Specify the selected architectural block’s **Size/Position** relative to the floor or terrain. Not available if the selected

block is includes any objects that do not have these settings in their specification dialogs.

- Specify the **Floor to Bottom** distance.
- When the selected object is located outside of a room and **Auto Adjust Height** is checked, Floor to Bottom is measured from the terrain. When it is unchecked, it is measured from the default floor height of Floor 1. See “Terrain Height vs Floor Height” on page 697.
- Uncheck **Use Floor Finish** to measure the Floor to Bottom distance from the subfloor. When checked, this distance is measured from the floor finish surface. Only available when Auto Adjust Height is checked.

Layer Panel

For information about the Layer tab, see “Layer Panel” on page 152.

Label Panel

Labels for Architectural Blocks display in floor plan view when the “Architectural Blocks, Labels” layer is turned on and use the Text Style assigned to that layer. See “Architectural Block Labels” on page 791.

The Label Tab is available for a variety of different objects. For more information, see “Label Panel” on page 1243.

Architectural Blocks, Sub-Objects, and Components

An architectural block is composed of a group of sub-objects that have been blocked together. For example, a kitchen island architectural block may consist of cabinets, appliances, a custom countertop, and other accessories.

Each of the sub-objects in an architectural block may contain additional parts called components. The cabinets in a kitchen island, for example, may contain handles, hinges, and drawer glide.

Architectural blocks can be treated as a single unit in materials lists and schedules, ignoring sub-objects and their components. See “General Panel” on page 793.

Sub-Objects

Certain attributes of an architectural block can be edited at the sub-object level. A sub-object can be edited by accessing its specification dialog in either of two ways:

- Explode the architectural block, select the sub-object, and click the **Open Object** edit button.
- Select the sub-object while it is part of the architectural block and click the **Open Object** edit button. Some attributes may not be editable while the object is part of a block. See “Editing Architectural Blocks” on page 791.

To select a sub-object

1. Click the **Select Objects** button, then click on the sub-object that you would like to edit.

2. With the architectural block selected,

   click the **Select Next Object** edit button or press the Tab key.

   The selection switches to the individual object and it can be edited using its edit handles, edit toolbar and specification dialog.

The options for editing a sub-object may be more restricted than if the object were independent. If more extensive editing is required, the architectural block must be exploded.

Components

You can view and/or modify the components of an architectural block (or group of blocks) through the **Components** dialog. The **Components** dialog lists all the sub-objects that comprise an architectural block, as well as the components that make up each sub-object.

To open the **Components** dialog, select an architectural block and click the

Components  edit button. See “Components Dialog” on page 1265.

Chapter 26:

The Library

Chief Architect's library offers thousands of symbols, materials, and images that can enhance any plan.

New library catalogs and enhancements are made available by Chief Architect on a continuing basis and are available for download for the current program version.

You can also customize items from the library or import new items from outside the program and then save them in the library for future use.

The Library Browser shares its window with the Project Browser, which is discussed separately. See "Project Browser" on page 1093.

Chapter Contents

The Library Browser

The Chief Architect Library Browser allows you to manage the contents of the library as well as add library content to your drawings.

To open the Library Browser:

- Select **View> Library Browser** .
- Click the **Library Browser** button .
- Press **Ctrl + L** on your keyboard.

By default, the Library Browser is docked to the right side of the program window, but can be undocked or docked to another side. See “Docking the Library Browser” on page 801.

The Library Browser has four sections:

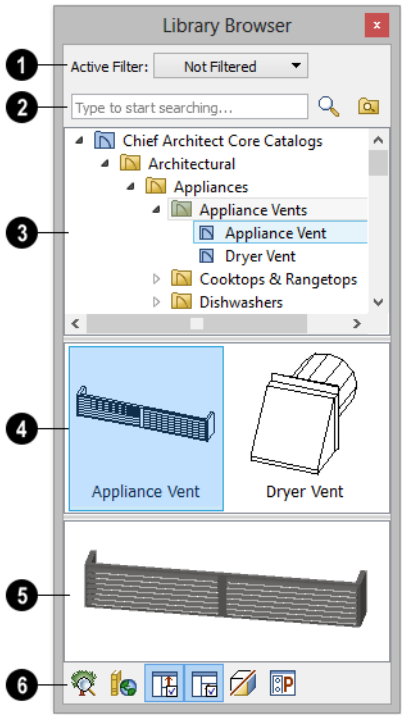
- The filter and search options at the top.
- The Directory and Search Results Pane.
- The Selection Pane.
- The Preview Pane.

To adjust the height or width of a section, place the pointer over the split bar you want to move. When the double-headed arrow ↔ displays, click and drag.

> You can control the configuration of the Library Browser panes in the Preferences dialog. See “Library Browser Panel” on page 94.

You can work on your drawing with the Library Browser open. To close the Browser, click the Close button or double-click on an object in the Selection Pane.

The library directory is presented in a tree list with five categories: Chief Architect Core Catalogs, Chief Architect Bonus Catalogs, Manufacturer Catalogs, User Catalog and Trash. See “Library Content” on page 803.



1 Specify what displays in the Directory Pane’s tree list by selecting a filter from the drop-down list. See “Filtering the Display of Library Content” on page 812.

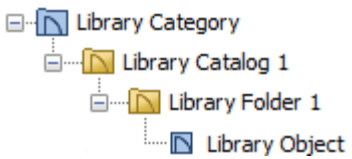
- When “Not Filtered” is selected, all installed library content will display in the tree list.
- “Not Filtered” will be the only available option until you create a custom filter.
- Click the **Manage Library Filters** button to open the **Manage Library**

Filters dialog. See “Manage Library Filters Dialog” on page 813.

❷ Search the library using keywords and optional search filters. See “Searching the Library” on page 802.

- Begin typing in the text field to search for library items. As you type, search results will display in the Directory Pane.
- Right-click on an item in the Search Results list and select **Show in Browser** to view the item’s location in the Directory list.
- Click the **Browse** button to stop searching and restore the Directory list.
- Click the **Search** button to display the search results for your search entry.
- Click the **Search Filtering Options** button to customize your search parameters.

❸ The library **Directory** and **Search Results** display here. The basic structure of the directory tree is:



Library items are always placed in alphabetical order within their heirarchy.

The Library Browser includes a Trash bin, where deleted items are moved until you choose to Empty Trash. See “Deleting Library Items” on page 811.

Navigate the Directory Pane using the mouse. Click the gray Expand arrow beside a catalog or folder to display its contents. Once expanded, you can click the black Collapse arrow to close it again. You can also browse the list using the arrow keys on your keyboard.

Click on an item to select it. Preview images display in the Selection and Preview Panes and basic information about it also displays in the program’s Status Bar. See “The Status Bar” on page 39.

❹ The **Selection Pane** shows a thumbnail image of the item selected in the Directory Pane.

When an item is selected in the Directory Pane, a basic line-based representation of the item displays in the Selection Pane.

- If the selected item is a single object, a preview of that object displays in the Preview Pane. You can move your cursor into the drawing area to place the item. See “Placing Library Objects” on page 814.
- If the selected item is a folder, a thumbnail image displays, representing each item inside. Move your pointer over an item in this pane to see a Tool Tip with the item’s name. Click on a folder in the Selection Pane to display its contents here and make it the item selected in the Directory Pane.
- Some folders may have too many items to display useful thumbnails for each; when this is the case, they do not display.

If you have **Scrollable List** checked in the **Preferences** dialog, a scroll bar is present at the bottom of the Selection Pane.

Click the **Show/Hide Selection Pane** button to toggle the Selection Pane on and off.

❺ When an individual item is selected in either the Directory or Selection Pane, an image of it displays in the **Preview Pane**. If the item is designed to be inserted into another object such as a cabinet, that parent object will also display in the preview.

You can click the **Toggle Preview Display** button at the bottom of the browser window to switch between preview images in Standard Render and Vector View styles.

If the selected object is a 3D symbol, you can rotate and zoom in or out on the Preview using the mouse. Two-dimensional objects, such as CAD Blocks or Line Styles cannot be adjusted in this manner in the Preview Pane.

If you have rotated a view in the Preview Pane, you can restore the default angle either by clicking in the Selection Pane or by right-clicking on the Preview Pane and selecting **Reset Preview**.

Click the **Show/Hide Preview Pane** button to toggle the Preview Pane on and off.

❻ The toolbar at the bottom of the browser aids in searching, displaying panes, and managing library content.

Click the **Plant Chooser** button to open the **Plant Chooser** dialog. See “Plant Chooser Dialog” on page 749.

Click the **Get Additional Online Content** button to launch your default web browser to the Chief Architect web site, where additional library content is available for download.

Click the **Show/Hide Selection Pane** button to toggle the Selection Pane on and off.

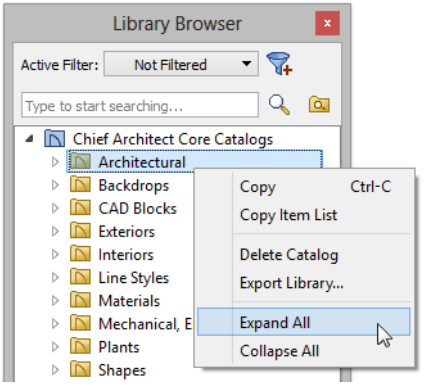
Click the **Show/Hide Preview Pane** button to toggle the Preview Pane on and off.

Click the **Toggle Preview Display** button to switch between Standard Render and Vector View images of a selected library object in the Preview Pane. See “Rendered and Vector Views” on page 868.

Click the **Preferences** button at the bottom of the Library Browser to open the **Preferences** dialog, where display properties for the Library Browser can be controlled. See “Library Browser Panel” on page 94.

Using the Contextual Menus

A number of important library functions can be accessed using the contextual menus. Right-click on an item in the Library Browser to open a contextual menu displaying options related to that item. See Contextual Menus.



The options in the contextual menu vary depending on the item selected, but may include:

- Cut/Copy/Paste
- Paste Shortcut
- Rename
- Delete
- Export Library
- Open
- Components
- Search Attributes
- Text Macro Management
- Place Molding Profile
- Reset Preview
- Expand All/Collapse All
- Show in Browser

Keyboard Commands

The Library Browser can be navigated using the arrow keys on your keyboard.

- The right and left arrow keys expand and collapse folders.
- The up and down keys change which library object is currently selected.
- Select an item and press F2 to rename it.
- Select an item and press the Delete key to delete it.

If you have **Scrollable List** selected in the **Preferences** dialog, pressing the Tab key switches focus between the Directory and Selection Panes. Use your mouse to select an object for placement. See “Library Browser Panel” on page 94.

If you have **Tiled To Fit Window** selected instead, pressing the Tab key switches focus between the tree view and the Selection Pane. You can then use the arrow keys to select a library object within the Selection Pane.

Expand/Collapse All

When a library category or folder is selected in the Directory Pane, **Expand All** and **Collapse All** are available in the contextual menu, allowing you to expand or contract its contents in the tree view.

Docking the Library Browser

Initially, the Library Browser side window is docked to the right side of the main Chief Architect program window. To undock it, click and drag its title bar towards the center of the program window. Once undocked, it can be moved and redocked in the same manner. See “Side Windows” on page 33.

When moved to the top, bottom, or side of the program window, it automatically docks in a vertical or horizontal orientation, depending on its location.

- You can prevent the Library Browser from docking when dragged in the **Preferences** dialog. See “Appearance Panel” on page 90.
- Holding down the **Ctrl** key while dragging the Library Browser from docking.

To return the Library Browser to its original position and size, click the **Restore Position/Size** button in the **Preferences** dialog.

Closing the Library Browser

The Library Browser can be closed in either of two ways:

- Click the **Close** button at the top right corner of the browser window.
- Select **View> Library Browser** .

Searching the Library

The Library Browser filtering options let you focus your searches to meet parameters that you define.

Search filters do not affect the display of items in the Directory Pane tree list. You can filter the display of the tree list separately. See “Filtering the Display of Library Content” on page 812.

To search the Library Browser

1. Select **View> Library Browser** and click in the Search field at the top of the Library Browser.
2. Begin typing a keyword to search for.
3. As you type, the search results will populate in the Directory Pane below.
4. If you move your mouse pointer over the Search field, a Tool Tip will state the number of results of your search.
5. Right-click on an item in the Search Results list and select **Show in Browser** to view the item’s location in the Directory list.

Substrings are not included. For example, searching for “windows” will not produce “window” as a search result. On the other hand, searching for “window” will produce “windows” as a search result.

To search using custom filters

1. Click the **Turn on search filtering options** button.
   - Check **Match Keyword** to match the entered search keyword with an object’s search attributes.
   - Check **Match Entire Word** to match the entire keyword or words with the complete name of the object.
   - Check **Match Folders** to include library folders in your search.
   - Check **Include Filtered** to include all library catalogs not currently displaying in the tree list in your search. See “Filtering the Display of Library Content” on page 812.
2. Click the arrow beside **Type**, **Style**, or **Manufacturer** to expand the category.
   - Check the box beside one or more **Type** of library item that you want to include in your search.
   - Check the box beside one or more architectural or design **Style** to include items of that style in your search.
   - Check the box beside one or more **Manufacturer** to include in your search. Manufacturer catalogs that were imported during the current program session will not be listed until you exit out of and restart Chief Architect.

To save time, check the box beside Type, Style, or Manufacturer to select all of the options in that category at once; uncheck the box to deselect all of the options.

3. Type a keyword in the **Search** field. The results will be filtered to match your selected filtering options

Searching Filtered Content

When **Include Filtered** is checked, any items in your search results that are currently filtered out of the tree list cannot be shown in the browser. If you right-click on such an item and select **Show in Browser**, a warning message will display.

Search Attributes

Objects in the library all have one or more search attributes, which are keywords and architecural styles that can be used to find them in a library search. The **Search Attributes** dialog lists these attributes for each library object. See “Search Attributes” on page 822.

Library Content

The Chief Architect library has five categories: Chief Architect Core Catalogs, Chief Architect Bonus Catalogs, Manufacturer Catalogs, User Catalog and Trash. See Getting Started Guide, “Deleting Library Items” on page 811.

Chief Architect Core Catalogs

The Chief Architect Core Catalogs category contains a wide selection of 3D symbols, images, CAD objects, and materials. When you install the program from DVD, this library content will also be installed; if you download the software, you will be able to download the Core Catalogs separately, after the program is installed.

When you launch the program for the first time, it will ask if you want to download the Core Catalogs. Click Yes to begin the download. If you click No, you can download at any time by selecting **Library> Install Core Content** from the menu.

Chief Architect Bonus Catalogs

Chief Architect regularly posts new library catalogs available for download. Select **Library> Get Additional Content Online** from the menu to access the bonus catalogs and content.

Some Bonus Catalogs are available only to Support and Software Assurance program members. For more information, visit: chief-architect.com.

Not all Bonus Catalogs are compatible with Chief Architect Interiors and Lite. See “Chief Architect Premier vs Interiors vs Lite” on page 27.

Manufacturer Catalogs

A variety of name brand library catalogs are available for download on the Chief Architect web site with content ranging from materials to fixtures to CAD blocks.

Select **Library> Get Additional Content Online** to access these Manufacturer Catalogs.

As with the Bonus Catalogs, not all Manufacturer Catalogs are compatible with Chief Architect Interiors and Lite, and some are only available to SSA program members.

The User Catalog

The User Catalog is the location for items that you add to the library either from a drawing or by importing. See “Adding Library Content” on page 807.

You can create and organize custom library folders and imported items such as symbols, images, backdrops, CAD blocks, line styles, and materials. See “Organizing the Library” on page 809.

Copy Item List

Copy Item List is available in the contextual menu when a library category or folder is selected in the Library Browser Directory Pane. Select this option to copy a list of all objects in the selected library item to the Windows Clipboard. You can then paste this list into a text application such as Notepad. See “To Copy, Cut and Paste text” on page 1019.

Updating Library Catalogs

The Chief Architect Core Catalogs, Bonus Catalogs, and Manufacturer Catalogs are updated periodically to include new and improved content. You can update your installed catalogs to include the latest content by selecting **Library> Update Library Catalogs** at any time.

The program will gather information about the content in each of these three categories, and then download and replace any content that is not up to date, and you may see a progress indicator at the bottom of the Library Browser while it is doing so. See “Download Progress” on page 805.

Backing up Library Content

The Chief Architect User Catalog File, User_Library.calib, is located in the Chief Architect X6 Data folder. See “Chief Architect Data” on page 51.

The best way to back up your custom library content is to export the items in your User Catalog, as this will ensure that the textures used by custom materials or imported symbols are not lost. See “Backing Up Your Files” on page 56.

Exported libraries use the **.calibz** file format: a zipped file type that can include textures and images along with other library data.

To back up your custom library content

1. Launch Chief Architect and select **View> Library Browser** from the menu.
2. Right-click on a folder or item in the User Catalog.
3. Select **Export Library** from the contextual menu.
4. The **Export Library Data** dialog is a typical Save dialog. See “Exporting Files” on page 56.
   - Notice that the file type in the Save as type field is “Library File with Textures/Images (*.calibz)”.

Downloading Library Content

The Chief Architect Core Catalogs, Chief Architect Bonus Catalogs, Manufacturer Catalogs are all available for internet download.

Core Catalogs

When you launch Chief Architect for the first time, you will be asked if you want to download the Core Catalogs. Click Yes to begin the download.

If you click No, you can download at any time by selecting **Library> Install Core Content** from the menu.

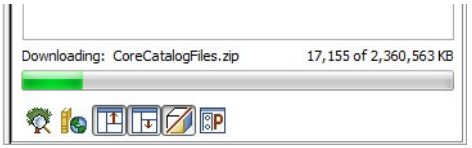
Bonus and Manufacturer Catalogs

Bonus and Manufacturer Catalogs can be downloaded from our web site, www.chiefarchitect.com. Select **Library> Get Additional Content Online** to launch your default internet browser to our Content Resources page.

Download Progress

When library content is downloading, a green progress bar will display at the bottom of the Library Browser. If you choose to download the Core Catalogs while the library is not open, the Browser will open so the progress indicator can display.

Click on the progress bar to display the name of the current file being downloaded, the total amount of data to be downloaded in KB, and the amount downloaded so far.



Pausing and Resuming

Library downloads can only take place while Chief Architect is running. If you close the program while a download is in progress, a dialog will confirm whether you wish to stop the download.

- Click **Stop Download and Close Program** to stop the download and close the program.
- Click **Cancel** to leave the program open and continue downloading.

Most catalogs are composed of a single file. If you stop the download midway, none of the downloaded data will be retained.

The Core Catalogs, on the other hand, contain a large volume of data saved in multiple files. If you close the program and stop the Core Catalogs download midway, only data associated with the file currently being downloaded will be lost. You can resume the download beginning with that file at a later time by selecting **Library> Install Core Content**.

Download Errors

If any problems occur during the library download process, a dialog box will notify you at the end of the download. Click **Retry Download** to repeat the download and

correct any errors or click **Cancel** to discard the downloaded catalog.

Importing Library Catalogs

Chief Architect library files have two different file extensions: **.calib** and **.calibz**. Both files can include any combination of Chief Architect library items; in addition, **.calibz** files are able to save data associated with textures and images. Both file types can be imported into the Chief Architect library.

There are several ways to import a **.calib** or **.calibz** file into the program library:

- Double-click on the file in an operating system window.
- Drag the file from an operating system window and drop it into the Chief Architect program window.
- Select **Library> Import Library** from the program menu.

To import library files into the library

1. Select **Library> Import Library** to display the **Import Library Data** dialog.
2. Browse to the **.calib** or **.calibz** file(s) that you want to import and either single or group-select the files so that their names display in the **File Name** field.
   - To select a group of files, click on the first one, hold down the Shift key, then click on another file. The two files plus all files in between are selected.
   - To select multiple files individually, click on one, hold down the Ctrl key, then click on additional files. Only the files you click on are selected.
   - To select all files in the directory, click on one and press Ctrl + A. Only do this if you wish to import all files in the folder.
3. Click the **Open** button.
4. A progress bar will display, telling you the progress of each library data file as it is imported. Once imported, each file will be located in the User Catalog.

When a **.calib** or **.calibz** file is imported into the program, its contents are automatically placed in the User Catalog. Any images or textures saved in a **.calibz** file will be copied into the Chief Architect X6 Data\ Images and Textures folders for backup purposes. The program will only reference these copies if it cannot locate the files in their original locations. See “Chief Architect Data” on page 51.

Legacy Library Conversion

If you have Chief Architect X5 library content, the initial startup of Chief Architect X6 will give you the option to migrate this content for use in Chief Architect X6. See “Migrating Library Catalogs” on page 13 of the User’s Guide.

You can also import legacy **.calib** and **.calibz** files created in Chief Architect X4, X3, or X2 for use in version X6 at any time. See “Exporting Library Catalogs” on page 813.

Note: Library content exported from Chief Architect 2012 will not include catalog names. Any subscribed content from version X3 that has not been downloaded will not be included, either.

In addition, legacy **.alb** files created in Chief Architect X1 and prior can be converted for use in version X6.

To convert legacy library files

1. Select **Library> Convert Legacy (.alb) Library Files**.
2. In the **Select a Legacy Library File Folder** dialog, select one or more **.alb** files that you want to bring in to Chief Architect X6.
3. The selected files' names will display in the **File name:** field.
4. Click the **Open** button to import these prior version third party **.alb** files into the User Catalog.
5. Organize the imported content to suit your needs. See "Organizing the Library" on page 809.

Third Party Library Content

There are a variety of third party sources for 3D symbols, textures and other items that may be of use in Chief Architect. Some sources even provide this content in **.alb** file format, which was the library file format used by Chief Architect versions 8.0 through X1. These third party libraries can be converted for use in Chief Architect X6 as described above.

Adding Library Content

In addition to downloading Chief Architect Content and importing entire catalogs into the library, you can also add a variety of individual objects to the library.

Add to Library

Nearly any object imported into a plan, converted into a symbol, or placed from the Library Browser can be added to the User Catalog in the library.

- Check **Add to Library** in the **Import 3D Symbol** dialog. See "Importing 3D Symbols" on page 1149.
- Check **Add to Library** in the **Convert to Symbol** dialog. See "Convert to Symbol" on page 1173.
- Select an object in your plan and click the **Add to Library** edit button.

In addition, some Chief Architect objects that are not symbols, such as cabinets, terrain objects, architectural blocks, CAD blocks, molding profiles, walls, doorways, and windows can be added to the library. See "Native Objects vs Symbols" on page 821.

An object created using a drawing tool in Chief Architect will automatically be added to the User Catalog using the name of that tool, whereas a symbol imported will automatically use the Symbol Name. These objects can be renamed after adding them to the Library, either before or after moving them to their appropriate user created folder

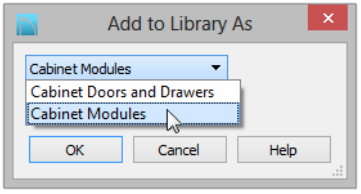
in the User Catalog. See “Renaming Library Items” on page 810.

Some objects, notably cabinets and doors with custom door styles, have other library objects inserted into them. See “Inserted Objects” on page 815. You can choose to add the containing object to the library, or the inserted object:

- Click the **Add to Library As** edit button to choose which symbol category to add the object to. Depending on your choice, either the inserted object is added to the Import library category, or the containing object with the inserted one included is added.

To use Add to Library As

1. Select an object that has another object inserted into it, such as a cabinet and click the **Add to Library As** edit button.
2. In the **Add to Library As** dialog, select what part of the selected object should be added to the library.



- In the case of a cabinet, select “Cabinet Doors and Drawers” to save the selected cabinet’s door style to the library rather than the entire cabinet.
- Or, select “Cabinet Modules” to save the entire cabinet, including its doors, drawers and panels.

3. If you selected more than one object for which **Add to Library As** is available:
   - The dialog will open separately for each different type of object selected.
   - The dialog will open just once if all selected objects are the of the same type.

Adding Materials and Images

New materials, images, plant images, and line styles can be created in the User Catalog. Right-click on the User Catalog or a folder within it, select **New>** from the contextual menu, then select the type of item you wish to create from the submenu.

Chief Architect can use materials and images in a variety of file formats and provides several means of adding new material and image files to the library. For more information, see “Creating Materials” on page 833 and “To create an image in the Library Browser” on page 1103.

Adding New Backdrops

A backdrop is an image, typically of an exterior view, that displays in the background of 3D views to help place the model into a realistic setting and add a sense of perspective. See “3D Backdrops” on page 1122.

A new backdrop image can be created using a variety of graphic file formats and can be imported into Chief Architect in several ways:

- Select **File> Import> Backdrop** to open the **Import Backdrop File** dialog, which is similar to the **Import Picture**

File dialog. See “Importing Pictures” on page 1109.

- Right-click on the User Catalog and select **New> Backdrop** from the contextual menu.
- Copy and paste an image into Chief Architect. See “Copying and Pasting Objects” on page 168.
- Use the **Screen Capture** tools. See “Creating Screen Captures” on page 1121.
- Import a folder of backdrop images.

To add a folder of backdrops to the library

1. Select **File> Import> Create Backdrop Library** .
2. Browse to the location of a folder of images on your hard drive that you would like to bring into the library as backdrops, select it, and click OK.
3. A folder with the same name will be created in the User Catalog, containing the imported backdrop images.

Adding 3D Symbols

An imported symbol can be added to the library in either of two ways.

- By checking **Add Symbol to Library** during the symbol import process. See “Import 3D Symbol Dialog” on page 1150.
- Using the **Add to Library** edit tool after the symbol is placed in a plan. See “Add to Library” on page 807.

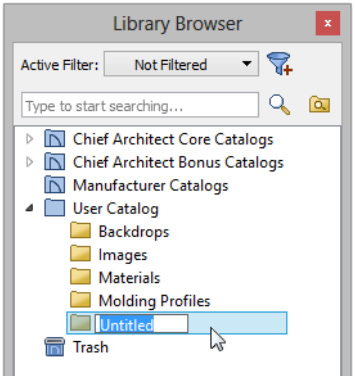
Organizing the Library

Library folders and objects can be copied, pasted, moved, and deleted: allowing you to organize your User Catalog to best suit your work style and needs.

Adding New Folders

New folders can be added to the User Catalog or to any folder located within it. To add a new folder, right-click on User Catalog or one of its sub-folders and select **New> Folder** from the contextual menu.

The new folder is created inside the library item you right-clicked on and is initially named “Untitled”. Type a short, descriptive name and press Enter.



Selecting Library Items

To select a library object, folder, or category, simply click on it. You can also multiple-select library items:

- To select a group of items, click on the first one, hold down the Shift key, then click on another file. The two files plus all files in between are selected.
- To select multiple items individually, click on one, hold down the Ctrl key, then click on additional files. Only the files you click on are selected.

When an item is selected, preview images display in the Selection and Preview Panes and basic information about it also displays in the program's Status Bar. See "The Status Bar" on page 39.

A selected library item can be modified in a number of ways to help meet your organizational needs. When multiple items are selected, these options may be limited depending on the specific selection set.

Renaming Library Items

Only folders and objects in the User Catalog can be renamed. There are several ways to do this from the tree list:

- Right-click on the item, select **Rename** from the contextual menu, and type a new name.
- Click once on the item, press F2 on your keyboard and type a new name.
- Click once on the item, pause for a moment, then click a second time and type a new name.

Library names are case-sensitive and can contain up to 63 characters. While you can have more than one library item that uses the same name, it is best to use short, descriptive and unique names.

Moving Library Items

Folders and objects in the User Catalog can be moved to new locations within the User Catalog. Folders and library objects are always organized alphabetically within each hierarchy.

To move one or more items to a different location, select it in the tree list, then click and drag it to the new location in the list. Directories and folders able to accept new content highlight as your mouse pointer moves over them. Release the mouse button to relocate the selected library item in the highlighted location.

You can also cut one or more library items from one location and paste them in another. When an item is cut, it is removed from its current location and saved to the Windows Clipboard. To cut an item:

- Right-click on it and select **Cut** from the contextual menu.
- Click on the library item and press Ctrl + X on your keyboard.

To **Paste** the item, click on a library catalog or folder in the Library Browser tree view and either:

- Right-click on the new location and select **Paste** from the contextual menu.
- Press Ctrl + V on your keyboard.

Copying Library Items

All library folders and library objects can be copied and pasted to new locations in the User Catalog.

There are two ways to copy one or more library items to the Windows Clipboard:

- Right-click on it and select **Copy** from the contextual menu.
- Click on the library item and press Ctrl + C on your keyboard.

To **Paste** the item, click on a library catalog or folder in the Library Browser tree view and either:

- Right-click on the new location and select **Paste** from the contextual menu.
- Press Ctrl + V on your keyboard.

When a library item is copied and pasted, the new item that results is independent of the original item. If you make changes to it, the original item is unaffected. Similarly, changes to the original item do not affect the copy.

Library Shortcuts

In addition to copying and pasting to create new, independent library items, you can copy and paste to create Library Shortcuts. Library Shortcuts are not independent items - they are linked to the original item and are affected if changes are made to the original.

Library Shortcuts are advantageous because you can place a given library item in multiple locations to suit your organizational style without increasing the size of the library database and without having to maintain multiple copies of the same item.

To create a Library Shortcut, copy a library item to the Windows Clipboard. Then, right-click on the location where you would like to create a copy and select **Paste Shortcut** from the contextual menu. Library Shortcuts use the same name as their source item but use the Library Shortcut  icon.

To locate a Library Shortcut's source item, right-click on it in the tree list and select **Locate Shortcut Source**

If you move or delete an item from the library, any shortcuts to it will not be updated or removed. If you try to use a "hanging" shortcut, a message about its status will display in the library preview panes.

Deleting Library Items

The five installed library categories: Chief Architect Core Catalogs, Chief Architect Bonus Catalogs, Manufacturer Catalogs, User Catalog, and Trash cannot be deleted.

Catalog level folders in all categories can be deleted; however, individual subfolders and objects can only be deleted out of the User Catalog.

Items in the library that are eligible for deletion can be deleted in either of two ways:

- Right-click on it and choose **Delete** from the contextual menu.
- Select it and press the **Delete** key on your keyboard.

When items from the User Catalog are deleted, they are moved to the Library

Browser Trash  . Items in the Trash can be retrieved by clicking and dragging them into any location in the User Catalog.

To empty the Trash  , right-click on it and select **Empty Trash** from the contextual menu.

Depending on how much content is in the Trash, emptying it can be time consuming. You can click the **Cancel** button to end the process if you wish.

The Empty Trash command is both immediate and permanent. It cannot be undone, so use care when using it. You should back up all your library files regularly. See “Backing up Library Content” on page 804.

Filtering the Display of Library Content

Depending on how much library content you have imported or customized, the tree list in the Directory Pane can be very large. You can control what content displays in the list using **Library Filters**.

Library Filters do not remove content from the library database. They do, however, affect the library Search: unless you check **Include Filtered** in the advanced Search options, library content that is not displaying is not included in your searches.

You can also set up filters for your library Search results, but these two types of filters are unrelated. See “To search using custom filters” on page 802.

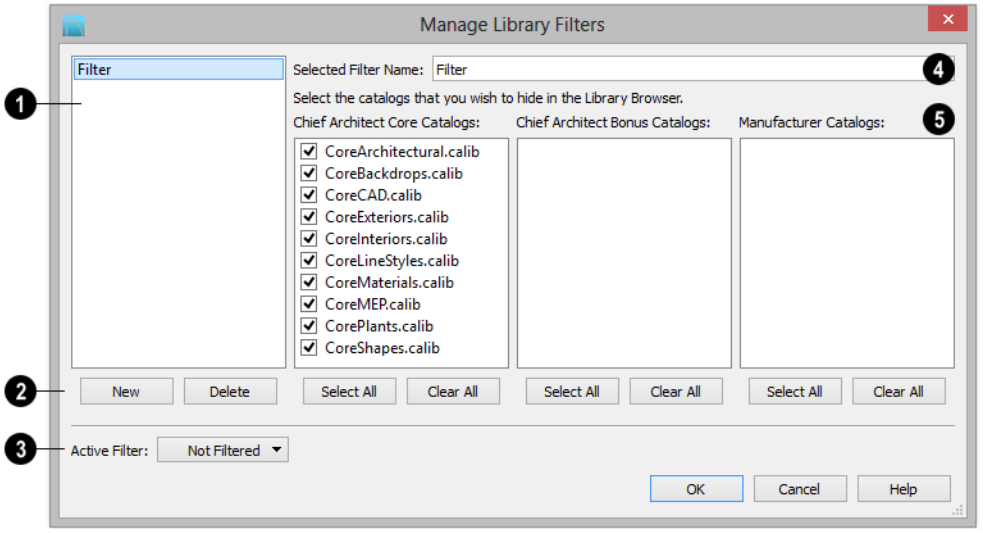
Library filters can be created, edited, and deleted in the **Manage Library Filters** dialog.

Click the **Manage Library Filters**  button at the top of the Library Browser to open this dialog or select **Library> Manage Library Filters**  from the menu.

You can also add the Manage Library Filters button to your toolbars and assign a hotkey to it. See “Toolbars and Hotkeys” on page 129.

Any library filters that you create will be listed in the **Active Filters** list at the top of the Library Browser. Select a filter from the list to display content in the library tree list according to its settings. See “The Library Browser” on page 798.

Manage Library Filters Dialog



1 A list of available library filters displays here. Click on a name in the list to select it. The Selected Filter is highlighted and can be edited using the options to the right.

2 Click the **New** button to create a new filter or click the **Delete** button to remove the Selected Filter from the list.

3 Select the **Active Filter** from the drop-down list. This is the filter in use in the Library Browser when the **Manage Library Filters** dialog is closed.

4 Specify the **Name** of the Selected Filter.

5 A list of all **Chief Architect Core**, **Chief Architect Bonus** and **Manufacturer Catalogs** installed in your library display here.

- Check the box beside a library catalog's name to prevent it from displaying in the Library Browser Directory Pane tree list.
- Click the **Select All** button below either list to prevent all catalogs in that list from displaying in the Directory Pane tree list.
- Click the **Clear All** button below either list to include all catalogs in that list in the Directory Pane tree list.

Exporting Library Catalogs

Exporting library files allows you to:

- Back up your custom library content.
- Transfer library content between computers.

- Share custom library content with colleagues.

Exporting is often preferable to simply copying library files because it allows you to include images and textures in the exported library.

To export content from the library

1. Locate an object, folder, or catalog that you want to export, right click on it, and select **Export Library**.
2. In the **Export Library Data** dialog.
   - Choose the appropriate **Save in:** location for your exported library file.
   - Type a short, descriptive name for your library file in the **File Name** field.
   - Click the **Save as type:** drop down list and select whether or not you want the library to include Textures/Images.

If any of the items being exported are images or use textures, be sure to select the .calibz file type.

   - Click **Save**.
3. Your exported library file can now be copied to a network location or storage device in an operating system window.

Placing Library Objects

Library objects are subject to placement restrictions based upon typical real-life placement. Most library objects require sufficient free space at the location where they are placed, for example, and some library objects have additional requirements.

Library windows and doors, for example, must be placed in a wall just like standard windows and doors, and some fixtures are designed to be placed in cabinets.

Library symbols have placement restrictions that are determined when the symbol is created but can be changed later. See “Native Objects vs Symbols” on page 821 and “Symbol Specification Dialog” on page 1159.

If a warning message displays when placing a library object or symbol, it will indicate where the object can be placed.

There are three main categories of items available in the Library Browser:

- Stand-alone objects that can be placed directly into a plan. Examples include cabinet modules, furnishings and images.
- 3D objects designed to be inserted into another 3D object. Examples include cabinet fixtures, windows and doors. Some items, such as cabinet doors and fixtures and fence panels, can be inserted into another object or placed as stand-alone objects.
- Materials, line styles and molding profiles, which cannot stand alone and must be assigned or applied to another object.

Stand-Alone Objects

Most library categories contain objects that can be selected in the Library Browser and placed directly in a 2D or 3D view.

- Most stand-alone objects are designed to rest on the floor or terrain.
- Some objects will rest on top of a cabinet, shelf, furniture or roof plane object if one is located at the point where they are first placed.
- A few objects, notably some light fixtures, will mount on the bottom of a wall cabinet or on the ceiling.
- In addition, some objects will attach to a wall if one is nearby.

To place a stand alone library object

1. Click on an object in the tree view or Selection Pane of the Library Browser to select it for placement. See “The Library Browser” on page 798.
2. Move your mouse pointer into the view area and notice that it displays an icon indicating the type of object selected instead of an arrow.
3. Click to place the selected object at that location.
4. Continue clicking to place as many instances of the selected object as needed. When you are finished, click the **Select Objects** button.

Once a stand-alone object has been placed, it can be edited in a variety of ways. See “Editing Library Objects” on page 820.

Inserted Objects

Some objects cannot stand alone and must be placed into other objects in a plan. For example, doors and windows must be inserted into a wall, while some appliances and plumbing fixtures must be placed inside a base cabinet. See “Doors” on page 355, “Windows” on page 383 and “Cabinets” on page 659.

An inserted object can only display in a 2D or 3D view if the object that contains it is set to display. This is the case even if the inserted object’s layer is turned on. See “Displaying Library Objects” on page 819.

To insert a library object

1. Click on an object in the tree view or Selection Pane of the Library Browser to select it for placement. See “The Library Browser” on page 798.
2. Move your pointer into the drawing area.
3. Click on the object into which you wish to insert the selected library item. The library item is inserted into the object.
4. Continue clicking to place as many instances of the selected item as needed. When you are finished, click the **Select Objects** button.

If you try to insert an object into another object that is on a locked layer, nothing will be created. See “Object Creation and Layers” on page 168.

Assigned Items

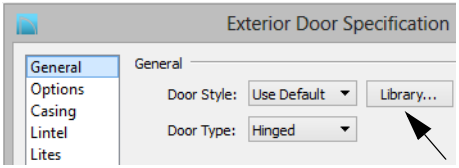
Some library items, such as moldings and materials, are not objects in themselves but can be applied to objects in a variety of ways.

- Using the specification dialog of the containing object. See “Select Library Object Dialog” on page 816.

- By selecting the item in the library and then clicking on the containing object in floor plan view.
- Materials can be assigned to objects directly from the library in 3D views or by selecting the material and then clicking on an object's surface. See "The Material Painter" on page 828.
- Moldings and Line Styles can also be added to a plan by selecting the desired library item, then clicking and dragging a line in the drawing area. The result is either a Molding Line or CAD Line, depending on the selected library item. See "Molding Polylines" on page 648.

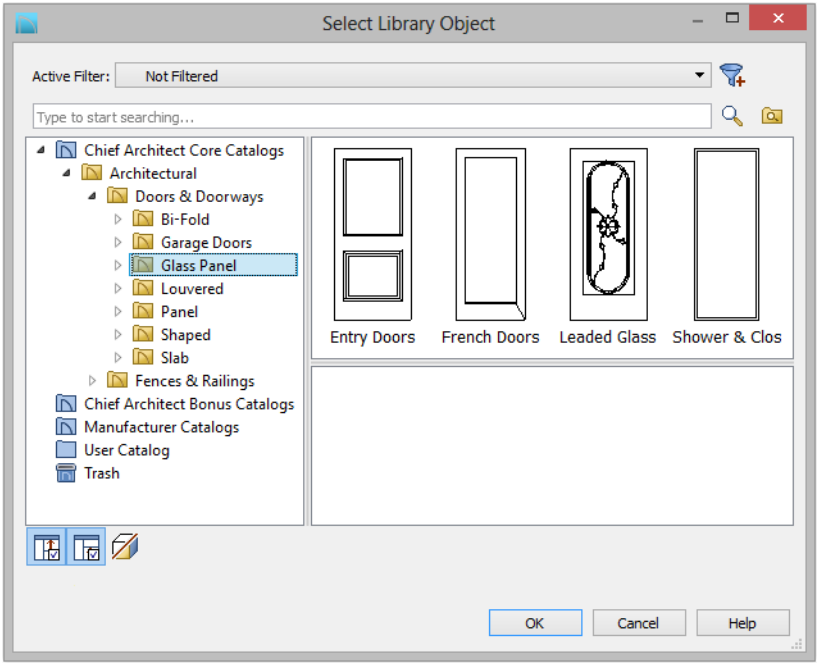
Select Library Object Dialog

The **Select Library Object** dialog is a modal version of the Library Browser that is accessible from object specification dialogs that display the Library... button.



Click this button to select and apply items from the library to the selected object. See "Specification Dialogs" on page 38.

The **Select Library Object** dialog only displays categories that are related to the selected object. For example, this is how the dialog looks when accessed from the General panel of the **Door Specification** dialog:



To make your selection, highlight the desired object and click **OK**, or simply double-click on the object in the Selection Pane to close the **Select Library Object** dialog.

The **Select Library Object** dialog has most of the same functionality that the Library Browser has: including the search and search filtering options, the toggleable, resizable Preview and Selection Panes, and the **Toggle Preview Display** button. See “The Library Browser” on page 798.

If the **Select Library Object** dialog is opened by clicking the **Library Material** button on the Materials panel of any specification dialog or using the **Material Painter**, two additional options are available:

- Click the **Add New Material** button to open the **Define Material** dialog and create a new material.
- Check **Use Default Material** to apply the default material for the selected object, if one exists. See “Material Defaults” on page 852.

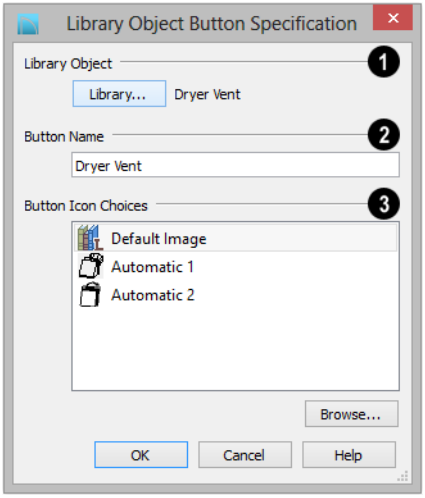
See “Materials Panel” on page 831 or “The Material Painter” on page 828.

Place Library Object Button

The **Place Library Object** button can be added to your toolbar and used for quick access and placement of frequently used library items.

If the **Place Library Object** button has not yet been assigned a library object, click it once to open the **Library Object Button Specification** dialog.

Double-click a **Place Library Object** button that has been assigned a library object to open the **Library Object Button Specification** dialog.



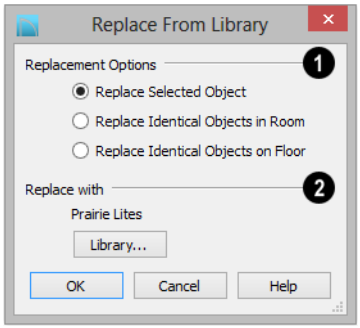
1. Click the **Library** button to open the **Select Library Object** dialog and assign a library object to the button. If a library object has already been assigned, click this button to assign a new library object. See “Select Library Object Dialog” on page 816.
2. When a library object has been selected, type a **Button Name** in the text field.
3. When a library object has been selected, assign a **Button Icon**. Choose from two automatically generated button icons or click **Browse** to browse your computer for a different icon.

Up to 100 **Place Library Object** buttons can be added to the same toolbar, each assigned a different object.

The library object assigned to the **Place Library Object** button is actually saved with that particular button. If you move or delete the library item from the library, the button will continue to function.

Replace From Library

The **Replace From Library** edit button is available for any object that can be added to the library and can be used in 2D and 3D views. Click this button to open the **Replace From Library** dialog and replace the selected object, and others like it if you choose, with an object of the same type from the library.



1 Select one of the **Replacement Options**.

- Select **Replace Selected Object** to replace only the currently selected object.
- Select **Replace Identical Objects in Room** to replace all objects that are in the same room as, and are identical to, the currently selected object. Not available for doors or windows.
- Select **Replace Identical Objects on Floor** to replace all objects that are on the same floor as, and are identical to, the currently selected object.

2 Click the **Library** button to open the **Select Library Object** dialog and select an object to use as a replacement. The name of the object that is currently selected as a replacement displays above.

Replace From Library is not available for materials, backdrops, and items assigned to other objects, such as materials.

Displaying Library Objects

The display options available for library objects depend on the type of object in question, as well as the view.

If the display of an object is turned off in a 2D or 3D view, any objects inserted into it will not display in that view, either - even if the inserted object's layer is turned on. See "Inserted Objects" on page 815.

In Floor Plan View

All library objects except materials, doors and drawers applied to cabinets, and backdrops can display in floor plan view. Library objects are represented in floor plan view by 2D CAD blocks that resemble the size and shape of the object when viewed from above. To learn how to specify the symbol that represents an object, see "2D Block Panel" on page 1162.

As with other architectural objects, the display of library objects is controlled by layer in the **Layer Display Options** dialog. Each library category has its own layer. See "Layer Display Options Dialog" on page 148.

Symbols belong to one of three drawing groups that influence which objects display in front of others in floor plan view. You can click the **Move to Front of Group** edit button to display a selected symbol in front of over symbols or architectural blocks. See "Drawing Groups" on page 215.

Object Labels

Fixtures, Furnishings, Geometric Shapes, Hardware, Millwork, Architectural Blocks and Plants can display labels in floor plan

and cross section/elevation views when the appropriate layer is set to display in the **Layer Display Options** dialog. For example, fixture labels are placed on the "Fixtures, Labels" layer. See "Object Labels" on page 1241.

Object labels have their own edit handles and can be moved and rotated when the object is selected. Library object labels use the Text Style assigned to their layer. See "Text Styles" on page 1030.

You can specify a custom label for many library objects in the **Symbol Object Specification** dialog. See "Symbol Object Specification Dialogs" on page 823.

In 3D Views

All library objects except CAD blocks can display in 3D views.

By default, images rotate to face the camera in 3D views. For information about turning off image rotation, see "Image Specification Dialog" on page 1105.

Doors, windows and cabinets from the library may also display opening indicators in Vector Views when the "Opening Indicators" layer is turned on. See "Displaying Objects" on page 144.

In the Materials List

Most library objects are counted in the Materials List, as are any comments added to the **Components** dialog for a library object. See "Components Dialog" on page 1265.

Note: Although the size and materials of many library objects can be edited, these changes are not reflected in the Materials List. See "Materials Lists" on page 1247.

Editing Library Objects

Like native Chief Architect objects, library objects can be customized to suit your design needs. There are three approaches to editing library objects:

- Select an object in the User Catalog, edit it using any of the options in its contextual menu, and your changes will be reflected when you next place this library object in a drawing.
- Place an object in a drawing and then edit it using the various edit tools available for it. This will not affect the original object still saved in the library.
- Place an object in a drawing, edit it using the available edit tools, and then add it back to the library for future use. This will not replace the original object still saved in the library. See "Add to Library" on page 807.

Library objects placed in a drawing can be selected individually or as a group, like other objects in Chief Architect. See "Selecting Objects" on page 180.

Once selected, library objects can be edited in a variety of ways using dimensions, the edit handles, the edit toolbar buttons and the specification dialog. See "Symbol Object Specification Dialogs" on page 823.

Native Objects vs Symbols

In Chief Architect, objects created using the program's standard tools, such as the **Door Tools** and **Cabinet Tools**, are referred to as native objects.

On the other hand, objects placed from the library, such as fixtures and furnishings, are symbols. Symbols are typically more limited than native objects in how they can be edited.

In addition to the symbols available in the library, you can import additional symbols into the program from 3D **.dxf**, **.dwg, .obj, .3ds** or **.skp** files. See "Importing 3D Symbols" on page 1149.

Any changes made to objects like fixtures and furniture will not be reflected in their Materials List Description, although they may be seen in other columns, such as Size. See "Materials Lists" on page 1247.

You can change a symbol's name, which is used in its Materials List Description, in the **Symbol Specification** dialog. You can also change the names of its components. See "3D Panel" on page 1160 and "Materials Panel" on page 831.

Remove Manufacturer Lock

Manufacturer symbols are limited in the ways that they can be edited. After such a symbol is placed in a plan, select it and click the **Remove Manufacturer Lock** edit button to remove the manufacturer data so that it can be edited like other symbols.

Using Edit Handles

Most library symbols are box-based objects and can be edited as such once placed in a drawing. See "Editing Box-Based Objects" on page 203. Depending on the type of view and the surface selected, the edit handles a symbol displays will vary.

When a furnishing or fixture symbol is selected in floor plan view or on the top surface in a 3D view, up to ten edit handles display. They are the Move handle at the center, the Rotate handle just outside the front indicator (a V) and a Resize handle on each edge and at each corner.

When a symbol is selected on a side in a cross section/elevation or 3D view, it displays five edit handles: the Move handle and a Resize handle on each edge.

Symbols cannot be concentrically resized, even when the **Concentric** edit behavior is enabled. See "Edit Behaviors" on page 176.

The labels of library cabinets, electrical, furnishings and fixtures, when displayed, have a separate Move edit handle that displays when the object is selected.

Fixtures and furniture placed in a plan are subject to bumping/pushing behavior when moved. See "Bumping/Pushing" on page 218.

In the Specification Dialog

The specification dialog for any symbol, image, material, or plant image in the library can be edited from the Library Browser Directory Pane. See "Specification Dialogs" on page 38.

Specification dialogs are not available for native objects saved in the library.

To open the **Symbol Specification** dialog, click on a symbol name in the tree view of the Library Browser and select **Library> Open**. See “Symbol Specification Dialog” on page 1159.

Deleting Built-in Fixtures and Appliances

A fixture installed into the front of a cabinet becomes a cabinet face item, like a door or drawer. It can be resized or deleted like other face items in the **Cabinet Specification** dialog. See “Front Panel” on page 681.

Components

Many architectural objects have a **Components** dialog that lets you control how that object displays in the Materials List. In the Library Browser Directory Pane, right-click on a symbol and select **Components** to open the **Components** dialog. See “Components Dialog” on page 1265.

Changes made to the Components of an object saved in the library do not affect instances of that object already placed in a plan: they are only applied to instances of the object placed in the future.

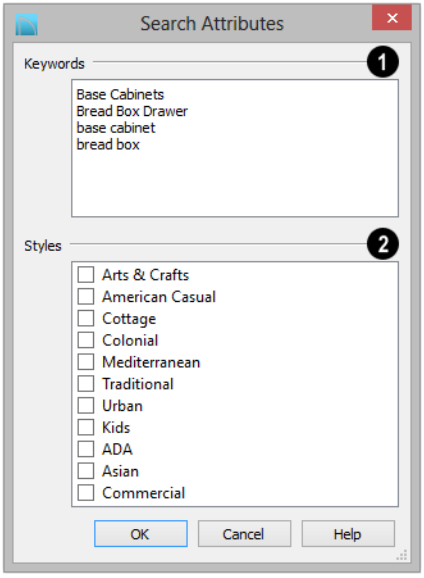
Once placed in a plan, many objects have a **Components** edit tool that allows you to make changes to that object’s Components without affecting the symbol in the library.

Terrain objects, CAD blocks, moldings, images, backdrops, and materials do not display in the Materials List.

Search Attributes

The **Search Attributes** dialog lists the keywords and styles associated with a selected library object. Keywords and styles can be used to locate the object when performing a library search. See “The Library Browser” on page 798.

To open the **Search Attributes** dialog, right-click on an item in the User Catalog and select **Search Attributes** from the contextual menu. See “Using the Contextual Menus” on page 800.



1. Any searchable **Keywords** associated with the object display in the list. Click in the list box and type in any additional keywords that you would like to use. Each keyword should be on its own line in the list.

2. Check the box beside any **Styles** that you want to associate with the object.

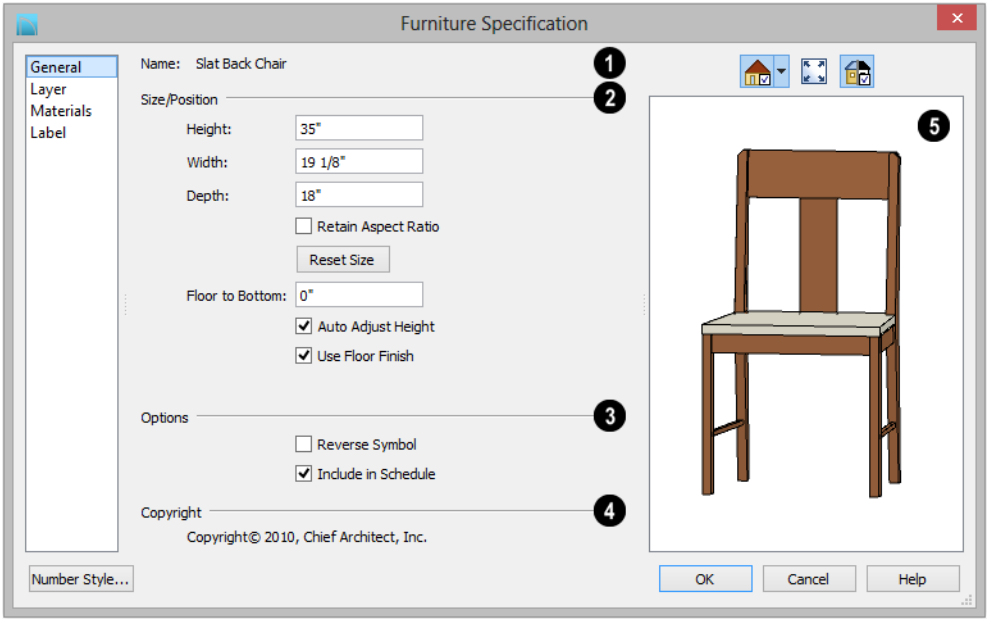
Symbol Object Specification Dialogs

The **Fixture**, **Furniture**, **Geometric Shape**, **Hardware, Millwork,** and **Plant Specification** dialogs all feature the same options. The actual name of the dialog is determined by the type of object that is currently selected.

For example, selecting a library object placed from the Interiors Core Catalog and clicking the **Open Object** edit button opens the **Furniture Specification** dialog.

Many library symbol objects can also be edited in the **Symbol Specification** dialog. See “Symbol Specification Dialog” on page 1159.

General Panel



1. The **Name** of the selected symbol object displays here.

2. **Size/Position -**

- Specify the **Height**, **Width**, and **Depth** of the object.

Note: Some very thin custom symbols may have a Height, Width, or Depth value of 0. In these cases, the 0 value cannot be edited.

- Check **Retain Aspect Ratio** to maintain the ratio between the object’s Height, Width, and Depth when it is resized in the

specification dialog. Does not affect the behavior of the object's edit handles.

- Click **Reset Size** to reset the symbol's original, unmodified size. The Floor to Bottom value, below, is not affected by this button.
- **Floor to Bottom** - Enter the distance from the floor to the bottom of the object. A value of zero rests the object on the floor.
- If the selected symbol is ceiling mounted, **Height Above Ceiling** will be available instead of Floor to Bottom. Specify the selected object's height above the ceiling. Enter a negative value to offset the symbol below the ceiling, or uncheck **Follow Ceiling** if you prefer to specify the object's Floor to Bottom height instead.
- When the selected object is outside a room and **Auto Adjust Height** is checked, its Floor to Bottom height is measured relative to the terrain height. When this is unchecked, the Floor to Bottom height is measured from the default floor height of Floor 1. See "Terrain Height vs Floor Height" on page 697 of the Reference Manual.
- Check **Use Floor Finish** to measure the Floor to Bottom distance from the surface of the floor finish. When unchecked, this height is measured from the subfloor. Only available when Auto Adjust Height is checked, this setting only affects objects located inside of a room.

❸ **Options** -

- Check **Reverse Symbol** to reverse the object's appearance, so that features on its left are positioned on its right, and vice versa. This turns a right-hand refrigerator, for example, into a left-hand refrigerator. This option has no effect on objects that are symmetrical.
- Check **Include in Schedule** to include the selected symbol(s) in the schedule associated with that type of object. See "The Schedule Tools" on page 1232.

❹ If the selected object has a **Copyright**, information about it displays here.

❺ A preview of the selected library object displays here and updates with changes. If the selected symbol is inserted into another object, such as an appliance in a cabinet, the parent object will also display. See "Dialog Preview Panes" on page 38.

Layer Panel

For information about the settings on this tab, see "Layer Panel" on page 152.

Materials Panel

For information about the settings on this tab, see "Materials Panel" on page 831.

Label Panel

A variety of library objects can display labels in floor plan view and cross section/elevation views. Labels use the Text Style assigned to the layer they are on.

For information about the settings on this tab, see "Label Panel" on page 1243.

Manufacturer Panel

If the selected symbol or material is from a Manufacturer's catalog, the Manufacturer panel lists contact information about the

manufacturer. See “Manufacturer Catalogs” on page 803.

Fixture and Furnishing Schedules

The **Fixture** and **Furnishing Schedule** tools allow you to produce customizable fixture and furnishing scheduless as well as fixture and furnishing labels that display schedule numbers. See “The Schedule Tools” on page 1232.

Chapter 27:

Materials

The objects used in Chief Architect have a variety of 3D properties. These objects - walls, windows, doors, cabinets, roof planes, lot perimeters, etc. - can have materials assigned to them so that they look realistic in 3D views. These materials can also be used to generate materials lists that can help with cost estimations.

Designing with objects that look correct in 3D and calculate properly in the Materials List requires that you use realistic material definitions and apply them appropriately to objects in your plan.

Chief Architect comes with many materials that are ready for use. From siding, roofing, flooring, masonry, tile, and paneling, to road surfaces, grass, water, and wood materials, Chief Architect has materials for every application, inside and out. If you cannot find a material that suits your needs, you can customize the materials provided or create your own.

Learning how to create, manage, apply, and edit materials saves time and adds that professional touch to your designs.

Redefining only the visual properties of a material may create unexpected results. For example, changing the image of a brick material to represent siding does not cause the material to be considered as siding during material calculations.

Chapter Contents

About Materials

The materials that are assigned to objects in Chief Architect perform two important roles:

- They determine what the surfaces of objects look like in 3D views.
- They influence how objects are calculated in the Materials List. See “Materials Lists” on page 1247.

Materials are stored in the Materials library in the Library Browser and can be applied to objects in either of two ways:

- Using the **Material Painter**  .
- In an object’s specification dialog. See “Materials Panel” on page 831.

Patterns and Textures

In Chief Architect, materials have two attributes that determine what they look like in 3D views: Textures and Patterns.

- Textures are created using special image files that tile seamlessly when applied to surfaces and are visible in Ray Trace views and most Rendering Techniques. See “In Rendered Views” on page 887.
- Patterns are composed of CAD lines and are seen in Technical Illustration, Line Drawing and Vector Views. See “Rendering Techniques” on page 928.

Unlike textures, patterns are associated with a Type that determines if and how materials are calculated in the Materials List.

Material Types

Every material is classified by Type, which defines how the material is calculated in the Materials List. Not every Type is calculated in the Materials List; however, most determine whether a material is counted by piece, area, volume and so on. See “Material Types” on page 837.

Some Types are associated with patterns. Only Chief Architect Pattern Types are figured in the Materials List. If a **.pat** file is selected, the pattern type is listed as Custom. See “Pattern Panel” on page 844.

The Material Painter

Select **3D> Material Painter** to access the **Material Painter Tools**, which are used to apply materials to object surfaces in 3D views.

The **Material Painter**  tool can also be activated by selecting a material in the library while a 3D view is active.

If you use the Material Painter to change a room’s floor or ceiling finish material, it will add that material to the room’s Floor or Ceiling Finish Definition. Changes to a Deck room’s planking or framing will affect its floor structure definition. See “Floor and Ceiling Platform Definitions” on page 337.

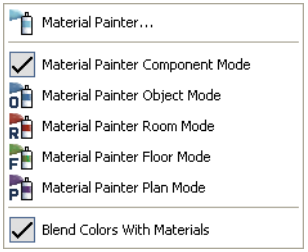
Material Painter Modes

There are five Material Painter Modes. Each mode specifies how broadly or narrowly the selected material will be applied to surfaces in your plan.

- The **Material Painter Component Mode** is the default mode. This applies the selected material to an object component. Using this tool is the same as opening an object for specification and changing the material for one of its components on the Materials panel. See “Materials Panel” on page 831.
- The **Material Painter Object Mode** applies a material to all components of an object that share the same material assignment.
- The **Material Painter Room Mode** applies a material to all the objects in the room that currently have the same material. For example, if you apply a material to a dining room chair, this mode applies the material to all other objects in the room with the same original material, such as other chairs and the dining table.
- The **Material Painter Floor Mode** applies the selected material to all surfaces on the floor that currently have the same material. For example, if you apply a material to the kitchen countertops using this mode, the bathroom countertops on the same floor also have the material applied.
- The **Material Painter Plan Mode** applies the selected material to all surfaces in the entire plan that currently have the same material. For example, if you have the same carpet on all floors in a plan, applying a selected material while this mode is active will change all carpet on all floors.

When the **Material Painter** tool is active, the Material Painter Mode toolbar buttons display in the edit toolbar, allowing you to quickly change modes.

You can also specify the active mode by selecting **3D> Material Painter**. A check displays next to the active mode in the submenu.



Blend Colors With Materials

In addition to the Material Painter Modes, the **Blend Colors With Materials** option allows you to apply a solid color to a surface displaying a pattern or texture and blend the two.

Blend Colors With Materials works in all five Material Painter Modes. See “Blending Materials” on page 834.

To use the Material Painter tool

1. Create a 3D view in which the patterned/textured material is visible.

2. Select **3D> Material Painter> Material Painter** .
3. Select a solid color material from the **Select Library Object** dialog. See “Select Library Object Dialog” on page 816.
   - Check **Use Default Material** at the bottom left of the dialog to apply the default material to any object that has a defaults dialog. See “Material Defaults” on page 852.
4. Select a Material Painter Mode from the edit toolbar, which displays at the bottom of the program window when the Material Painter is enabled.
5. Click the **Blend Colors With Textures** edit button to turn this feature on or off depending on your needs.
6. Note that the name of the material being painted displays on the left side of the Status Bar at the bottom of the program window. See “The Status Bar” on page 39.
   - Move your pointer over a surface in the 3D view. The Status Bar now states both the material being painted and the current material on the target surface.
7. Click on the surface to apply the selected material to that surface. The material is applied to surfaces in the model based on the active Material Painter Mode.
   - When both the **Material Painter** and **Blend Colors With Textures** are active, the cursor displays a paint roller icon .
   - When the **Material Painter** is active and **Blend Colors With Textures** is not, the cursor displays a spray can icon .
8. If either the **Component** or **Object Mode** is active, you can continue to click on surfaces to apply the selected material. When you are finished, select a different tool.

Material Painter and Walls

As a general rule, the **Material Painter** cannot be used to apply a material to an individual wall. Rather, it applies the material to an entire room, to all the rooms on the floor, or to all the rooms in the entire plan, depending on which Material Painter Mode is active.

There are a couple of exceptions to this rule that apply when the wall surface being painted faces an exterior room such a porch and/or the Exterior Room. See “Room Types” on page 329.

- If the **Material Painter Component Mode** is active, the entire length of the individual wall is painted. Other walls defining the exterior room(s) are unaffected.
- If the **Material Painter Room Mode** is active, the selected material is applied to the entire exterior room. If any walls defining this room also define other exterior rooms, their entire lengths are also affected.

Material Eyedropper

The **Material Eyedropper** tool allows you to load the material assigned to an existing object and apply that material to other objects.

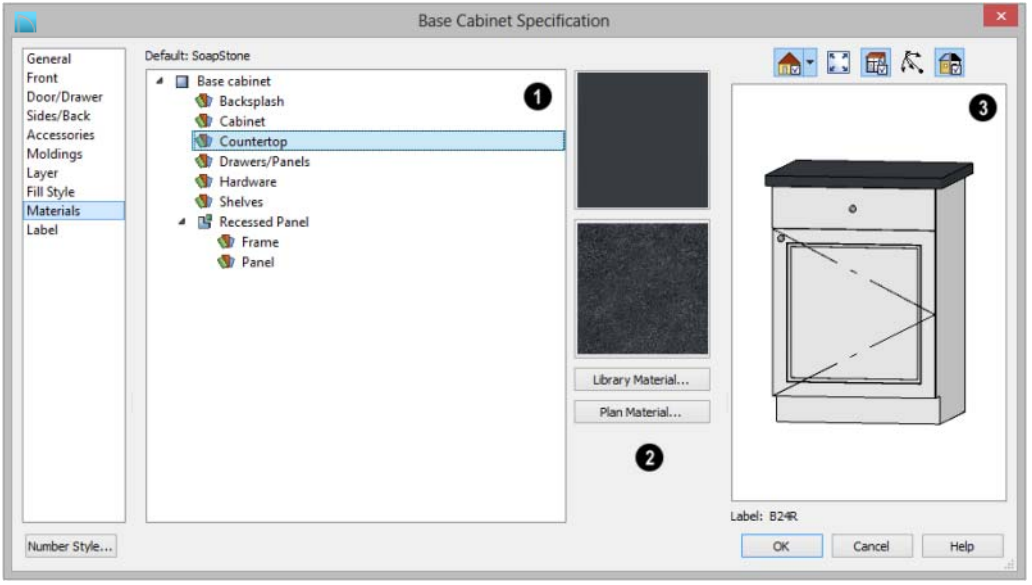
In a 3D view, select **3D> Material Painter> Material Eyedropper** and then move your mouse pointer over a surface in the view. The name of the material on that surface is stated on the left side of the Status Bar. Click on the surface to load its material assignment. The pointer then changes to indicate that the material is ready to be applied to another object using the **Material Painter** tool. Depending on the currently active **Material Painter Mode**, you can continue to apply the material to the surfaces of other objects.

Materials Panel

The specification dialogs for most objects include a Materials panel. Select an object or a group of similar objects and click the **Open Object** edit button to open the specification dialog for that selection.

On the Materials panel, you can specify material assignments for the components that make up that object. When a new material is assigned, the appearance of the preview image on the right side of the dialog updates.

There is also a Materials panel in the **Symbol Specification** dialog. See “Symbol Specification Dialog” on page 1159.



❶ The tree list on the left side of the panel lists the components of the selected object that can be assigned unique materials. Some objects may have only one component while more complex objects may have many. In addition, some components contain additional sub-components, which display separately in the components tree list.

- Click on a component in the tree list to select it and assign a new material to it.
- If the selected component belongs to a symbol object from the library, you can click on it a second time to rename it. See "Native Objects vs Symbols" on page 821.

❷ The two boxes to the right of the tree list display previews of the color, pattern, and texture of the material assigned to the selected component. If "No Texture" displays in the preview window, either the material has no texture assigned or the texture file could not be found on the system.

- Click **Library Material** to open the **Select Library Object** dialog. Select a material and click **OK** to assign that material to the selected component. See "Select Library Object Dialog" on page 816.
- Click the **Plan Material** button to open the **Plan Materials** dialog and select a material from those already used in your plan. See "Managing Plan Materials" on page 839.

❸ A preview of the selected object displays on the right side of the panel. To view material textures, select **Standard** as the View Type; to view material patterns, select **Vector View**. See "Dialog Preview Panes" on page 38.

Viewing Materials

Textures display in Ray Trace views and most Rendering Techniques, while patterns display in Technical Illustration, Line Drawing and Vector Views. See "Displaying 3D Views" on page 885.

In Technical Illustration, Line Drawing and Vector Views, you can turn the display of material patterns on and off by selecting **3D> Toggle Patterns**  . See "Rendering Techniques" on page 928.

When most other Rendering Techniques are used, you can turn the display of textures on and off by selecting **3D> Camera View Options> Toggle Textures**  .

If you receive an error message regarding a missing file when creating a 3D view, your plan might contain two textures of the same name or textures that did not originally come with the program and are not currently saved in the library.

To resolve this, find the original texture file named in the error message and copy it (while recreating its path) into the "Old Textures" folder. The next time Chief Architect is opened, it will find the missing file and correctly show the texture.

Editing Materials

Much like objects, materials in Chief Architect can be edited so that they better suits your design needs. There are two approaches to material editing:

- Select a material in an unlocked library in the Library Browser, edit it, and your changes will be used when you next use the material in any plan. Changes made in this manner do not affect materials already in use in a plan.
- Apply a material to an object in a plan and then edit that applied material using either the **Plan Materials** dialog or **Adjust Material Definition** tool. Changes made in this way will affect any instances of that material in the current plan only.

Editing the material applied to an object is not the same as applying a different material to that object. See “The Material Painter” on page 828.

Library Browser

Right-click on a material in an unlocked library and select **Open** from the contextual menu to open the **Define Material** dialog for that material. See “Define Material Dialog” on page 841.

Plan Materials

Select **3D> Materials> Plan Materials** to open the **Plan Materials** dialog for the current plan. Select a material and click the **Edit**, **Copy**, or **New** button to open the **Define Materials** dialog. You can add a newly defined material to the library from the **Plan Materials** dialog by selecting it and clicking the **Add to Library** button. See “Plan Materials Dialog” on page 840.

Adjust Material Definition

The **Adjust Material Definition** tool is useful for changing plan materials directly from a 3D view.

Select **3D> Materials> Adjust Material Definition** and then click any surface in a 3D view to modify the material currently assigned to that surface in the **Define Material** dialog. See “Define Material Dialog” on page 841.

Changing a material definition with this tool affects all objects in the current plan that are using that material but does not affect any materials saved in the library or materials used in other plans. See “Adding Library Content” on page 807.

Creating Materials

Chief Architect provides a wide variety of materials - including numerous name brand material catalogs - that are ready to download and use. If you cannot find a suitable material, you can edit an existing material or create a new one. See “Editing Materials” on page 833.

In the Plan Materials Dialog

There are two ways to create a new material in the **Plan Materials** dialog. See “Plan Materials Dialog” on page 840.

- Click the **New** button to create a new material for use in the current plan file.
- Select a material and click the **Copy** button to make a new material based on the original, which can then be edited and used in the current plan.

To make a plan material available for use in other plans, select it and click the **Add to Library** button. See “Adding Library Content” on page 807.

In the Library Browser

Materials can be created in the Library Browser, making them available for use in any plan. See “Adding Library Content” on page 807.

In the directory pane of the Library Browser, right-click on an unlocked folder and select **New> Material** from the contextual menu. See “Using the Contextual Menus” on page 800.

The **Define Material** dialog opens, allowing you to specify the new material’s attributes. See “Define Material Dialog” on page 841.

Using Paste Image

A new material can be created by copying an image that will serve as its texture to the Windows Clipboard, then navigating to a Chief Architect window and selecting **Edit> Paste> Paste**  from the menu. See “Paste” on page 169.

From a Screen Capture

You can use the **Screen Capture** tools to create a texture based on a screen capture from any application and use it to create a new material in the My Materials library. See “Creating Screen Captures” on page 1121.

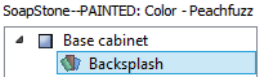
By default, materials created from a screen capture will be set to **Stretch to Fit**. If you would like the texture to tile instead, uncheck this box. See “Stretch to Fit” on page 836.

Blending Materials

 In 3D views, you can create a new material by blending a solid color such as a paint color with a textured and/or patterned material. Select **3D> Material Painter> Blend Colors With Materials** to toggle this feature on or off. See “Blend Colors With Materials” on page 829.

The result is a new material that is saved in the current plan. It can be found in the **Plan Materials** dialog, edited as needed, and added to the library if desired. See “Plan Materials Dialog” on page 840.

Materials created using the **Blend Colors With Materials**  tool are given the name of the patterned/textured material with the extension “--PAINTED:” followed by the name of the solid color material.



Convert Textures to Materials

 An entire folder of textures can be converted into a library of materials. Select **3D> Materials> Convert Textures to Materials** and then browse to a folder of

textures on your computer. The converted library folder assumes the same file structure as the original folder.

Create Plan Materials Library

Select **3D> Materials> Create Plan Materials Library** to create a library of materials based on the materials used in the current plan. This is useful for converting material template plans, a common way to store material definitions in prior versions of Chief Architect, into a materials library. This command creates a new library in the Materials category using the same name as the plan. Adding materials to the library individually allows you to store the material within the existing directory structure.

Mapping Patterns and Textures

Materials have two attributes that determine what they look like in 3D views: patterns and textures. See “About Materials” on page 828.

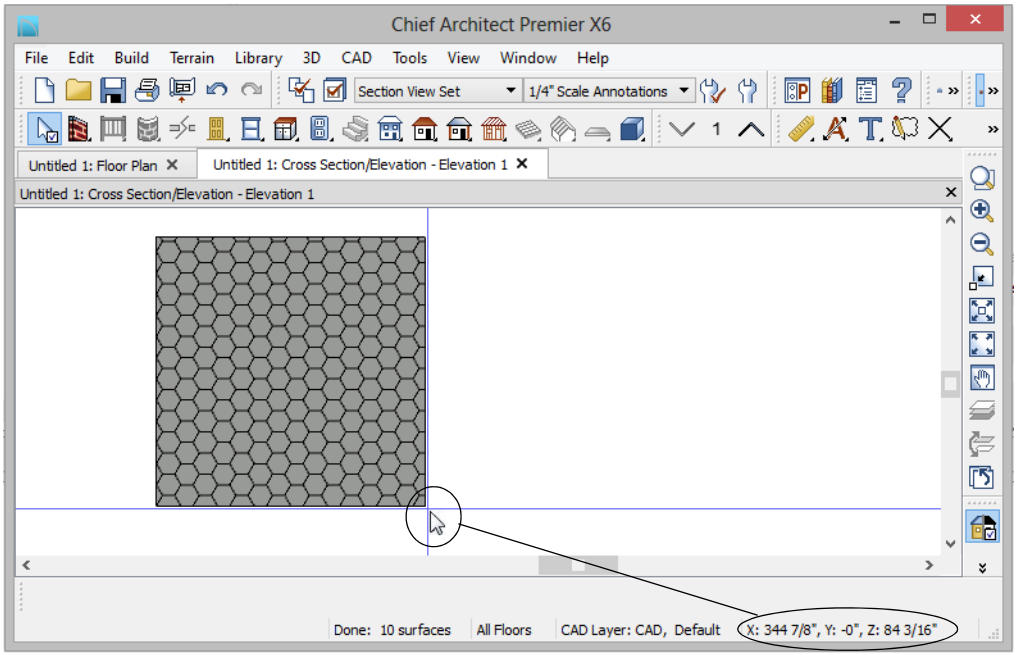
Both patterns and textures have points of origin, which determine where the pattern or texture begins on an X/Y axis. By default, this origin is 0,0; however, you can specify a different origin in the **Define Material** dialog.

- The origin of a texture can be set either globally or independently for each object. By default, texture mapping is per object. See “Texture Panel” on page 846.
- The origin of a pattern is always per object. See “Pattern Panel” on page 844.

If a texture is set to map globally, it may not look right on some surfaces in 3D views. If this is the case and you do not wish to map the texture independently on each object, you can create a copy of the material for each surface that requires modification and specify its texture’s origin.

Determining the Origin

Before a new origin can be specified, the display of coordinates in the Status Bar should be enabled. See “The Status Bar” on page 39.



The pointer's current coordinates display in the Status Bar

To determine origin coordinates on the horizontal plane, place your cursor over the origin location in floor plan view. When the pointer is in the position you want to establish as the material origin, take note of the coordinates that display in the Status Bar.

To determine origin coordinates on the vertical plane, place your cursor over the origin location in a cross section/elevation view.

Once you have taken note of the new origin coordinates, enter them on either the Pattern or Texture panel of the **Define Material** dialog. See "Define Material Dialog" on page 841.

A texture or pattern origin is a property of the material rather than of the object that the material is assigned to. When an object is moved, the pattern or texture maintains its absolute position and may not look right. It is a good idea to assign pattern or texture origins only after the position of the object has been finalized.

If you have multiple objects using the same material, they all share the same origin. Duplicate materials can be created if you want different origins specified for the same texture or pattern.

Stretch to Fit

Some special textures, often used for artwork, do not tile. Instead, these textures resize to stretch across any surfaces that they are applied to. Materials that behave this way

are specified as **Stretch to Fit** in the **Define Material** dialog.

To display an artwork texture, first place a wall or desk frame in your plan. A selection of both are available in the library. See “Placing Library Objects” on page 814.

Next, simply apply a material specified as **Stretch to Fit** to the center portion of the frame. See “The Material Painter” on page 828.

For more information about creating and using custom materials, see “Materials Tutorial” on page 129 of the User’s Guide.

Material Types

Every material is classified by **Type** in the **Define Material** dialog. See “General Panel” on page 842. The Type defines how the material is calculated in the Materials List. Some but not all Types are associated with patterns that display in Vector Views. See “Vector View” on page 928.

Not every Type is calculated in the Materials List. Those that are are only calculated when assigned to structural components like wall, floor and ceiling, or roof layers; slabs; or generic objects like Primitives.

Following are the available Material Types and their characteristics:

Type	Pattern	Options	Materials List
Framing	None	n/a	Calculates stick framing quantities when assigned to the Main Layer of a wall type definition, or a layer in a floor or ceiling structure or finish definition. See “Framing” on page 561.
Brick	Typical staggered running bond brick course.	Height, Length, Depth and Mortar Width.	Calculates the number of units based on the total surface area. For a masonry wall with two layers of brick, create a wall type with two layers to get the right count. This Type can be specified for anything using this style of layout, such as plywood with staggered joints.
Strip	Parallel lines.	Height, Grouping, and Overlap Amount.	Calculates lineal footage based on the surface area and the height of the strip minus the Overlap amount. Grouping can be used to model a material that has a repeating pattern across its width.

Type	Pattern	Options	Materials List
Sheet	None	n/a	Calculates the number of sheets required to cover the surface area.
Gap	None	n/a	Gap materials create a space between materials. This is equivalent to defining no material at all and is not calculated in the Materials List.
Area	None	n/a	Calculates the total surface area.
Volume	None	n/a	Calculates cubic feet (meters).
Concrete	None	n/a	Calculates cubic yards (meters).
Tile	Grid	Height, Width, Thickness, and Joint Width.	Calculates the number of units required to cover the surface area.
Shingles	Rows of staggered rectangles.	Height, Width, Thickness, and Overlap Amount.	Calculates the number of shingles required to cover the surface area.
Flooring	None	n/a	Calculates the total surface area.
Shakes	Staggered rows of uneven rectangles.	Height, Width, Thickness, and Overlap Amount.	Calculates the number of shingles required to cover the surface area.
Herringbone	Herringbone.	Height, Length, Depth and Mortar Width. Height and Length are restricted to a 2:1 ratio.	Calculates the number of units required to cover the surface area.
Octagon	Octagons and small squares.	Height, Length, Depth and Mortar Width. Height and Length refer to the small square edges and are restricted to a 1:1 ratio.	Calculates the number of units required to cover the surface area. Units are composed of one octagon and four squares.
Hexagon	Hexagon	Height, Length, Depth and Mortar Width. Height and Length are restricted to a 1:1 ratio..	Calculates the number of units required to cover the surface area.
Parquet	Square parquet units	Size.	Calculates the required number of parquet units to cover the surface area.

Type	Pattern	Options	Materials List
Textured	Similar to a Sand fill style.	Spacing.	The Materials List does not calculate this material Type.
Earth	Alternating hatch pattern similar to Parquet.	Size.	The Materials List does not calculate this material Type.
Stars	Six sided stars.	Size.	The Materials List does not calculate this material Type.
Custom	Multiple options	Depends on the selected pattern.	Calculates the surface area. If you select Use Custom Pattern File, the Material Type will be Custom regardless of the selected pattern.

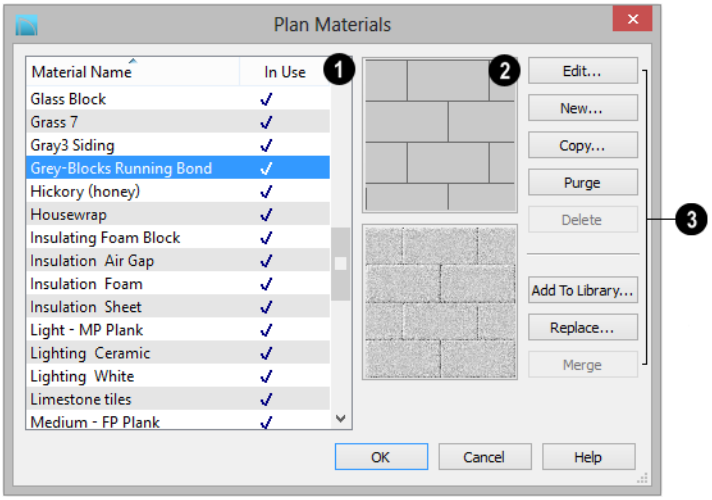
Managing Plan Materials

The **Plan Materials** dialog can be used to manage the materials used in the current plan. Select **3D> Materials> Plan Materials** to open this dialog.

When a material is applied to an object in a plan, a copy of that material is made and saved with the plan. If you access the **Define Materials** dialog through a menu or specification dialog, your changes affect that material wherever it is found throughout that plan. Other objects in that plan that use that material are also affected, but objects outside the current plan are not.

All materials that come with Chief Architect are stored in the Library Browser. You can also create your own materials and save them in the Library Browser. See “Creating Materials” on page 833.

Plan Materials Dialog



1 A scrollable, alphabetical list of the materials saved in the current plan displays here. Click on the name of a material to select it. Select multiple materials by holding down the Shift or Ctrl key.

- If there is a checkmark in the **In Use** column, the material is used by one or more objects in your plan or is defined as a default material for one or more objects in your plan.
- If the **In Use** column is empty, the material was used at one time but is no longer assigned to any objects or used as a default.

2 Previews of the selected material display to the right of the list of names. If multiple materials are selected at once, no previews will display.

- The top preview window shows the material's pattern, as seen in Vector Views.
- The bottom preview shows how the texture appears in rendered views. If the words "No Texture" display, either a texture has not been assigned to the material or the texture file could not be found on your system. In either case, the material will be represented in rendered views by a solid color.

3 The buttons on the right allow you to modify the selected material and manage the items in the list of material names.

- Click **Edit** to open the **Define Material** dialog for the selected material. See "Define Material Dialog" on page 841.
- Click **New** to open the **Define Material** dialog to create a new material.
- Click **Copy** to create a copy of the selected material and open the **Define Material** dialog where you can make changes to the copied material.
- Click **Purge** to remove all unused materials from the plan.

- Click **Delete** to remove the selected material from the plan. If the material is used in the model, you cannot delete it.
- Click **Add to Library** to add the selected material to the Library Browser, making it available for use in other plans. See “Adding Library Content” on page 807.
- Click the **Replace** button to replace the selected material with a new one from the library. Materials assigned to objects as well as those set in object defaults dialogs are affected. See “Select Library Object Dialog” on page 816.
- Click the **Merge** button to merge multiple selected materials into one. The material that is listed first is retained and all other materials in the selection set are deleted. Any instances of the deleted materials in the plan are replaced by the first material. Only available when multiple materials are selected.

You can create a folder containing all of the current plan’s Plan Materials in the Library Browser User Catalog. See “Create Plan Materials Library” on page 835.

Define Material Dialog

The **Define Material** dialog allows you to adjust how materials look in 3D views and can be accessed in a number of ways:

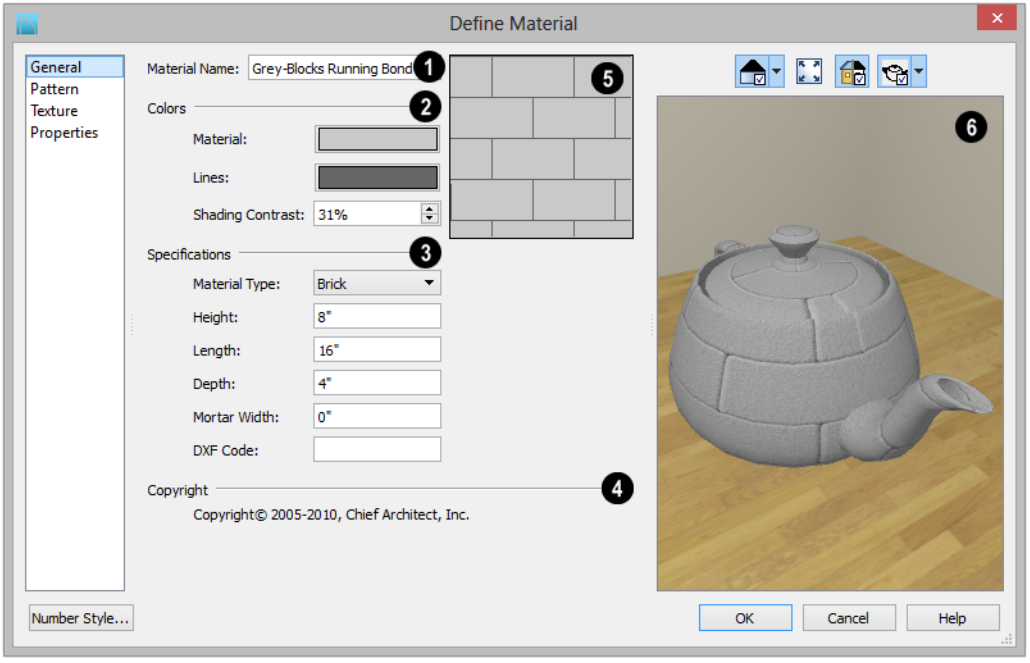
- Use the **Adjust Material Definition**  tool. See “Adjust Material Definition” on page 833.
- Select a material from the **Plan Materials** dialog and click **Edit**, **New**, or **Copy**. See “Managing Plan Materials” on page 839.
- Right-click on a material in an unlocked library in the Library Browser and select **Open** from the contextual menu. See “Using the Contextual Menus” on page 800.
- You can also right-click on an unlocked library and select **New> Material**.

If you select a manufacturer’s material, the options in the **Define Material** dialog may change. Some options are not available and the panels may vary.

If you access the **Define Material** dialog through a menu or specification dialog, your edits affect that material wherever it is found in the current plan. Other objects in that plan that use that material are also affected, but objects outside the current plan are not.

General Panel

The options on the General panel will vary depending on the selected material Type.



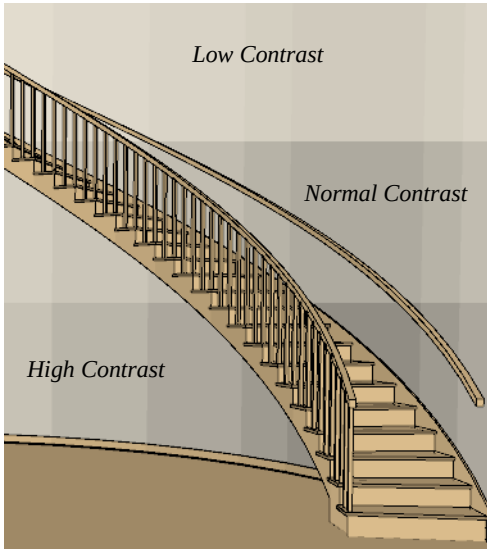
1 The **Material Name** displays here. You can type a different name if you wish. Renaming the material does not create a new material: it redefines the existing material. See “Creating Materials” on page 833.

2 Specify the **Colors** used to represent the material’s pattern in Vector Views. Click a color box to open the **Select Color** dialog and select a color. See “Color Chooser/Select Color Dialog” on page 853.

- The **Material** color displays in Vector Views. It is also used in Rendering Techniques that use textures when **Toggle Textures** is off, or if a material has no texture specified. See “In Vector Views” on page 887.

  This color also affects Transparent materials in rendered and ray trace views: choose white for a fully transparent material or black for one that is completely opaque. See “Properties Panel” on page 848.
- The color of the **Pattern Lines**, which display in Vector Views, displays here.
- Specify the **Shading Contrast**, which is the amount of contrast between surfaces at different angles to each other in Vector Views.

The following shows a curved wall with three different Shading Contrasts (created in a separate graphics program). Notice how the lowest contrast at the top appears almost flat.



❸ Specifications -

- Select a material **Type** from the drop-down list. The selected Type defines how - or whether - the material is calculated in the Materials List and may also be associated with a pattern. See “Material Types” on page 837.

Depending on the Type selected, additional settings may become available. Unless otherwise noted, these settings affect both the appearance of the material in Vector Views and how it is counted in the Materials List:

- Specify the material’s **Height**. This value is restricted to a ratio of the Length for Parquet, Octagon, and Hexagon material Types. When applied to a Strip, Shingles, or Shakes Type, the **Height - Overlap Amount = Exposure** of the material.
- Specify a Framing material’s **Spacing OC**. This value controls the spacing of wall studs only. See “Wall Framing” on page 562.
- Specify the material’s **Length**. This value is restricted to a ratio of the Height for Parquet, Octagon, and Hexagon material Types.
- Specify the **Thickness** of a material Type such as Tile. Thickness does not typically affect the appearance of the material in Vector Views, but is used for Materials List calculations.

Note: With the exception of wall framing, when a material is assigned to a wall type layer, floor or ceiling structure or finish layer, or to a structural roofing layer, the Thickness value set here is not used for materials list calculations.

- Specify the **Depth** of a Brick material. Depth does not typically affect the material’s appearance in Vector Views, but is used for Materials List calculations.
- Some patterns are defined by relative **Size**. The number does not have any units: it is more like a scaling factor. Material Types with a Size setting are not calculated in the Materials List.
- Specify the **Joint Width**, which is the grout width between pieces of Tile. This affects the size of tiles in Vector Views but not the size of the pattern lines.
- Specify the **Mortar Width** for a Brick or Block material. This affects the size of bricks and blocks in Vector Views but not the size of the pattern lines.

- Specify the **Overlap Amount**, which is the amount that a Strip, Shingles, or Shakes material overlaps itself. The **Height - Overlap Amount = Exposure** of the material.
- **Grouping** is used to describe the repeat of the pattern across the width of a Strip material. A 13" wide Strip with an Overlap Amt of 1" and a Grouping of 3 calculates materials based on a 12" coverage and a repeat line pattern of 4".
- This **DXF Code** holds up to five characters that appear at the end of the layer names used when exporting a 3D DXF file. See “Exporting a 3D Model” on page 1154.

❹ If the material has a **Copyright**, information about it will display here.

❺ A preview of the material’s pattern displays in the square pane. It updates as you change the material definition.

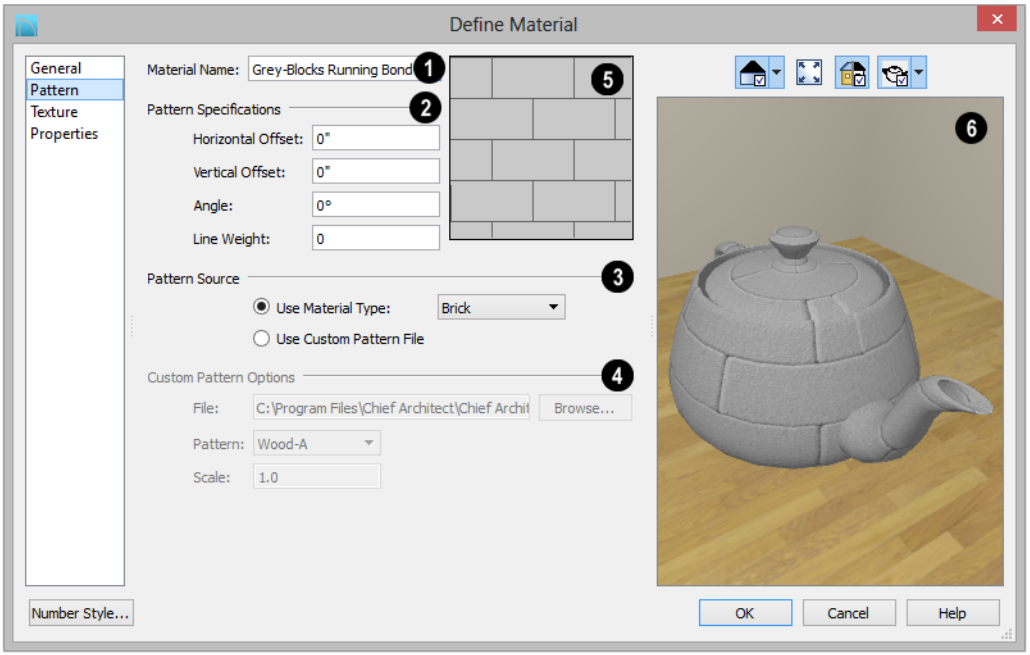
❻ A preview of the material applied to an object displays here and updates as changes are made to the material definition. Various options allow you to view different aspects of the material’s attributes:

- Display the material in Standard rendering, Vector View, or in a Ray Trace view.
- Zoom and orbit the object in the view.
- Toggle Color on or off.
- Select a Cube, Sphere, or Teapot shape.

Unlike other dialog previews, the Rendering Technique and object shape selected in this dialog’s preview are remembered during the current program session. See “Dialog Preview Panes” on page 38.

Pattern Panel

Patterns are used to represent materials in Technical Illustration, Line Drawing and Vector Views. Pattern Types also affect the Materials List. See “Patterns and Textures” on page 828.



1 The **Material Name** displays here. You can type a different name if you wish. Renaming the material does not create a new material: it redefines the existing material.

2 **Pattern Specifications** -

- Specify the **Horizontal** and **Vertical Offsets**, if needed, so the pattern displays correctly on surfaces in Vector Views. See “Mapping Patterns and Textures” on page 835.
- Specify the **Pattern Angle**, in degrees measured counterclockwise.
- Specify the **Line Weight**, which is the thickness of the pattern lines.

3 Specify the selected material’s **Pattern Source**, which affects both how the material looks in Vector Views and how it is calculated in the Materials List. See “Material Types” on page 837.

- Select **Use Material Type** to base the material’s pattern on the selected Type, then select a Type from the drop-down list. This drop-down is also found on the General panel.
- Select **Use Custom Pattern File** to specify a Custom pattern and enable the options below. When a Custom pattern is used, the material will be counted as an Area type in the Materials List.

4 The **Custom Pattern Options** are available when Use Custom Pattern File is selected, above.

- The **File** pathname of the selected **.pat** pattern file displays here.

- Click the **Browse** to open the **Custom Pattern File** dialog and select a pattern file. This dialog is a typical Open dialog, and opens to the Patterns folder in the program installation directory.
- Select a **Pattern** from the drop-down list. The items available depend on the **.pat** file selected above.
- Specify the pattern's **Scale**. If the pattern appears black in the square preview pane, this value should be increased.

❺ A preview of the material's pattern displays in the square pane. It updates as you change the material definition.

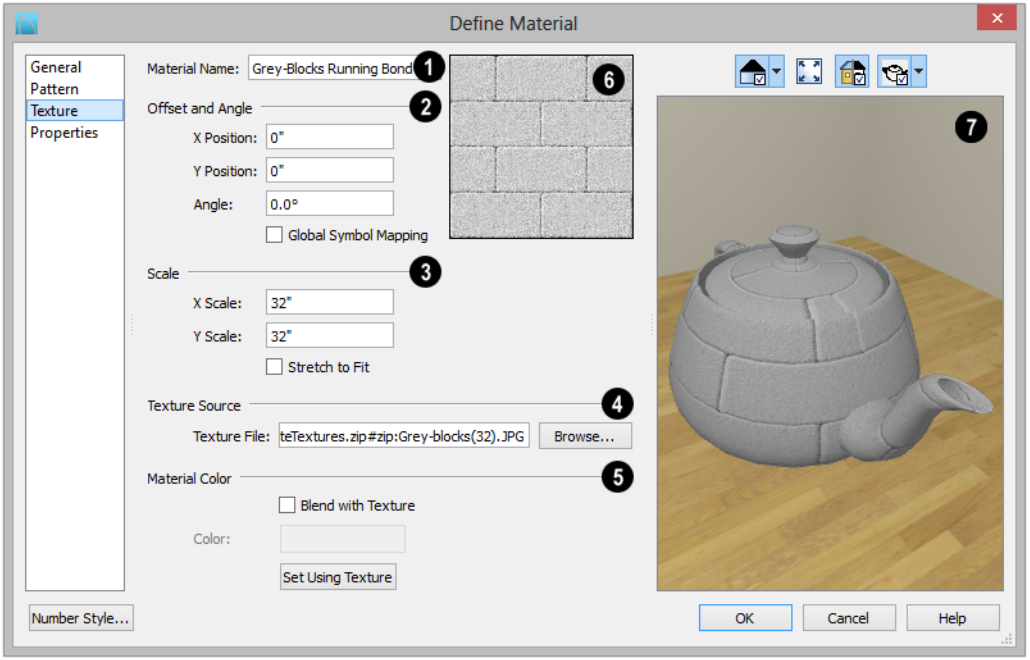
❻ A preview of the material applied to an object displays here and updates as changes are made to the material definition. Various options allow you to view different aspects of the material's attributes:

- Display the material in Standard rendering, Vector View, or in a Ray Trace view.
- Zoom and orbit the object in the view.
- Toggle **Color** on or off.
- Select an object shape: Cube, Sphere, or Teapot.

Texture Panel

In most Rendering Techniques, materials are represented by textures. See "Rendering Techniques" on page 928.

Transparency information may be contained on the alpha channel of a texture; if so, it is used in rendered views.



1 The **Material Name** displays here. You can type a different name if you wish. Renaming the material does not create a new material: it redefines the existing material.

2 **Offset and Angle** -

- Specify the **X** and **Y Positions** of the texture, if needed, so the texture displays correctly on surfaces in rendered views. See “Mapping Patterns and Textures” on page 835.
- Specify the **Angle** of the texture on the surfaces of objects, in degrees.
- Check **Global Symbol Mapping** to map the texture using the same origin on all objects. When unchecked, the origin is defined individually for each object. See “Mapping Patterns and Textures” on page 835.

3 Specify the **Scale** of the selected material’s texture.

- Adjust the **X Scale** and **Y Scale**, or height and width, of the selected texture.

If a rendered surface is larger than the area described by the Scale, the surface has “tiles” of the texture image. If it is smaller, only a portion of the texture is shown.

- Check **Stretch to Fit** to stretch the texture image to cover each surface it is applied to. Stretch to Fit is typically used for artwork or photography in a frame.

Note: Changing the scale or selecting Stretch to Fit can cause textures to appear distorted if applied to a surface with a different aspect ratio than the original texture image.

❹ **Texture Source** - Displays the path and file name of the selected texture.

- Click the **Browse** button to browse to a texture file saved on your computer. Supported file formats are **.jpg**, **.bmp**, **.png**, **.gif**, **.tif**, **.pcx**, **.tga**. See "Creating Materials" on page 833.
- You can also type or paste the full path name of a texture in the text field.
- Textures saved in **.zip** files can also be used.

To use a texture saved in a .zip file

1. Type or copy the full path name of the **.zip** file in the text field.
2. Directly after the path name, type #zip:, followed immediately by the name of the texture file including its file extension.

❺ Specify the characteristics of the **Material Color**. This can also be set on the General panel.

- Check **Blend with Texture** to apply the Material Color over the material's texture.

  When a new material is created using the **Blend Colors With Materials** tool, the resulting material has this box checked. See "Blend Colors With Materials" on page 829.
- Click the **Color** button to specify the Material Color.
- Click the **Set Material Color Using Texture** button to use the predominant color of the material's texture. See "Patterns and Textures" on page 828.

❻ A preview of the material's texture displays in the square pane. It updates as you change the material definition.

❼ A preview of the material applied to an object displays here and updates as changes are made to the material definition. Various options allow you to view different aspects of the material's attributes:

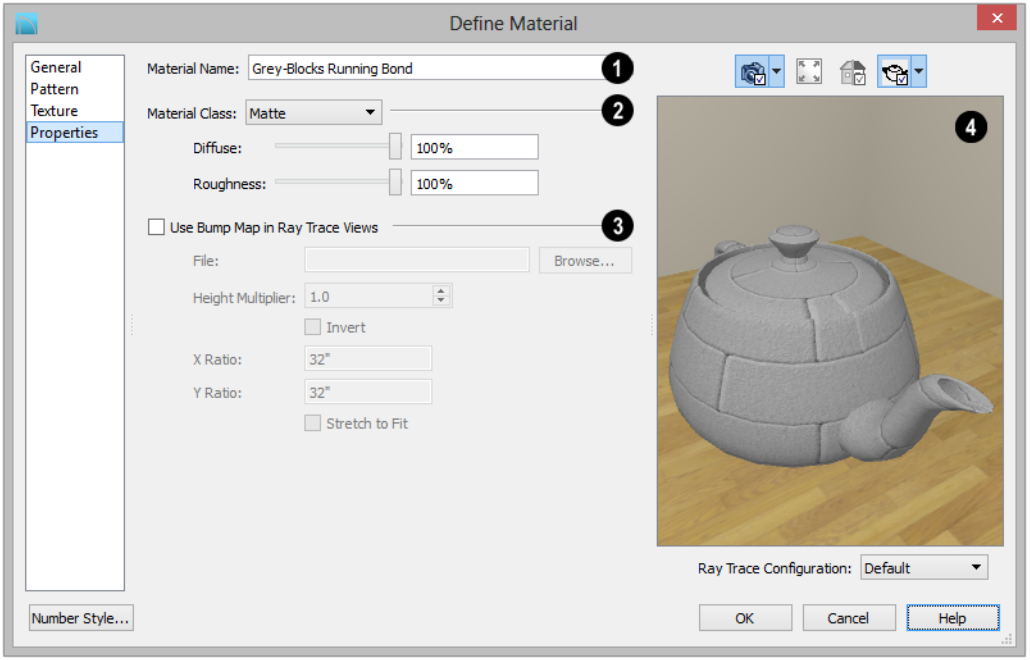
- Display the material in Standard rendering, Vector View, or in a Ray Trace view.
- Zoom and orbit the object in the view.
- Toggle **Color** on or off.
- Select an object shape: Cube, Sphere, or Teapot.

Properties Panel

The Properties panel controls how the material appears in most rendered 3D views and in Ray Trace views.

A material's rendered appearance is also affected by the Render settings in the **Preferences** dialog and the lights that have been placed in the model. See "Light Types" on page 918.

For special lighting effects on an object, use at least one point or spot light, and for these highlights to appear on large flat surfaces, select **Use Triangles** in the **Preferences** dialog. See "Render Panel" on page 122.



1 The **Material Name** displays here. You can type a different name if you wish. Renaming the material does not create a new material: it redefines the existing material.

2 Select a **Material Class** from the drop-down list. Each material class has its own set of visual characteristics.

- **General Material** - Most materials fall into this category, which gives you control over a number of properties.
- **Reflective** - Similar to General Materials, Reflective materials are reflective rather than specular.
- **Plastic** - Plastics are limited in that they are not specular, emissive, transparent, or reflective.
- **Shiny Metal** are also limited for a specific purpose. They are not diffusive, emissive or transparent, do not use the material's pattern or texture when ray traced.
- **Predefined Metal** use the scientifically measured physical properties of a selection of real-world metals. Predefined metals do not use the material's pattern or texture when ray traced, and their editing options are limited to Roughness and metal type.
- **Polished** materials represent surfaces with multiple layers, such as those that are glazed, varnished, or buffed. They are not emissive, transparent, or reflective, but have additional control over Roughness.
- **Mirror** is another class of material limited to a specific purpose. They are not diffusive, specular, rough, emissive, or transparent and do not use the material's

pattern or texture when ray traced. When Reflection in Mirrors is checked in the Preferences dialog, flat surfaces with a Mirror material will display reflections in camera views without ray tracing. See “Reflections” on page 913.

- **Translucent** - Similar to General Materials, Translucent materials are not emissive or reflective. Contrary to the name, Translucent materials are not transparent, either. They do have a Translucency setting, but it only applies to light coming directly from a light fixture and only takes effect in ray trace views. Ambient light or reflected light cannot pass through translucent materials so objects cannot be seen through translucent materials at all - even in ray trace views.
- **Transparent** is another material class limited for a specific purpose. Transparent materials are not diffusive, specular, rough, or emissive, but do allow you to specify how light bends when passing through the material.
- **Matte** is another material class limited for a specific purpose. Matte materials are not specular, emissive, transparent, or reflective.

Adjust the settings associated with the selected Material Class using the slide bar or by entering a value in the text box to specify the appearance of the material in 3D views in which textures are used.

- **Diffuse** controls the degree to which the material’s main color contributes to its appearance. Not available for Metal, Mirror, or Transparent materials.
- **Specular** controls how bright the material appears when illuminated by a point or spot light. It simulates the reflection of light off a surface. Not available for Reflective, Predefined Metal, Mirror, or Transparent materials.
- **Roughness** controls how shiny a material is when illuminated by a point or spot light. A material with a low Roughness value has a bright, round spot of light when rendered with a point or spot light shining on it. Not available for Polished, Mirror, or Transparent materials.
- **Emissive** controls how bright a material appears independent of the lighting in the scene. It can be used to simulate surfaces that are glowing with their own light, such as the glass on a light fixture. Only available for General materials.
- **Transparency** controls how opaque or transparent a material is. Most materials are opaque while some materials, such as glass, are partially transparent. In some situations, materials with transparency can slow down rendering speed. See “Speeding up 3D View Generation” on page 938. Only available for General, Translucent, and Transparent materials.

For maximum Transparency, specify the Material Color as white on the General panel of the dialog. A black material will be opaque regardless of its transparency setting.

For a completely transparent material, select the General Material class and set the Transparency to 100%.

- **Reflection** controls how reflective a material appears in ray trace views only. See “Ray Trace Views” on page 940. Click the **Color** button to select a color for light reflecting off the material. For most material classes, reflectivity is best seen at glancing angles to the surface. For

reflectivity from all angles, use a Mirror material. Not available for General, Plastic, Predefined Metal, Polished, or Matte materials.

- **Translucency** controls the degree to which light coming directly from a light fixture shines through the material. Only available for Translucent materials, this setting only affect ray traced views.
- Select a **Metal** from the drop-down list. Only available for Predefined Metal materials.
- **Brushed Metal** creates a brushed appearance for Predefined Metal materials.

Polished and Brushed Predefined Metals can have different amounts of roughness running in different directions on a given surface. These surfaces look different depending on the viewing angle.

- **U Roughness** produces reflective highlights oriented horizontally. Only available for Polished materials and Brushed Predefined Metal materials.
- **V Roughness** produces reflective highlights oriented vertically. Only available for Polished materials and Brushed Predefined Metal materials.
- **Index of Refraction** controls how much light bends when it passes through the material. A value of 1 is the lowest possible value and produces no light bending. Only available for Transparent materials.

❸ Check **Use Bump Map in Ray Trace Views** to enable the settings below and assign a bump map to the selected material. A bump map is an image file that makes a material appear non-flat in ray trace views. See “Bump Maps” on page 955.

- The full path name of the selected bump map image **File** displays here.
- Click the **Browse** button to browse to a bump map image file saved on your computer. Bump maps saved in **.zip** files can also be used. See To use a bump map saved in a .zip file, below.
- The **Height Multiplier** allows you to specify how drastic the effect of the bump map is. The default value is 1, but larger or smaller values may give better results, depending on the bump map. Values can be typed to 0.001 accuracy.
- Check **Invert** to correspond light areas in the image with low points in the bump map and dark areas with high points. When unchecked, the opposite occurs.
- Specify the **Ratio** of the bump map’s height (x) to its width (y) in inches (mm). If a Ratio of 32”x32”is used, the bump map tiles every 48” in both directions to cover each surface. If a surface is smaller than 48”x48”, only a portion of the bump map is used.
- Check **Stretch to Fit** to stretch the bump map to cover each surface it is applied to.

The **Ratio** and **Stretch to Fit** settings are available when the selected material does not have a texture assigned to it. When the material does have a texture assigned to it, these settings display for reference only and use the same values as the material’s texture. See “Texture Panel” on page 846.

❹ A preview of the material applied to an object displays here and updates as changes are made to the material definition. Various options allow you to view different aspects of the material’s attributes:

- Display the material in Standard rendering, Vector View, or in a Ray Trace view.
- Zoom and orbit the object in the view.
- Toggle **Color** on or off.
- Select an object shape: Cube, Sphere, or Teapot.
- Select a **Ray Trace Configuration** from the drop-down list to use in the preview. Only available when Ray Trace is the selected preview view type.

To use a bump map saved in a .zip file

1. Type or copy the full path name of the **.zip** file in the text field.
2. Directly after the path name, type #zip:, followed immediately by the name of the bump map file including its file extension.

Manufacturer Panel

If the selected material was copied from the Manufacturer library category, the Manufacturer panel lists contact information. See “Manufacturer Catalogs” on page 803.

Material Defaults

Most objects in the program have defaults dialogs which allow you to set up a variety of attributes, including materials, before the objects are created. Default Settings are accessed by selecting **Edit> Default Settings**. See “Preferences and Default Settings” on page 71.

The **Material Defaults** dialog serves two purposes. It allows you to:

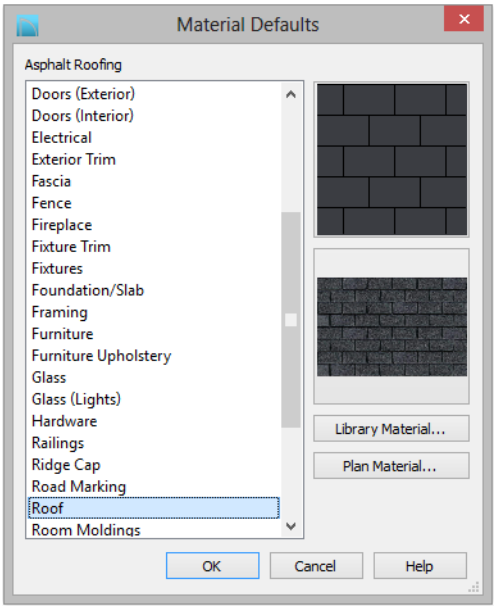
- Set the default materials for objects that do not have a defaults dialog. Fireplaces and furnishings from the library are examples of objects that do not have a defaults dialog.
- Set the initial materials that can then populate a variety of defaults dialogs for objects that do have them. **Door**, **Window**, and **Cabinet Defaults** are examples of defaults dialogs that can draw their material assignments from the **Material Defaults** dialog.

Because material defaults are Dynamic Defaults, you can also use the **Material Defaults** dialog to apply a material to multiple objects that share similar components. For example, the “Room Moldings” Material Default applies to the base, crown, and chair rail moldings that can be assigned to rooms, as well as to interior door and window casing. If you change this Material Default, all of these objects in the plan can be affected. See “Dynamic Defaults” on page 74.

Material Defaults Dialog

Select **Edit> Default Settings**  from the menu, select **“**Materials”, and click the **Edit** button to open the **Material Defaults** dialog.

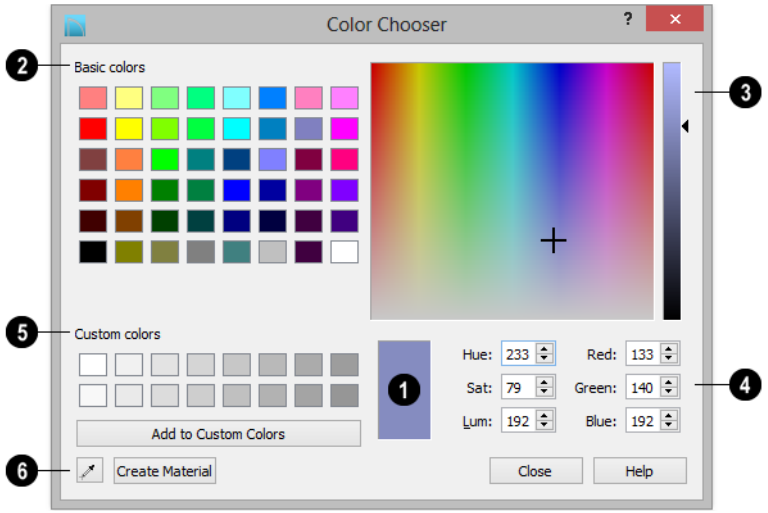
The settings here are similar to those on the Materials panel found in object specification dialogs throughout the program. See “Materials Panel” on page 831.



- Select a category from the scrollable list.
- Click the **Library Material** button or either material preview box to open the **Select Library Object** dialog. See “Select Library Object Dialog” on page 816.
- Click the **Plan Material** button to open the **Plan Materials** dialog. See “Plan Materials Dialog” on page 840.

Color Chooser/Select Color Dialog

The **Color Chooser** dialog is opened by selecting **Tools> Color Chooser**. The similar **Select Color** dialog can be opened by clicking on the color bar that can be found in many dialogs throughout the program.



1 The currently selected color displays in the rectangle at the lower center of the dialog. There are a number of ways to select a color in this dialog:

2 Click in any one of the **Basic colors** boxes to select it.

3 Click anywhere in the color spectrum area to select a color.

- The location of the selected color is identified by a crosshairs and its Hue, Saturation, and RGB values will display below and update as you click.
- Click anywhere in the vertical bar or drag the arrow to adjust the selected color's Luminosity and RGB values.

4 Define the selected color by specifying its **Hue**, **Saturation**, and **Luminosity** (HSL) or its **Red**, **Green**, and **Blue** (RGB) values.

5 Click in one of the **Custom colors** boxes to either select it as the new color or to specify it as the box for a new custom color to be defined.

- Click the **Add to Custom Colors** to add the currently selected color to the Custom Colors group.

6 Click the **Color Chooser Eyedropper**, then click anywhere on your monitor to select the color displaying at that location.

You can select a color from any program window. Before opening the Color Chooser dialog, make sure the desired color can be seen onscreen by tiling Chief Architect and the other program window.

- Click **Create Material** to add the color to the User Catalog in the library. The new material's name is "Custom Color" followed by its RGB values. Only available when the dialog was opened by selecting **Tools> Color Chooser**  .

If the **Select Color** dialog was opened via another dialog panel, click OK to apply the

currently selected color to the object's line or fill style, or to the material's pattern color.

Chapter 28:

View and Window Tools

The View and Window Tools let you control how views of your drawing are shown on screen, as well as toggle useful drawing aides on and off.

One layout file can be open at a time, but there is no limit to the number of plan files that can be open. The name of the file and the type of view displays at the top of each view window in its title bar. If the view is saved, its name also displays.

Chapter Contents

View Tools

The **View Tools** allow you to open and close the program's side windows, as well as toggle a variety of references and drawing aides. Select the **View** menu to access these tools. You can also add the **View Tools** parent button to your toolbars. See "Adding and Removing Buttons" on page 132.

Refresh Display redraws the current window to clean up extra lines, show missing items, and correct random on-screen effects caused by changes to the model. See "Refresh Display" on page 217.

Library Browser opens and closes the Library Browser side window. See "The Library" on page 797.

Project Browser opens and closes the Project Browser side window. See "Project Browser" on page 1093.

Aerial View opens and closes the Aerial View side window. See "Aerial View" on page 863.

Tool Palette opens and closes the Tool Palette, which will display related tools. See "Child Tool Palette" on page 130.

Status Bar displays or suppresses the Status Bar at the bottom of the program window. See "The Status Bar" on page 39.

Scrollbars displays and suppresses scrollbars on view windows. See "View Windows" on page 33.

Toolbars displays and hides the program's toolbars. See "Toolbars and Hotkeys" on page 129.

Color toggles the display of color in the current view. See "Color On/Off" on page 214.

Reference Grid toggles the display of the Reference Grid in all views in the current plan or layout file. See "Grid Snaps" on page 164.

Angle Snap Grid toggles the display of the Angle Snap Grid in all views in the current plan or layout file. See "Angle Snap Grid" on page 163.

Temporary Dimensions toggles the use of Temporary Dimensions when objects are selected. See "Temporary Dimensions" on page 980.

Arc Centers and Ends toggles the display of Arc Centers and Ends in the current view. See "Arc Centers and Ends" on page 192.

Line Weights toggles the display of Line Weights in all views in which lines are drawn. See "Line Weights" on page 1187.

Drawing Sheet toggles the display of the drawing sheet. See "Print Preview" on page 1187.

Zoom Tools

Zoom is used to magnify any given area on the plan or 3D view. Select **Window> Zoom**, then click and drag a marquee around an area on screen. When you release the mouse, the selected area expands to fill the screen.

When the zoom is complete, whatever tool was active prior to selecting the **Zoom**  tool automatically becomes active again. If another zoom is needed, click the **Zoom**  tool again.

Zoom In - Click to zoom in towards the screen center by a factor of two.

Zoom Out - Click to zoom out from the screen center by a factor of two.

Undo Zoom - Reverse the last zoom operation.

Fill Window - Fits all visible items on screen.

Fill Window Building Only - Fits all walls and railings on the current floor on screen.

Zooming With the Mouse Wheel

Use the mouse wheel to zoom in and out in plan and 3D view windows. Scrolling the mouse wheel one click up or down zooms in or out, centering on the location of your pointer and changing the zoom by about 10%.

Note: Depending on the configuration of your mouse, it may be necessary to hold down the Ctrl key while turning the mouse wheel. If zooming in and out are not working correctly, contact the manufacturer of your mouse and mouse driver for their assistance.

Zooming in 3D Views

Zooming in 3D views does not change the camera's location or field of view. Instead, the extents of the view are expanded or cropped. You can alternatively set cameras to zoom by adjusting their Field of View. See "Render Panel" on page 122.

Undo Zoom

Select **Window> Undo Zoom** to reverse the last zoom operation.

Note: Undo and Redo do not affect zoom.

Zoom  and **Undo Zoom**  are also available through the contextual menu. See "Contextual Menus" on page 36.

Fill Window

In floor plan view, a CAD Detail or a cross section/elevation view, select **Window> Fill Window** or press the **F6** key to view nearly everything on screen that is visible, including the Reference Display. CAD Points are the only objects that are not included when Fill Window is used.

If you are zoomed in so that only a portion of the drawing displays on screen, selecting **Fill Window** zooms out so that the entire view fits on the screen. If you are zoomed out so that the entire drawing is smaller than the screen, selecting **Fill Window** zooms in until the drawing fills the screen.

When the drawing sheet is shown, **Fill Window** zooms to the sheet borders.

Fill Window Building Only

Window> Fill Window Building Only is similar to **Fill Window**, but zooms in or out to so that all walls and railings in the view fill the current window. Other objects are ignored.

In 3D Views

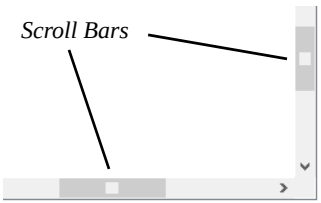
Fill Window and **Fill Window Building Only** behave slightly differently in perspective and orthographic 3D views. In perspective views, the original zoom factor is restored, while in orthographic views the camera's Field of View is adjusted so that all surfaces in the 3D view are included.

Panning the Display

There are four ways to pan the display without changing the zoom factor.

Using the Scroll Bars

One method is to use the scroll bars on the right and bottom edges of the window.



- Drag the square button in the bar itself in order to pan a larger distance.
- Click the end arrow keys on the scroll bars to shift the display in 12" increments.
- The 12" increment is defined in the **Plan Defaults** dialog under **Inches Scrolled by Arrow Key**. See "General Plan Defaults Dialog" on page 86.

Using the Arrow Keys

In floor plan view, the Shift + arrow keys on the keyboard work exactly like clicking the arrow buttons on the scroll bar. They shift the display according to the number of inches defined in the **Plan Defaults** dialog.

Using the Mouse

If you have a wheel mouse, you can pan the display by pressing the middle mouse button, or wheel, and moving the mouse in the direction you would like to pan. When the middle mouse button is held down, the pointer changes to a hand icon.

In the Mac version of Chief Architect, you can pan using the left mouse button and Command key.

Mouse drivers sometimes have other functions assigned to the wheel and buttons. These override the Chief Architect setting.

Using a Mac Trackpad

In the Mac version of Chief Architect, you can two finger drag to pan the display. See “Using a Trackpad” on page 33.

Using the Pan Window Tool

The **Pan Window** tool works much like the mouse wheel method.

- Select **Window> Pan Window** . The pointer changes to a hand icon. Click and drag to pan the window. The program reverts to the previously active tool when you release the mouse button.
- Double-click the **Pan Window** tool and the command remains active.

Working in Multiple Views

Although only one layout file can be open at a time, there is no limit to the number of plan files that can be open, nor is there a limit to the number of plan view windows that can be open. The name of the file and the type of view is stated at the top of each view window in its title bar as well as in its tab. If the view is saved, its name displays instead of the view type.

By default, Chief Architect uses a tabbed document interface, which means that when more than one view window is open in the program window, each open window will have a tab that displays in a row above the currently active view.

- Each tab states the name of file and either the name of the view or the view type. Click on a tab to make it the active view.
- If there is not enough room in the program window to display all tabs, left and right arrow buttons allow you to scroll through the tabs.

There is no limit to the number of 3D view windows that you can have open at a given time; bear in mind, though, that each window demands use of your computer’s resources and that you may see poor performance if too many views are open. See “3D Views” on page 867.

There are several ways to close a view window. See “Closing Views and Files” on page 68.

Tiling Views

As an alternative to tabbed views, windows can instead be tiled. Tiling allows you to display multiple views in a single Chief Architect window so you can see the results of changes in floor plan view in 3D or vice versa. It can also be useful for copying objects from one plan to another.

Floor plan view and a camera view Tiled Vertically

There are several ways to create tiled views:

- Click and drag a view window's title bar or tab into the part of the drawing area that you would like it to be. When a highlighted space is created, release the mouse button.
- Select **Window> Tile Horizontally** to display views in a horizontal orientation, one above the other.
- Select **Window> Tile Vertically** or press Shift + F6 on the keyboard to display views in a vertical, side by side, orientation.

Views are tiled left to right or top to bottom in the order in which they were last active: the most recent view is on the left or at the top, while least recent is on the right or on the bottom.

- To activate a view, click on its title bar or anywhere in the view window. Note that any changes you make in the active window are reflected in other views as well.
- To end window tiling, select **Window> Tab Windows**. You can also end tiling by double-clicking on the title bar of the program window.

Multiple Program Windows

To create a second program window, click and drag the title bar or tab of a view window completely out of the current program

window: for example, onto a second monitor. A second Chief Architect program window will be created with its own menu and toolbars.

Although the two windows are separate, they nevertheless constitute a single launch of the software, so only one of them can have an open layout file.

Swapping Views

There are a number of ways to switch between open view windows:

- Click on a view window's tab.
- Select **Window> Swap Views** or press F7 to switch between the two most recent views.
- The **Swap Views** button toggles between the current view and the view that was current before it.
- Select **Window> Select Next Tab** or **Window> Select Previous Tab** to cycle through all open views in the order you prefer.
- In Windows, press the Ctrl + Tab (Next Window) or Ctrl + Shift + Tab (Previous Window) keys to cycle through all open views.
- On a Mac, press the Ctrl + } (Next Window) or Ctrl + Shift + { (Previous Window) keys to cycle through all open views.
- Select **Window> Show Layout** to switch to the layout file. Only available if a layout file is currently open. See "Layout" on page 1203.
- A list of all the views currently open is located at the bottom of the Window menu. Each view is identified by its name and what type of view it is. A checkmark is beside the view that is currently active. Select one to go directly to that view.

If more than eight view windows are open, **More Windows** will be the last item in the Window menu. Select this option to open the **Select Window** dialog:

Select the name of a view in the list and click **OK** to make it the active view.

> Note: The Window Menu Tools parent button can be added to the toolbars. See "Toolbar Customization Dialog" on page 135.

Aerial View

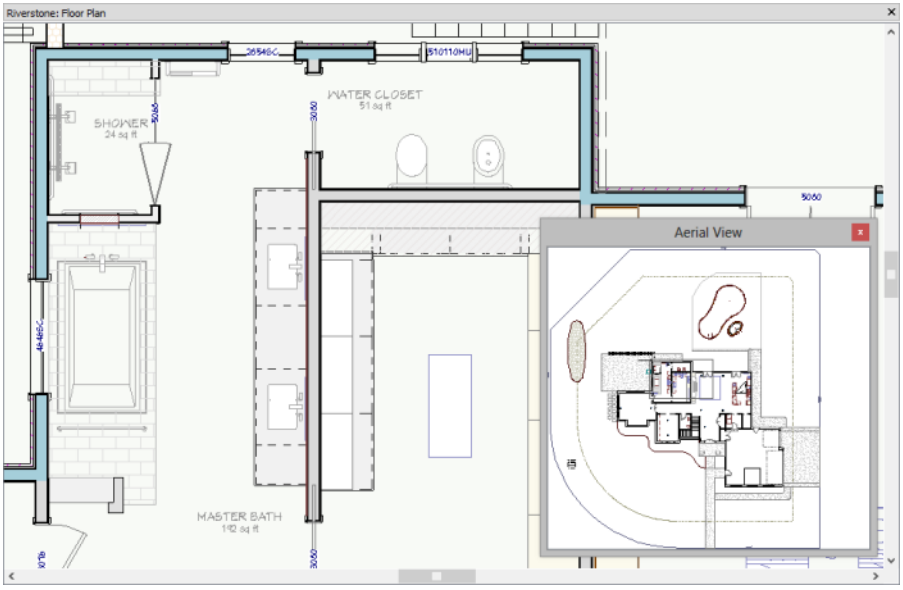
Aerial View is a side window that shows everything on the current floor or layout page along with a marquee that indicates the portion that is currently shown in the view window. This can make it easier to navigate in the view. Select **View> Aerial View** to open the **Aerial View** side window. See "View and Side Windows" on page 33.

Aerial View always everything in the current view, so it has no scroll bars. As you zoom or pan around the view window, the marquee in **Aerial View** moves and resizes in response so it represents the part of the view that is currently visible on screen.

Although Aerial View can be open regardless of the type of view that is active, it only

displays information when a floor plan view or a layout page is active.

Aerial View is initially docked on the right side of the window; but like other side windows, it can be moved to any other edge or allowed to float.



The grey border that displays in the Aerial View window represents the extent of the floor plan view.

- The grey marquee that displays in Aerial View represents the extents of what is currently visible on screen. This marquee updates if you zoom or pan in the view.
- Use the left mouse button to drag a new marquee within the **Aerial View** side window. The view updates to match.
- Use the right mouse button to move ✣ the existing marquee within the **Aerial View** window. The focus of the view window updates to match.
- No matter what tool is active, when you move the pointer to the **Aerial View** window and drag a marquee, the floor plan view zooms in on that area.
- The display of objects in **Aerial View** is controlled by the default layer set for Aerial Views. Since the purpose of Aerial View is to enhance navigation in plan view, you may want to turn off layers that clutter and slow it down. See “Layer Set Defaults” on page 146.

Closing Views

If a view is still needed, swap to a different view without closing the current views. If, however, a view is no longer neede, it can be closed. See “Closing Views and Files” on page 68.

Chapter 29:

3D Views

Little preparation is needed to create a 3D view of a model: simply click a button to create an overview or click and drag to create a camera or cross section/elevation view.

To improve the quality of the rendering and create a custom look, you can adjust lighting and edit the materials used in the plan. You can create Final and Ray Trace views that are even more realistic. See “Rendering and Ray Tracing” on page 911.

Many objects can be placed and edited in 3D views, and any camera view or overview can be saved or even used to record a walkthrough. See “Pictures, Images, and Walkthroughs” on page 1101.

Chapter Contents

OpenGL and Hardware

Chief Architect features an easy to use rendering engine that makes use of OpenGL rendering technology, which has good hardware support on most video cards.

To take full advantage of the rendering capabilities of Chief Architect, a graphics card or chipset that supports OpenGL 2.1 or higher hardware acceleration is required.

Types of 3D Views

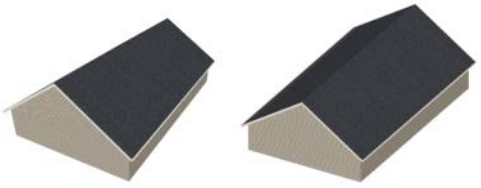
There are three categories of 3D views in Chief Architect: camera views, overviews and cross section/elevation views. Each of these view types can be generated using a variety of rendering techniques. See “Rendering Techniques” on page 928.

Every 3D view is also either orthographic or perspective in nature. Cross section/elevation views are always orthographic while camera views are always perspective. You can choose to generate overviews as either orthographic or persective.

Perspective and Orthographic Views

Perspective views have a focal, or vanishing, point. Surface edges and lines that would be parallel in real life appear to converge towards that focal point, and objects closer to the camera appear larger while objects farther from the camera appear smaller.

Orthographic views do not have a focal or vanishing point. Parallel surface edges and pattern lines appear parallel in these views and objects appear to be the same size regardless of their distance from the camera.



Perspective Overview *Orthographic Overview*

Perspective views display 3D objects much the way that they appear to the eye in real life, so they are ideal for presentation views. By default, perspective views are created using the Standard rendering technique.

Orthographic views, on the other hand, are useful for technical drawings. By default, orthographic views are created using the Vector View technique.

Rendered and Vector Views

3D views can be generated using a variety of different rendering techniques. See “Rendering Techniques” on page 928.

Most rendered views represent materials using textures. Surface edge lines are generally not drawn and lighting is often modeled, creating results that range from a photorealistic appearance to artistic painting styles. Standard rendered views can also be

Ray Traced for additional realism. See “Ray Trace Views” on page 940.

Vector Views are non-photorealistic views in which objects are drawn using surface edge lines, or vectors. Lighting is not calculated, and materials are represented using pattern lines and solid colors, making Vector Views quicker to generate and ideal for layout drawings and high resolution printing.

Defaults and 3D Preferences

There are a number of defaults and preference settings that allow you to control the initial characteristics of 3D views.

Camera positioning, field of view and related initial settings for camera views are specified in the **Camera Defaults** dialog. See “Camera Defaults Dialog” on page 869.

Ambient lighting settings, 3D backdrop information, and other settings that affect 3D views as they are generated are found in the **3D View Defaults** dialog. See “3D View Defaults Dialog” on page 873.

Which objects display in a 3D view and which do not is controlled in the **Layer Display Options** dialog. You can specify which layer set is initially used when a view is created by each of the 3D View tools. See “Layer Set Defaults Dialog” on page 156.

3D views can be generated using any of the **Rendering Techniques**. See “Rendering Techniques” on page 928.

The initial settings for each Rendering Technique can be set in the **Rendering Techniques Defaults** dialog. See **“Rendering Technique Options” on page 931**.

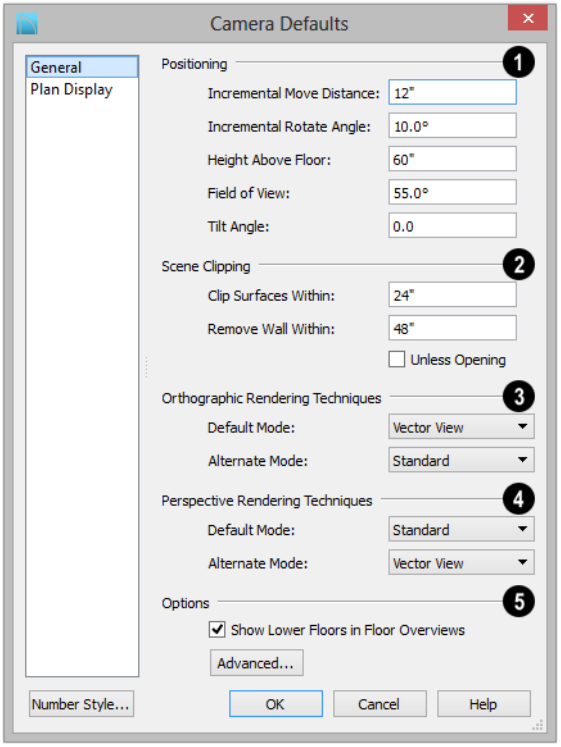
The Render panel of the **Preferences** dialog controls settings for Render Previews and Final Views. See “Render Panel” on page 122.

Camera Defaults Dialog

Default Settings can be accessed by selecting **Edit> Default Settings** or by double-clicking either **Perspective View Tools** parent button or any Camera toolbar button.

The settings in the **Camera Defaults** dialog affect how a camera clips, captures and renders views, how it displays in floor plan view, how it is positioned, and how it moves. Once a camera is created, these settings can be customized in the **Camera Specification** dialog. See “Camera Specification Dialog” on page 901.

General Panel



1 The **Positioning** settings control the position and orientation of the camera. See “Repositioning Cameras” on page 889.

- The **Incremental Move Distance** controls how far the camera moves each time you Pan in any direction or Dolly forwards or backward. For interior views a small number is good, but for exterior you may want a larger increment.
- The **Incremental Rotate Angle** defines how many degrees the camera rotates each time you Tilt, Orbit, or Dolly side to side. A setting of 90° would make one full rotation in four moves.
- The **Height Above Floor** defines the height that the camera is above the floor level for the current floor.
- The **Field of View** defines the camera’s field of vision in angular degrees.
- The **Tilt Angle** is the camera’s angle relative to the horizon. 0° is horizontal, 5° points slightly upward, and -5° points slightly towards the ground.

2 The **Scene Clipping** settings determine whether surfaces located close to the camera display in the view.

Both of these distances are measured in a radius from the camera position:

- **Clip Surfaces Within** - Objects within this distance from the camera do not display.
- **Remove Wall Within** - Walls within this distance from the camera do not display.
- Check **Unless Opening** to display a wall that is inside the **Remove Wall Within** range if the camera is pointing through a door or window in that wall.

❸ **Orthographic Rendering Techniques** - Specify which Rendering Techniques are used to create Orthographic 3D views. See “Rendering Techniques” on page 928.

- Select a Rendering Technique from the drop-down list to be used when a view is created using the **Default Mode**  . See “Edit Behaviors” on page 176.
- Select a Rendering Technique from the drop-down list to be used when a view is created using the **Alternate Mode** Alt.

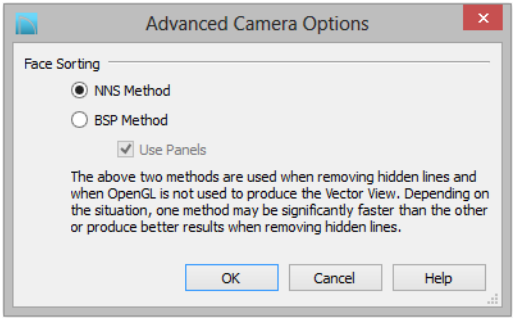
❹ **Perspective Rendering Techniques** - Specify which Rendering Techniques are used to create Perspective 3D views. See “Perspective and Orthographic Views” on page 868.

- Select a Rendering Technique from the drop-down list to be used when a view is created using the **Default Mode**  .
- Select a Rendering Technique from the drop-down list to be used when a view is created using the **Alternate Mode** Alt.

❺ **Options**

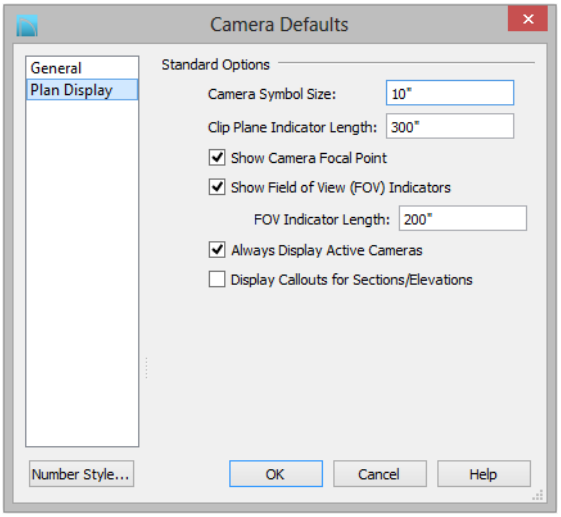
- Uncheck **Show Lower Floors in Floor Overviews** to show only the current floor in Floor Overviews. When checked, the current floor plus any floors beneath it are shown. See “Floor Overview” on page 880.
- Click the **Advanced** button to open the **Advanced Camera Options** dialog and specify how hidden lines are removed when OpenGL is not used. See “OpenGL and Hardware” on page 868.

Advanced Camera Options Dialog



- The **NNS Method** is Chief Architect’s default method. In most cases, it is both faster and requires less memory than the BSP Method.
- Select **BSP Method** to use an alternative method. This method may provide better results in some situations; however, it may be slower and require more memory.
- When the BSP Method is used, checking **Use Panels** may increase speed and reduce memory usage.

Plan Display Panel



The **Plan Display** settings control the appearance of the camera's symbol in floor plan view. See "Using the Edit Handles" on page 893.

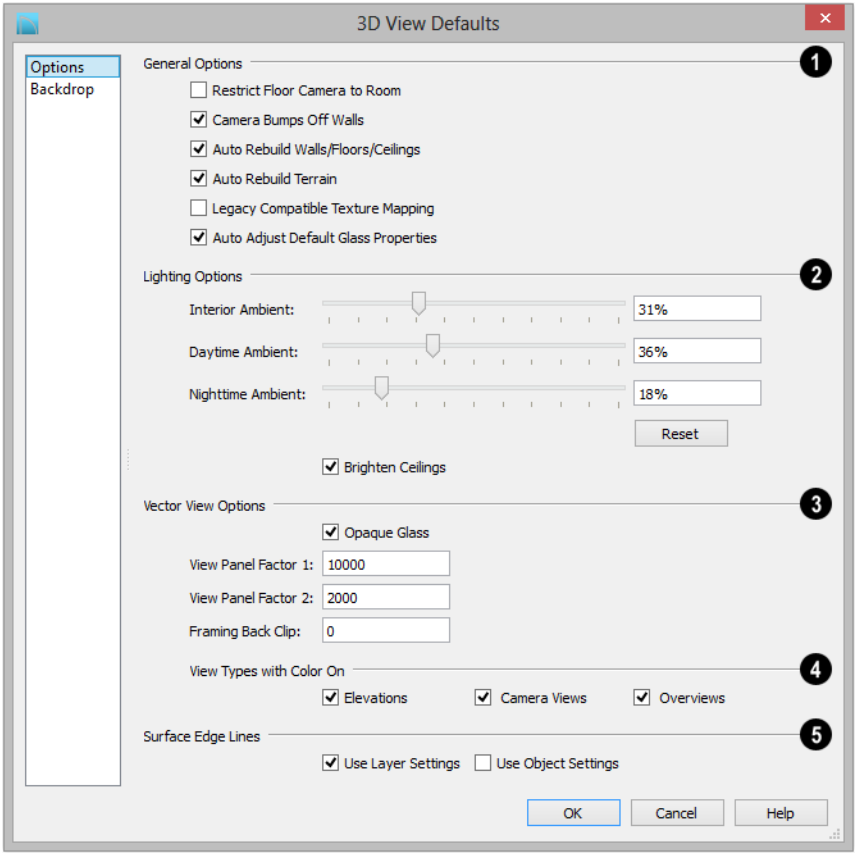
- Specify the **Camera Symbol Size**, measured in plan inches (mm). This is also the default size for Walkthrough Path Key Frames. See "Walkthroughs" on page 1124.
- Set the **Clip Plane Indicator Length** for Cross Section/Elevation, Backclipped Cross Section, and Wall Elevation camera symbols. The length is measured in plan inches (mm). See "Cross Section/Elevation Views" on page 881.
- Check **Show Camera Focal Point** to display the camera's focal point in floor plan view.
- Check **Show Field of View Indicators** to display the field of view indicator for cameras in floor plan view. You can also change the **FOV Indicator Length**, which is measured in plan inches (mm).
- Uncheck **Always Display Active Cameras** to turn off the display of active camera symbols when the "Cameras" layer is turned off. When checked, active cameras always display, regardless of the layer setting.
- Check **Display Callouts for Sections/Elevations** to represent cross section/elevation cameras in floor plan view using callouts instead of camera symbols. See "In Floor Plan View" on page 886.

3D View Defaults Dialog

Select **3D> 3D View Defaults**, **Edit> Default Settings**, or double-click the **Perspective View Tools** parent button to display the **3D View Defaults** dialog.

Some settings in the **3D View Defaults** dialog affect rendered views, some affect Vector Views, and some affect both view types. See “Rendered and Vector Views” on page 868.

Options Panel



1 The **General Options** affect all 3D views.

- Check **Restrict Floor Camera to Room** to suppress the generation of objects outside the room in which a Floor Camera is

created. Only affects subsequently generated Floor Camera views. See “Camera Views” on page 877.

When checked, a view through a doorway into another room shows only blank space or the selected 3D backdrop. Use this option to reduce 3D view rendering time or to minimize file size when creating a single room 3D Walkthrough.

- Uncheck **Camera Bumps Off Walls** to allow cameras to move freely through walls.
- Check **Auto Rebuild Walls/Floors/Ceilings** to automatically rebuild floors and ceilings before a 3D view or elevation is displayed. When this is unchecked and the structure is not up to date, the Rebuild Walls, Floors, Ceilings icon displays near your mouse pointer. See “Rebuilding Walls, Floors and Ceilings” on page 431.
- Check **Auto Rebuild Terrain** to automatically rebuild terrain to reflect recent changes before generating a 3D view. If this option is unchecked and the terrain is not up to date, the Rebuild Terrain icon displays near your mouse pointer. See “Building the Terrain” on page 709.
- Check **Legacy Compatible Texture Mapping** to use global texture mapping settings rather than texture mapping fixed to individual objects.

> Legacy Compatible Texture Mapping should remain unchecked except in legacy plans with custom rotated textures.

- When **Auto Adjust Default Glass Properties** is checked, the program automatically adjusts the behavior of window, door, and electrical fixture glass in Standard rendered and ray trace views in response to interior and exterior lighting conditions. When this box is unchecked, these adjustments are not made.

❷ The **Lighting Options** control the ambient light in rendered views. Click and drag the slide bar or type in a percent value to adjust these options. See “Ambient Light” on page 915.

- **Interior Ambient** affects interior views.
- **Daytime Ambient** affects daytime exterior views.
- **Nighttime Ambient** affects nighttime exterior views.
- Click the **Reset** button to to restore initial default values.
- Uncheck **Brighten Ceilings** to turn off the default parallel light source that shines upward in interior views to add extra illumination to ceilings. See “Default Lights” on page 915.

❸ The **Vector View Options** only affect views using the Vector View rendering technique. See “Rendered and Vector Views” on page 868.

- Check **Opaque Glass** to make the glass in windows and doors opaque in Vector Views. When unchecked, window and door glass is completely transparent.
- **View Panel Factors** adjust the performance of Vector Views. Normally, these values should not need changing, but you may be able to get modest performance improvements by trying other values. See “Speeding up 3D View Generation” on page 938.

- **View Panel Factor 1** determines how many surfaces are drawn for each horizontal panel. Each horizontal panel is then subdivided into vertical panels - and **View Panel Factor 2** determines how many surfaces are contained in each vertical panel.
- View panel factors represent target numbers of surfaces to use in defining each panel. A value of 10000 for Factor 1 means that a total of 10,000 or more surfaces are collected to define each panel vertically. A value of 2000 for Factor 2 means that 2,000 or more surfaces are collected to define panels horizontally.
- Making these numbers larger results in fewer panels; making them smaller results in more panels. Adjusting these numbers either too low or too high causes the time required to draw to increase.
- **Framing Back Clip** defines the back clip for framing members in cross section views. Framing must be set to display to see the effects of this value. A zero value does not back clip at all.

4. **Default Color Display** controls whether views created using the Vector View rendering technique are generated using color or not. See “Rendering Techniques” on page 928.

- Select a checkbox to generate that view type in color or uncheck to generate that view type as a line drawing.
- A colored view can always be changed to a line drawing and vice versa by choosing **Tools> Color Off/Color On**  .

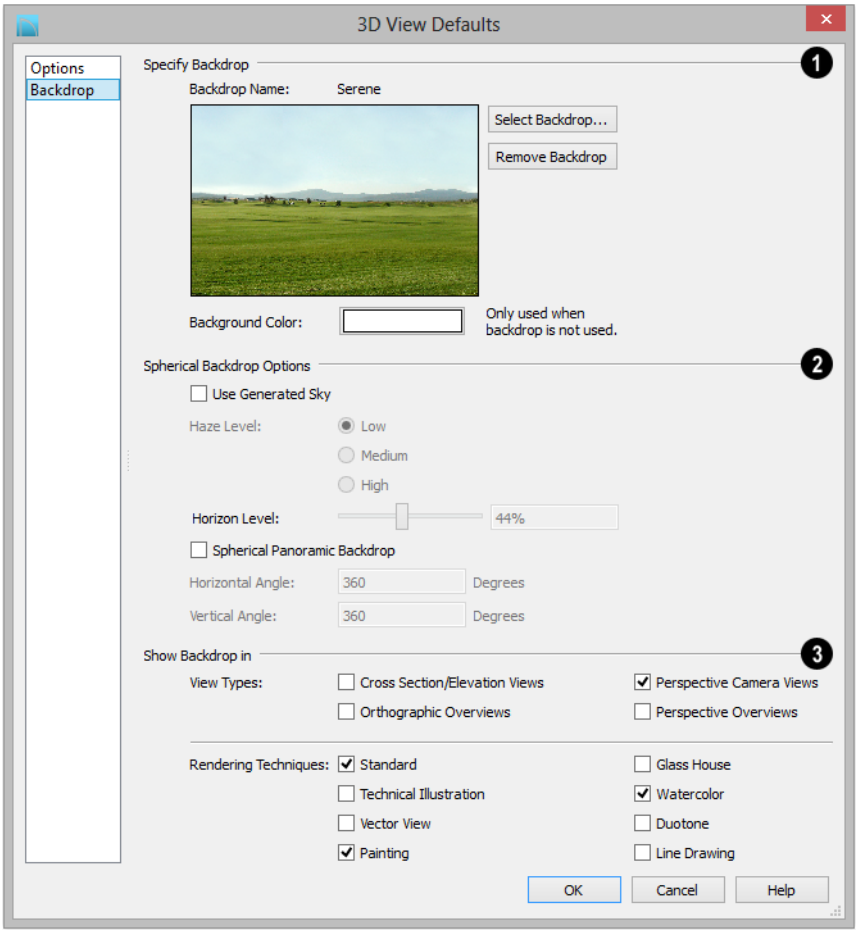
5. Specify how the **Surface Edge Lines** display for all objects in 3D views.

- Check **Use Layer Settings** to display surface edge lines for objects using the display settings specified by layer in the **Layer Display Options** dialog.

  If this option is not checked, all edge lines are drawn black and solid with a line weight of 0.
- If **Use Layer Settings** is checked you can also check **Use Object Settings**. All objects that have special settings specified on the Line Style panel of their specification dialog display using those settings, overriding the layer settings in the **Layer Display Options** dialog.

Backdrop Panel

The settings on the Backdrop panel allow you to specify a backdrop image or color to display behind your model in 3D views. See “3D Backdrops” on page 1122.



1 **Specify Backdrop** - A preview of the selected backdrop image is shown here. A backdrop cannot be selected or removed when Use Generated Sky is checked, below.

- **Backdrop Name** - The name of the selected backdrop image displays for reference.
- Click **Select Backdrop** to choose a backdrop image from the library. See “Select Library Object Dialog” on page 816.
- Click **Remove Backdrop** to use a solid color instead of a backdrop image in all 3D views, then specify the color below.
- Click the Color bar to select the **Background Color** that displays when a backdrop image is not being used. See “Color Chooser/Select Color Dialog” on page 853.

The **Background Color** is used in all views except Vector Views, which instead use the

Background Color set in the **Preferences** dialog. See “Colors Panel” on page 92.

❷ **Spherical Backdrop Options** -

- Check **Use Generated Sky** to simulate a daytime sky backdrop. When checked, Spherical Panoramic Backdrop will also be checked and a preview of the Generated Sky will display above.
- Specify a **Haze Level** of **Low**, **Medium**, or **High**. This determines the degree to which light in the sky backdrop appears to be scattered by particles in the air.
- Specify a **Horizon Level** using the text field or slider bar. The default value of 44% works well in most situations.
- Check **Spherical Panoramic Backdrop** to place the selected backdrop onto a sphere that surrounds your model in camera views and overviews.
- The **Horizontal Angle** and **Vertical Angle** settings are the same as those in the **Backdrop Specification** dialog. If these values are changed here, the backdrop saved in the library will be unaffected. See “Backdrop Specification Dialog” on page 1123.

❸ The **Show Backdrop in** options let you specify the conditions under which the selected backdrop image displays.

- Specify in which **View Types** a backdrop image is used. By default, only Perspective Camera Views are set to use a backdrop. See “3D View Tools” on page 877.
- Specify in which **Rendering Techniques** a backdrop image is used. See “Rendering Techniques” on page 928. By default, Standard, Painting and Watercolor use backdrops while the other techniques do not.

3D View Tools

Select **3D> Create Orthographic View** to display the Orthographic View Tools or **3D> Create Perspective View** to display the Perspective View Tools.

Camera Views

Camera views are perspective views. They are not scaled and cannot be annotated but are ideal for creating presentation views.

The **Full Camera** tool creates multi-floor views of the 3D model. It can be used to create interior and exterior perspectives, and is good for displaying cathedral ceilings, roofs, lofts, stairwell openings, and other variation in floor and ceiling levels.

The **Floor Camera** tool creates perspective views of the current floor only. Nothing above the ceiling surface is generated, and neither is anything below the floor.

Overviews

An overview can be either orthographic in nature or perspective, depending on the tool used to create it. See “Creating Overviews” on page 879.

 The **Orthographic and Perspective Full Overview** tools create views of the entire model including all floors, ceilings, and the roof.

 The **Orthographic and Perspective Floor Overview** tools create views of the current floor without a roof or ceiling.

 The **Orthographic and Perspective Framing Overview** tools create views of the framing in the model. Framing must be built in order for it to display in a framing overview. See “Framing Overview” on page 880.

 The **Isometric Overview** tools create specially oriented and scaled overviews that are common in engineering drawings. These tools are only available when an Orthographic Overview is active. See “Isometric Overviews” on page 881.

Cross Section/Elevation Views

Cross Section/Elevation views are similar to the traditional, scaled orthographic views often used in drafting. They are scaled and can be fully annotated. See “Cross Section/ Elevation Views” on page 881.

 A **Cross Section/Elevation** view displays all floors of the model except floor 0. If the view is created outside the structure looking toward it, the result is an exterior elevation. If the view is created inside the structure, or passes through any of the structure, a cross section is created.

 The **Backclipped Cross Section** tool includes only the objects between the starting point and stopping point of the cross section line.

 The **Wall Elevation** tool creates an elevation of a wall on a single floor and in a single room. The **Wall Elevation** tool cannot be used to create exterior views.

Select **3D> Create Auto Elevations**  to access tools that create, save, and name elevation views as soon as the tool is selected. These tools can also be added to your toolbars. See “Auto Elevation Tools” on page 883.

 The **Front Elevation** tool creates an exterior elevation of the front of the model (on screen, the bottom).

 The **Back Elevation** tool creates an exterior elevation of the back of the model (on screen, the top).

 The **Left Elevation** tool creates an exterior elevation of the left side of the model.

 The **Right Elevation** tool creates an exterior elevation of the right side of the model.

 The **All Elevations** tool creates an exterior elevation of the front, back, left, and right sides of the model.

 The **Create Room Elevation Views** edit tool creates an interior elevation view of each wall defining a selected room. This tool is found on the edit toolbar for a selected room rather than in the 3D menu. See “The Edit Toolbar” on page 35.

 The framing members of an individual wall can also be displayed and edited in a Wall Detail view. See “In Wall Detail Views” on page 589.

Ray Trace Views

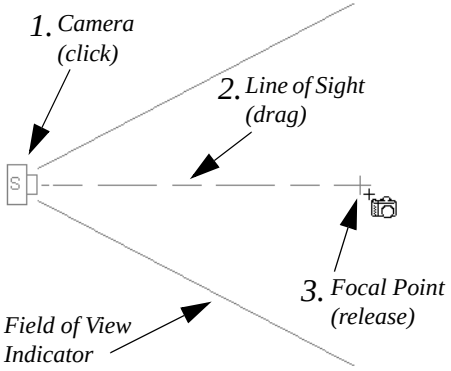
Ray Trace views are a special type of high-quality 3D view in which the paths individual photons are calculated so that realistic lighting effects can be modeled. They cannot be created directly from floor plan view. Instead, you must first create a Standard rendered view of the desired scene and then select **3D> Ray Trace Current View**. See “Ray Trace Views” on page 940.

Creating Camera Views

All full and floor camera views are created using the same method.

To create a camera view

1. In floor plan view, select the desired camera tool. The mouse pointer displays the camera icon.
2. Click and drag a line to define the view direction.
   - Where your line begins is the camera’s position.
   - The line that you drag defines the direction the camera is pointed.
   - The end of the line is the focal point of the view, the point the camera rotates around.
   - By default, the field of view is 45°, which is similar to what the human eye sees or a 50mm camera lens.



3. When you release the mouse button, a view generates in a new window.
4. Return to the floor plan view. A camera symbol now displays in floor plan view. See “Working in Multiple Views” on page 861.

In order to create a camera view, you must click and drag at least as far as your current **Snap Distance**. See “Snap Properties Panel” on page 113.

Creating Overviews

In Chief Architect, there are three different overview types: Full, Floor and Framing Overviews. Each type of overview can be generated as either an orthographic or perspective view. An overview window’s title bar indicates whether it is perspective or orthographic. See

"Perspective and Orthographic Views" on page 868.

Overviews generate as soon as you select the tool and are always created at the same angle. The focal point is always located at the center of the model; however, the position of the camera will vary depending on the size of the 3D model. The larger or more spread out the model, the further away the camera will be from the focal point so that the entire model can be seen in the view.

Once generated, an overview window's title bar indicates whether it is a perspective or orthographic view and a camera symbol representing the overview displays in floor plan view, The overview 'camera' can be edited much like regular camera views can. See "Editing 3D Views" on page 893.

Full Overview

Select **3D> Create Orthographic View> Full Overview** or **3D> Create PerspectiveView> Full Overview** to generate an exterior view of the entire model.

Floor Overview

Select **3D> Create Orthographic View> Floor Overview** or **3D> Create Perspective View> Floor Overview** to create a view of the current floor with the ceiling removed and all floors beneath it visible.

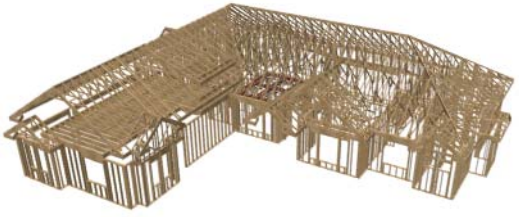
Floor Overviews are an effective tool for illustrating traffic flow and the relationships between spaces.

To see a different floor, select **Tools> Reference Floors> Up One Floor** or **Down One Floor**. You can also return to floor plan view and make another floor current before generating the Floor Overview

If you prefer, you can specify in the **Camera Defaults** dialog that only the current floor be included in Floor Overviews. See "Camera Defaults Dialog" on page 869.

Framing Overview

Select **3D> Create Orthographic View> Framing Overview** or **3D> Create Perspective View> Framing Overview** to create a view of the entire model, displaying only framing and the foundation.



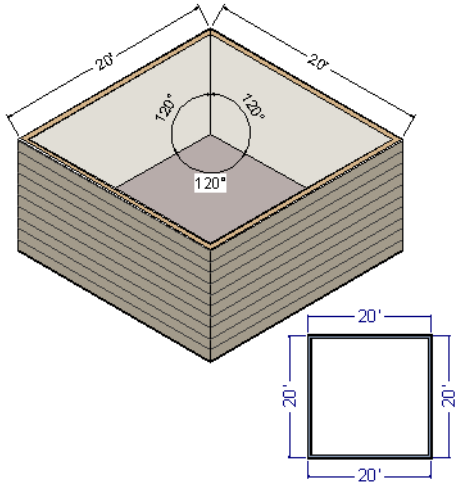
Framing overviews include all floor, wall, and roof framing as well as foundations. Unlike other overviews, which use the Camera View layer set, Framing Overviews use the 3D Framing Set. See “Layer Sets” on page 145

Framing must be built before generating this view or the view will be empty.

Isometric Overviews

An **Isometric Overview** is a special orthographic view in which the camera is positioned in such a way that the angles between the X, Y, and Z axes are all 120° in that view. See “3D Drafting” on page 29.

In addition, **Isometric Overviews** use scaling that is approximately 1.2 times that used in a normal projection so that lines parallel to the X, Y, and Z axes measure their true length in the 2D projection. As such, Isometric Overviews can be useful for technical drawings but may not be well suited for presentation views.



To create an Isometric Overview, begin in an Orthographic Overview. See “Perspective and Orthographic Views” on page 868.

To create an Isometric Overview

1. Create an **Orthographic Full Overview** or **Floor Overview** .
2. With the Orthographic view active, select **3D> Isometric Overviews** and choose a view option from the submenu.
3. The camera’s position will adjust, as will the scaling used in the view.
4. If you move, orbit, or tilt the camera the camera will return to normal scaling.

Cross Section/Elevation Views

The **Cross Section/Elevation**, **Back-clipped Cross Section**, and **Wall Elevation** tools produce the traditional, orthogonal views often used in drafting. Regardless of their distance from the camera, all lines and dimensions in these

views are their true lengths, making it easy to accurately see the spatial relationships of the 3D objects in the model.

Two additional elevation tools, **Exterior Elevations** and the **Create Room Elevation Views** edit tool, allow you to create and save multiple elevation views of either the entire plan or a single room with a single click.

Cross section/elevation views can be clipped to limit how much of the model is included in the view. See “Camera Panel” on page 906.

Cross section/elevation views are the only 3D views that can be enhanced with the 2D CAD tools. They can be fully annotated and dimensioned and then printed to scale.

Cross Section/Elevation Camera Tools

Each of the three cross section/elevation camera tools has a specific function.

A **Cross Section/Elevation** view displays all floors of the model. The cross section begins at the point where the camera arrow is drawn and continues through the entire model.

The **Backclipped Cross Section** tool includes only the objects or portions of objects between the starting point and stopping point of the camera’s Line of Sight.

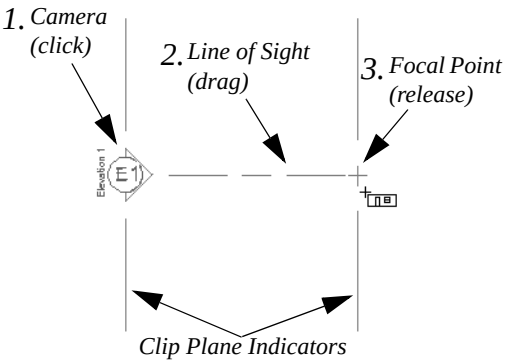
The **Wall Elevation** tool creates an interior elevation of a single wall defining the room that the camera is drawn in. It does not cut through walls or show the ceiling, floor, or roof. It creates a 2D projection of a wall and the objects located between that wall and the camera and is used primarily for kitchen and bath elevations. This tool cannot be used to create exterior views.

By default, **Wall Elevation** views recognize room definition created by railings and invisible walls; however, you can specify that these types of walls are ignored in the **Wall Elevation Specification** dialog. See “Camera Panel” on page 906.

Cross Section/Elevation, **Backclipped Cross Section** and **Wall Elevation** views are created in the same way.

To create a Cross Section/Elevation view

1. Select the **Cross Section/Elevation**, **Backclipped Cross Section** or **Wall Elevation** tool. The pointer changes to a with crosshairs marking the position of the pointer.
2. Click and drag a line in floor plan view.
   - A Camera symbol displays where you click, along with a Cross Section Line indicating the plane of the camera’s cross section cut line.



3. Drag in the direction of the Line of Sight to draw a camera arrow.
   - Always drag the camera arrow perpendicular to the wall to be viewed.
4. When you release the mouse button, the view generates in a new window.
   - If the view is a Backclipped Cross Section, a second Cross Section Line at the end of the Line of Sight indicates the furthest extent of the backclip.
   - You can specify the length of the Clip Plane Indicators and also restrict the side to side extents of the view to them. See “Camera Panel” on page 906.

As with camera views, you must click and drag at least as far as your current **Snap Distance** in order to create a Cross Section/Elevation view. See “Snap Properties Panel” on page 113.

If the Line of Sight does not cut through a 3D object and the object is within the back clipped distance, such as a window shown in elevation, the object retains its 3D definition and can be selected, moved, stretched, or otherwise modified in the view. The 3D model is updated in all views.

Auto Elevation Tools

The **Auto Elevation Tools** create exterior elevations of the front, back, left and right sides of the model. To use any of these tools, simply select it: the camera view - or all four camera views - are automatically created, saved and named. See “Saving 3D Views” on page 900.

At least one wall or railing must be present in the plan in order for the **Auto Elevation**  tools to work. If no walls or railings have been drawn, nothing will happen when any of these tools is selected.

The directions that these four elevation cameras point are directly related to the orientation of the X and Y axes, reference grid and snap grid in the plan. See “3D Drafting” on page 29.

The front elevation is located below the model on-screen and points upward while the back elevation is found above the model and points downward. This may not be the case, however, if you have used the **Rotate Plan View**  tool. See “Rotate Plan View” on page 233.

If the same Auto Elevation view is created more than once, the additional camera symbols are placed progressively further away from the model in floor plan view and are numbered. If an Auto Elevation is renamed and then the view created again, the symbols may overlap.

The **Auto Elevation Tools**  parent button can be added to the toolbars if you wish. See “To add a button to a toolbar” on page 132.

Room Elevation Views

The **Create Room Elevation Views** edit tool creates an interior elevation view of each wall defining or present in a selected room. To create elevation views for a room, select the room and then select this edit tool. See “Editing Rooms” on page 327.

Detailing Cross Section/Elevation Views

CAD objects, including Text and Dimensions, can be created in cross

section/elevation views. These objects are superimposed on the view and have no effect on the 3D model itself. If CAD objects have been added to a cross section/elevation view, the program will prompt you to save the view before closing the window. This information is then stored in the view.

Labels for cabinets and other objects can display in cross section/elevation views. See "Displaying Labels" on page 1242.

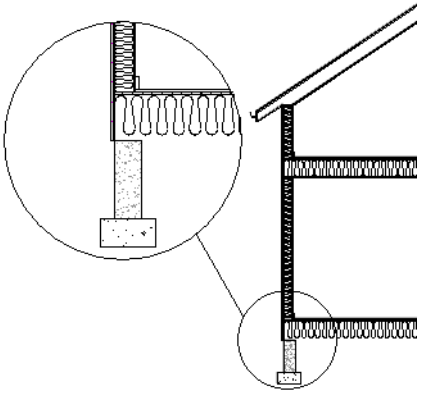
In cross section views, some objects, such as walls, are represented using Cross Section lines. If a dimension line finds an object surface edge represented by a Cross Section line, a Point Marker will be placed at that location, and the dimension will locate it instead of the Cross Section line. See "Markers" on page 1028.

CAD objects will snap to the Snap Grid when Grid Snaps are enabled. Note that the 3D model may obscure the display of the Snap Grid. See "Grid Snaps" on page 164.

When the Vector View rendering technique is used, you can select **CAD> CAD Detail From View** to create a 2D line drawing of the active cross section/elevation view in a CAD Detail window. This drawing can then be edited as needed. See "CAD Detail from View" on page 1086.

Auto Detail

The **Auto Detail** tool automatically creates CAD objects for commonly detailed components of cross section views. To use this tool, select **CAD> Auto Detail** while a cross section view using the Vector View rendering technique is active.



Auto Detail creates CAD objects in walls, floor and ceiling platforms, foundation walls and footings, and slabs that are intersected by the cross section plane as follows:

- **Walls** - Creates closed CAD polylines for each wall layer with a fill style specified in the wall type definition. The polyline uses the same fill as that specified for the wall layer. See "Wall Type Definitions" on page 295.
- **Floors and Ceilings** - Creates closed CAD polylines for each floor and ceiling layer with a fill style specified in the platform or finish definition. The polyline uses the same fill as that specified for the floor or ceiling layer. See "Floor and Ceiling Platform Definitions" on page 337.
- **Insulation** - Creates rectangular **Insulation** CAD boxes in floor and ceiling platforms and in walls.

  Specify which wall layers display insulation fill when auto-detailed. If the wall layer has a fill style, it will not

generate a fill polyline when insulation is also specified. See “Wall Type Definitions Dialog” on page 298.

Specify which rooms have insulation in the floor or ceiling. See “Floor and Ceiling Platform Definitions” on page 337.

- **Foundations** - Closed polylines are created for foundation walls, footings, and floors. The fill style for walls is specified for the wall layer in the wall type definition. The fill style for footings is “Concrete”. The fill style for the floor is set in the floor platform definition.
- **Slabs** - Closed polylines using the “Concrete” fill style are created for **Slabs** .
- **Material Regions** - Closed polylines for each layer of a Wall or Floor Material Region or a Custom Backsplash are created. The polylines use the fill style specified in the object’s material layers definition. See “Floor and Wall Material Regions” on page 779..

Using **Auto Detail** tool twice results in two copies of the same CAD objects.

Once created, these CAD objects can be selected and edited. See “Editing Closed-Polyline Based Objects” on page 198 and “Editing Box-Based Objects” on page 203.

The CAD objects created by the **Auto Detail** tool are placed on the Curent CAD Layer. See “Layers” on page 143.

Displaying 3D Views

A variety of tools and settings allow you to control the appearance of your 3D views. There are also numerous ways to adjust the position, focal point and field of view of a 3D view. See “Editing 3D Views” on page 893.

The name of the current plan file and the type of view displays at the top of each view window in its title bar. If a 3D view is saved, its name also displays.

There is no limit to the number of 3D view windows that you can have open at a given time; bear in mind, though, that each window demands use of your computer’s resources and that you may see poor performance if too many views are open. See “Working in Multiple Views” on page 861.

Layer Display Options

Which objects display in a 3D view is controlled in the **Layer Display Options** dialog. See “Layer Display Options Dialog” on page 148.

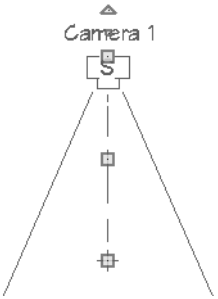
Different view types use different layer sets when they are created. See “Layer Sets” on page 145.

To show framing in a cross section/elevation view, framing must first be built using the **Build Framing** dialog and the appropriate framing layers must be turned on in the Section View layer set. See “Framing” on page 561.

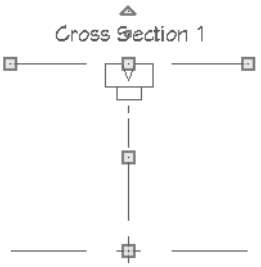
In Floor Plan View

3D cameras can be represented in floor plan view in either of two ways:

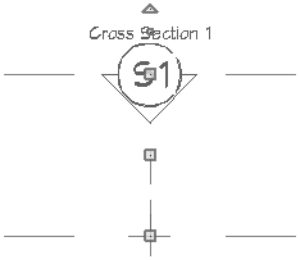
- By symbols that indicate the camera's position, field of view and focal point.



- Camera symbols representing cross section/elevation views indicate the clip plane position, line of sight, and back clip plane position if there is one.



- By callouts or, for cross section/elevation views, double callouts.



You can control the display of a camera's focal point and line or sight, or its backclip plane indicator and line of sight, as well as specify a camera symbol or callout, in the camera's specification dialog. See "Plan Display Panel" on page 904.

2D camera symbols are located on the "Cameras" layer by default; however, you can place a selected camera on any layer you wish. See "Layers" on page 143.

By default, active camera symbols display regardless of whether the "Cameras" layer is on or off. If you prefer that their display be turned on or off with this layer, uncheck **Always Display Active Cameras** in the **Camera Defaults** dialog. See "Camera Defaults Dialog" on page 869.

Active camera symbols use the Move color set in the **Preferences** dialog. All other display attributes are derived from the "Cameras" layer. See "Colors Panel" on page 92.

By default, the symbols for Cross Section/ Elevation and Full Overviews views display on all floors, while those for Full and Floor Cameras and Floor Overviews display only on the floor where they were created. You can, however, specify whether any camera's symbol displays on all floors or not in its

specification dialog. See “Plan Display Panel” on page 904.

Camera Labels and Callouts

Both saved and unsaved active cameras can have labels indicating the camera or callout number or its name. Camera labels are located on the “Cameras, Labels” layer and use the Text Style assigned to that layer. See “Object Labels” on page 1241.

- Camera labels and callout numbers are numbered sequentially in each plan in the order they were created unless you rename them.
- Camera labels always use the Camera Name. Saved cameras’ names can be specified in the **Camera Specification** dialogs. See “Camera Panel” on page 902.
- Saved camera callout labels and additional text can also be specified. See “Plan Display Panel” on page 904.
- If a cross section/elevation view using a callout is sent to layout, the layout page’s Label can display as the callout’s Text Below Line. See “Layout Page Information” on page 1226.

Camera symbols display a letter indicating the Rendering Technique it uses. This letter uses the same text style as the camera label. See “Rendering Techniques” on page 928.

Camera symbols are an on-screen reference: they do not print unless **Print Image** is used and cannot be sent to layout except as an image. They are, however, included when **CAD Detail from View** is used and in views exported to .dxf/.dwg.

In contrast, camera callouts are included when the view is sent to layout, printed, or exported and when **CAD Detail from View** is used.

In Rendered Views

There are a number of factors that contribute to the appearance of rendered 3D views:

- Select **3D> Camera View Options> Toggle Textures** in a 3D view to turn off the display of material textures. See “About Materials” on page 828. Not available in Glass House,Technical Illustration, Line Drawing or Vector Views.
- Select **View> Color** to toggle between color and greyscale in 3D views. See “Color On/Off” on page 214.
- Select **3D> Lighting> Adjust Lights** to open the **Adjust Lights** dialog and edit the light sources in the current plan. See “Adjust Lights Dialog” on page 917.
- Select **3D> Camera View Options> Final View** or **Final View with Shadows** to regenerate the rendered view based on the final view settings on the Render panel of the **Preferences** dialog. See “Previews vs Final Views” on page 913

In Vector Views

There are also a number of factors that affect the appearance of 3D Vector Views:

- Select **3D> Toggle Patterns** in a Technical Illustration, Watercolor, Line Drawing or Vector View to turn on or off the display of the “Patterns, 3D Views”

layer, which controls the display of material pattern lines. See “Layers” on page 143.

- Select **View> Color** to toggle between color and black and white control the display line and fill colors. See “Color On/Off” on page 214.
- The line style, color, and weight of objects in Vector Views can be specified by layer or, for some objects, individually in their specification dialogs. See “Line Style Panel” on page 1053.
- The line weight, color, and style of material patterns are set in the **Define Material** dialog. See “Define Material Dialog” on page 841.
- Line weights display on screen when **Show Line Weights** is enabled. See “Line Weights” on page 1187.

3D Backdrops

A backdrop is an image, usually of an exterior view, that displays in the background of 3D views to help place the model into a realistic setting and add a sense of perspective. If a backdrop is not specified, Chief Architect applies a background color. See “3D Backdrops” on page 1122.

Rendering Techniques

Any 3D view can be assigned a Rendering Technique for a range of different purposes: from detail drawings to artistic presentation views. Select **3D> Rendering Techniques** to access these tools. See “Rendering Techniques” on page 928.

Delete 3D Surface

The individual surface of an object can be temporarily removed from any 3D view by selecting **3D> Delete Surface** and then clicking on a surface. When the pointer is over a surface, that surface will become highlighted.

Surfaces removed in one view are removed in all 3D views, but are not permanently removed from the model. Continue clicking surfaces to remove them, then select another tool when you are finished.

Surfaces in 3D views are composed of multiple triangles. Hold the Alt key while clicking to delete one triangular face at a time rather than all triangles forming a surface. See “Higher Quality Rendering” on page 914.

Select **3D> Delete Surface** or click the toolbar button to restore the most recently deleted surface. All surfaces can be restored by selecting **Build> Floor> Rebuild Walls/Floors/Ceilings** or by exiting the 3D view and reopening it.

Rebuild 3D

Select **3D> Rebuild 3D** to regenerate all 3D data associated with the current plan. All open views will remain open.

Remove 3D

Select **3D> Remove 3D** from floor plan view to close all 3D views associated with the current plan file and remove unsaved 3D data from memory.

Any views saved with the plan are closed but not deleted.

Repositioning Cameras

Once a 3D view is created, there are many ways to manipulate the camera location and the direction of its line of site using the mouse, the keyboard, and the menus.

The Move Camera with Mouse buttons are included on the toolbars in 3D views by default; but, you can add the other tools your toolbars as well as customize their hotkeys. See “Toolbars and Hotkeys” on page 129.

When the keyboard or menu commands are used to move or rotate a camera, the adjustments occur in regular increments. The size of these increments is specified in the **Camera Specification** dialog:

- The **Incremental Move Distance** controls Panning movement and forward and backward Dolly movement.
- The **Incremental Rotate Angle** controls Orbit movement, Tilt movement, and side to side Dolly movement.

See “Camera Panel” on page 902.

Each time you move the camera, the view is updated. If you are using either the toolbar or keyboard to move the camera, you can hold down the Shift key, suppressing the redraw of the view until the Shift key is released and allowing you to move multiple increments more quickly.

Press Ctrl + Alt + S while in a camera view or overview to spin the view. Press Esc to stop the spinning.

Move Camera with Mouse

An active camera’s position can be edited using the mouse. Select **3D> Move Camera With Mouse** to access the Move Camera with Mouse modes. With the exception of Mouse Orbit Camera, which is available in Orthographic Overviews, these tools are not available in Orthographic views.

	Hotkey	Description
	Alt + O	**Mouse-Orbit Camera** lets you move the mouse to rotate the camera around its focal point. The camera’s position and direction both change. To continuously rotate the camera around its focal point, click in the 3D view, drag the mouse, and release the mouse button to “throw” the view. Click again in the view to stop it from rotating.

	Hotkey	Description
	Alt + P	**Mouse-Pan Camera** lets you move the mouse to move the camera up, down, left and right. The camera's position changes, but its direction does not.
	Alt + D	**Mouse-Dolly Camera** lets you move the mouse up and down to move the camera forward and backward. Move the mouse left or right to rotate the camera side to side.
	Alt + T	**Mouse-Tilt Camera** lets you move the mouse to tilt the camera in any direction while staying in the same location.
		**3D Center Camera on Point** lets you focus the camera at a particular point in the scene. This also sets the camera center so that future use of **Mouse-Orbit Camera** rotates around that point. To use the **3D Center** tool, activate the tool and then click on any object in the scene.

Move Camera with Arrow Keys

An active camera's position can be changed using the arrow keys on your keyboard. **Select 3D> Move Camera with Arrow Keys** to access Move Camera with Arrow Key modes. With the exception of Mouse Orbit Camera, which is available in Orthographic Overviews, these tools are not available in Orthographic views.

These modes use the **Incremental Move Distance** and **Incremental Rotate Angle** set in the active 3D view's **Camera Specification** dialog.

- **Arrow-Orbit Camera** lets you use the arrow keys to rotate the camera around the current focal point. The camera's position and direction both change.
- **Arrow-Pan Camera** lets you move the camera up, down, right, and left using the arrow keys. The camera's position changes, but its direction does not.
- **Arrow-Dolly Camera** lets you move the camera forward and back using the up and down arrow keys, and rotate side to side using the left and right arrow keys**.**
- **Arrow-Tilt Camera** lets you use the arrow keys to tilt the camera up, down, or side to side to change the focal point. The camera's direction changes, but its position does not.

Move Camera Tools

Select **3D> Move Camera** in a 3D view to access these tools. These tools change the active camera's position, but not its direction and are not available in Orthographic views.

These tools use the **Incremental Move Distance** set in the active 3D view's **Camera Specification** dialog.

	Hotkey	Description
	F	**Move Camera Forward** moves the camera and its focal point forward.
	B	**Move Camera Back** moves the camera and the focal point back.
	L	**Move Camera Left** moves the camera and the focal point to the left in a line perpendicular to the line of sight.
	R	**Move Camera Right** moves the camera and the focal point to the right in a line perpendicular to the line of sight.
	U	**Move Camera Up** moves the camera and the focal point up.
	D	**Move Camera Down** moves the camera and the focal point down.

Orbit Camera Tools

Select **3D> Orbit Camera** in a 3D view to access these tools. Orbiting the camera rotates it about the focal point using the **Incremental Rotate Angle** set in the active view's **Camera Specification** dialog.

These tools are not available in , Back Clipped Cross Section, or Wall Elevation views.

	Hotkey	Description
	I	**Move Camera In** moves the camera closer to the focal point along the line of sight. The camera cannot move past the focal point using this tool.
	O	**Move Camera Out** moves the camera away from the focal point along the line of sight.

	Hotkey	Description
		**Orbit Camera Upward** rotates the camera up about the focal point. The camera cannot rotate past a vertical line looking straight down on the focal point.
		**Orbit Camera Downward** rotates the camera down about the focal point. The camera cannot rotate past a vertical line looking straight up at the focal point.
		**Orbit Camera Left** rotates the camera to the left about the focal point.
		**Orbit Camera Right** rotates the camera to the right about the focal point.

Tilt Camera Tools

Select **3D> Tilt Camera** to access these tools. Tilting keeps the camera in one place and pivots the camera about its vertical or horizontal axis. This movement uses the **Incremental Rotate Angle** set in the active view's **Camera Specification** dialog and is similar to tilting your head up and down or turning it side-to-side.

These tools are not available in Orthographic views.

	Hotkey	Description
		**Tilt Camera Upward** tilts the camera up while keeping it in the same location. The camera cannot tilt beyond the vertical position.
		**Tilt Camera Downward** tilts the camera down while keeping it in the same location. The camera cannot tilt beyond the vertical position.
		**Turn Camera Left** turns the camera to the left while staying in the same location.
		**Turn Camera Right** turns the camera to the right while staying in the same location.

View Direction Tools

The **View Direction Tools** allow you to view the model from a specific direction in a camera view, overview, or cross section/elevation view. While one of these views is active, select **3D> View Direction** to access these tools.

	Description
	Front View creates a front view of the model.
	Back View creates a back view of the model.

	Description
	Top View creates a top view of the model.
	Bottom View creates a bottom view of the model.
	Left Side View create a left side view of the model.
	Right Side View create a right side view of the model.
	Restore Original View restores the original view position.

Editing 3D Views

In addition to its position and direction, there are other ways to modify a 3D view.

In the Specification Dialog

You can make adjustments to a camera in the **Camera Specification** dialog. This dialog is particularly helpful for making fine adjustments to the camera's position, appearance, and other attributes. See "Camera Specification Dialog" on page 901.

Tile a 3D view and the floor plan view and use the camera movement tools to see how they affect the camera. See "Tiling Views" on page 862.

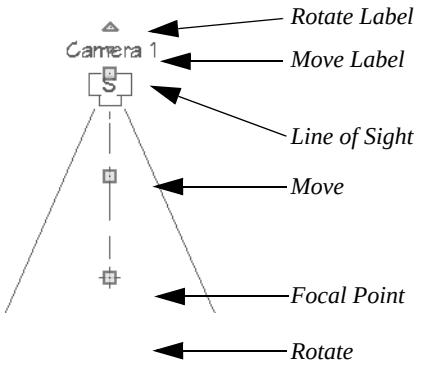
Using the Edit Tools

A camera symbol or symbols selected in floor plan view can be edited in a variety of ways using the buttons on the edit toolbar. See "The Edit Toolbar" on page 35.

Using the Edit Handles

Return to floor plan view without closing the 3D view. See "Working in Multiple Views" on page 861.

Using the **Select Objects** tool, select the camera object. When a camera symbol is selected it displays six edit handles.

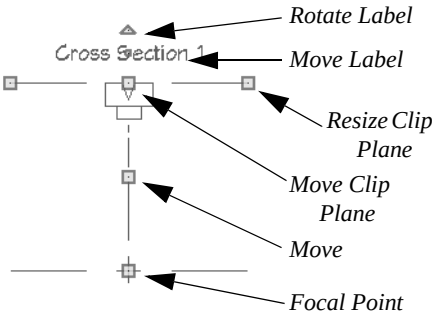


- Drag the **Rotate Label** handle or smaller **Move Label** handle to rotate or move the camera label.
- Drag the **Line of Sight** handle to change the camera angle without moving the focal point.
- Drag the **Move** handle to relocate the camera while maintaining its relative angle.
- Drag the **Focal Point** handle to reposition the focal point and change the line of sight without moving the camera.
- Drag the **Rotate** handle to rotate the camera's line of sight about its center.

The 3D view corresponding to the camera symbol reflects changes made to the symbol in floor plan view.

Note: Camera callouts do not display labels, so they do not have label edit handles.

When a cross section/elevation camera symbol or double camera callout is selected, it displays seven edit handles, three of which are unique to cross section/elevations.



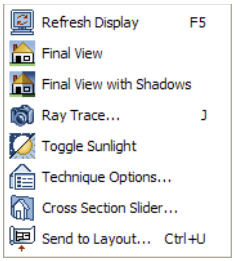
- Drag either of the two **Resize Clip Plane** handles to adjust the length of the clip plane line, which is perpendicular to the camera's line of sight. Left-click to resize the line concentrically and maintain the camera's position; right-click to move the selected end as well as the camera. This will affect what can be seen in the view if **Clip to Sides** is checked. See "Camera Panel" on page 906.
- Drag the **Move Clip Plane** handle to move the camera and its clip plane parallel to its line of sight.

You can specify **Double Callouts** in the **Cross Section/Elevation Camera Specification** dialog. See "Plan Display Panel" on page 904.

Multiple camera symbols can be selected; however, their editing options are limited to being moved, rotated, and deleted. You can also create revision clouds around group-selected camera symbols.

Using the Contextual Menu

In a 3D view, right-click in an empty space in which the backdrop or background color displays to access the contextual menu. See "Contextual Menus" on page 36.



- In Vector Views, the options are a selection of commonly used commands from the File, Edit, Tools and Window menus.
- In rendered views, the options are a selection of tools and toggles specific to rendered views or override the settings in the **Preferences** dialog. See “Render Panel” on page 122.

Changing a setting in the contextual menu only affects the current view. It does not affect the settings in the **Preferences** dialog.

Up One Floor/Down One Floor

You can move a camera to a different floor. While the camera view is active, select **Tools> Reference Floors> Up One Floor** or **Down One Floor** .

The position and movement of a camera is affected by its location within the model. When the camera is outside a building, its height is relative to the terrain and follows the terrain as it is moved. When inside a building, the camera height is relative to the floor of the room it is drawn in.

Which floor an active camera is on determines which floor is affected when any floor-specific actions are done. For example, if a camera is on Floor 2 and changes are made to the Floor Default settings while in that view, Floor 2 will be affected.

If the camera is on an upper floor and you move the camera outside of the building, the camera remains at the same height relative to the floor it was created on.

Zooming

The **Zoom Tools** are available in all 3D views. See “Zoom Tools” on page 859.

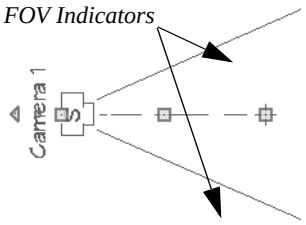
Selecting **Window> Zoom In** , **Zoom Out** or **Fill Window** does not change the camera’s location or field of view. Instead, the extents of the view are expanded or cropped.

If you wish, you can instead set the **Zoom** tools to change the Field of View when used in a 3D view. See “Render Panel” on page 122.

Field of View

The **Field of View** refers to a camera’s field of vision. A wider field of view makes the focal point appear further away, as more of the image is included in the same view window.

In floor plan view, the angled lines of a camera symbol indicate its field of view.



A camera's field of view can be adjusted in the **Camera Specification** dialog. See "Camera Panel" on page 902.

The field of view can also be adjusted while in a camera view using the keyboard:

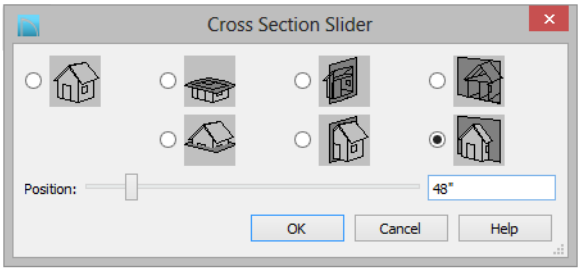
- **W** - Increase camera Field of View.
- **N** - Decrease camera Field of View.

In addition, the field of view can be adjusted with the mouse wheel when **Zoom Using Field of View** is checked in the **Preferences** dialog. See "Render Panel" on page 122.

Cross Section Slider

Select **3D> Camera View Options> Cross Section Slider** when a camera view or overview is active to open the **Cross Section Slider** dialog.

Note: The Cross Section Slider is not available when the Vector View Rendering Technique is used. See "Rendering Techniques" on page 928.



To use the Cross Section Slider

1. Click on the radio button beneath one of the cross section angles to select it.
   - The option at top right turns off the cutting plane, so no cross section is made.
2. Move the **Position** slider to adjust the position of the cutting plane.
3. You can position the cutting plane with accuracy using the text field to the right of the slider.
   - This value is measured from the edge of the model that is cut first by the selected cross section angle.
4. Click **OK** to close the dialog. If the active camera is saved, its Cross Section Slider settings will also be retained. See “Saving 3D Views” on page 900.

Working in 3D

A variety of tools are available in 3D views that allow you to edit your 3D model. You can also use the Dimension, Text, and CAD Tools to add annotation to cross section/elevation views.

Creating Objects in 3D Views

You can place windows, doors, cabinets, electrical objects, corner trim, and most library objects directly into 3D views. To do this, select the appropriate tool and click in

the 3D view. You can then edit the object's size and placement.

When created in 3D, most objects must be placed against a wall, on a floor platform, or within the Terrain Perimeter.

You can also click and drag to draw some CAD-based objects such as custom countertops, roof planes, terrain features and road, in camera views and overviews views.

The **Build Framing** and **Build Roof** dialogs are also accessible in 3D views, although the manual **Framing Tools** and **Roof Tools** are not.

Selecting and Editing Objects in 3D Views

Most objects can be selected and edited in 3D views. Select **Edit> Select Objects** and click on the surface of an object to select it. Once selected, objects can be edited using their edit handles, buttons on the edit toolbar, and the object's specification dialog. See "Editing Objects" on page 175.

When you select an object, edit handles and a handle surface display. The handle surface is a rectangle around the perimeter of the object that indicates the overall height and width of the selected surface. The edit handles that display depend on the type of object selected. Walls, for example, display two resize edit handles when selected while a slab displays ten handles, allowing you to move, resize and reshape it.

Note: If the wall height of the Exterior Room is adjusted in a 3D view, the default Floor or Ceiling Height of the entire floor is changed. See "Floor and Room Defaults" on page 324.

All moving or resizing is in the plane of the handle surface. You cannot move an object directly towards or away from the camera, for example, because that surface plane cannot be seen in the view.

By default, object movement is restricted to one inch or 10 mm increments, but this restriction can be set to custom increments in the **Plan Defaults** dialog and toggled off and on using the **Grid Snaps** button. See "Grid Snaps" on page 164.

Unrestricted positioning can also be enabled by holding down the Ctrl key while moving or resizing an object. See "Unrestricted Movement" on page 218.

Temporary dimension lines display when many objects are selected to help you resize the object and determine its height. These are sometimes easier to see when the color is toggled off. See "Temporary Dimensions" on page 980.

Because cross section/elevation views are orthogonal and display objects at their actual dimensions, they are sometimes more suitable for editing objects than camera views or overviews. See "Cross Section/ Elevation Views" on page 881.

When several 3D views are open, changes made in the plan automatically rebuild the model in all views. Because of this, it is typically faster to make changes to your plan with as few windows open as possible.

Editing Materials in 3D Views

Select **3D> Materials> Adjust Material Definition**, then click on a surface in the 3D view to open the **Define Material** dialog for that material. See “Adjust Material Definition” on page 833.

Select **3D> Material Painter** to apply materials to surfaces in the view using the Material Painter Tools. See “The Material Painter” on page 828.

Select **3D> Material Painter> Material Eyedropper** to apply the material on a surface in the view to other surfaces in the view. See “Material Eyedropper” on page 831.

Rebuild 3D

As changes are made to your plan, a 3D view automatically updates to reflect any changes visible in the view. If you find that a view is not updating as expected, select **3D> Rebuild 3D** to rebuild the entire 3D model.

Annotating 3D Views

The Dimension Tools, Text Tools, and CAD Tools are available in cross section/elevation views, allowing you to add technical information, call attention to details, and other tasks in these views. See “Detailing Cross Section/Elevation Views” on page 883.

You can also add annotation to any other 3D view by first making a line-drawn copy of the view using the **CAD Detail from View**  tool. See “CAD Detail from View” on page 1086.

Cross Section Lines

Cross Section Lines are created in cross section views to represent any objects split by the cross section line of the camera. They are placed on the “Cross Section Lines” layer, which is locked by default, and they get deleted and replaced whenever the view is redrawn.

When a dimension is drawn to locate an object split by a camera’s section line, it actually locates Cross Section Lines. So that dimensions can be retained when Cross Section Lines are regenerated, a **Point Marker**  is automatically created where a dimension meets a Cross Section Line and the dimension locates it instead of the Cross Section Line. See “Point Markers and Dimensions” on page 1028.

Cross Section Lines will print when their layer is turned on; however, they are not included when the view is sent to layer. The Point Markers created when dimensions locate Cross Section Lines, however, will both print and display in views sent to layout. See “Layout” on page 1203.

The “Cross Section Lines” layer can be unlocked, allowing Cross Section Lines to be be selected and edited. Additional CAD objects can also be placed on this layer when it is unlocked, as well; however, when the view is redrawn, all CAD objects on this layer will be deleted and replaced with a fresh set of Cross Section Lines.

Saving and Printing 3D Views

3D camera views, overviews and cross section/elevation views can be saved with the plan in which they are created, exported and saved as image files, as well as sent to layout and printed.

Saving 3D Views

Select **3D> Save Active Camera** to save the current camera in the plan. You can also save a camera view by checking the **Saved** box in the **Camera Specification** dialog. See “Camera Specification Dialog” on page 901.

Saved cameras can be closed and re-opened for later use, and retain their Cross Section Slider and Rendering Technique settings. See “Cross Section Slider” on page 896 and “Rendering Techniques” on page 928

In addition, if CAD or Text objects are drawn in a cross section/elevation view, you will be prompted to save the view when you close it. Any CAD or Text objects added to a cross section/elevation view are saved with the view as part of the plan file.

Once a 3D view is saved, it is listed in the Project Browser and can be named. The name displays in its label with the camera symbol in floor plan view. See “Project Browser” on page 1093.

Activating Saved Views

There are three ways to open a saved 3D view:

- Select the camera symbol in floor plan view and click the **Open View** edit button.
- Double-click the camera symbol using the **Select Objects** tool.
- Double-click on the saved camera view in the **Project Browser** or right-click on it and select **Open View** from the contextual menu.

Unsaved cameras that are open in another view window can also be activated using the **Open View** edit button.

If you open a saved camera view and then modify its location or direction using any of the tools available in that view, the program will confirm whether you want to re-save the camera using these new settings when you close it. See “Repositioning Cameras” on page 889.

CAD Detail From View

In any 3D view using the Vector View rendering technique, you can select **CAD> CAD Detail From View** to generate an editable line drawing of the view in a CAD Detail window. CAD Details created from a view do not update when the model is changed. See “CAD Detail from View” on page 1086.

Exporting 3D Views

All 3D views can be exported and saved as .bmp, .jpg, .png, or .tif files. Select **File> Export> Picture** to save the

current screen image as an image file. See “To export a picture” on page 1109.

In addition, Vector Views can be exported and saved as **.emf** files. See “Metafiles” on page 1112.

Once saved, a picture can be opened and converted into many other formats using a graphics program. Picture files can be sent to layout or used in word processing, desktop publishing, and web development programs to create advertisements, brochures, etc.

When a picture is exported, it is assigned the same size as it displays on screen. You can change the size of the view window to create a smaller or bigger picture.

Plan Backup

When transferring a plan to another computer or to another user, it is helpful to include all the Images, Textures, and Backdrops used in the plan so that rendered views are complete. The **Backup Entire Plan** tool allows you to do so. See “Backup Entire Plan” on page 67.

Printing 3D Views

Since all 3D views other than Vector Views are created using pixels instead of lines, **File> Print> Print Image** must be used when printing. **Print Image** is a special Chief Architect function that prints the screen in picture format. The entire view prints, including images such as plants and textures.

The quality of your print image is affected by your current window size and screen resolution. To maximize the quality of your printed image, generate it in full screen size and use the maximum screen resolution.

3D views can also be sent to layout and then printed as part of your construction documents.

Select **File> Send to Layout** to send the current view to layout. See “Sending Views to Layout” on page 1208.

Select a saved, inactive camera symbol in floor plan view and click the **Send Camera’s View to Layout** edit button to send the view to layout.

If you want to save or print a picture using resolution that is higher than your screen resolution, you can create the image using ray tracing. See “Ray Trace Views” on page 940.

Camera Specification Dialog

The **Camera Specification** dialog can be accessed in floor plan view by selecting a single camera symbol and clicking the **Open Object** edit button. See “In Floor Plan View” on page 886.

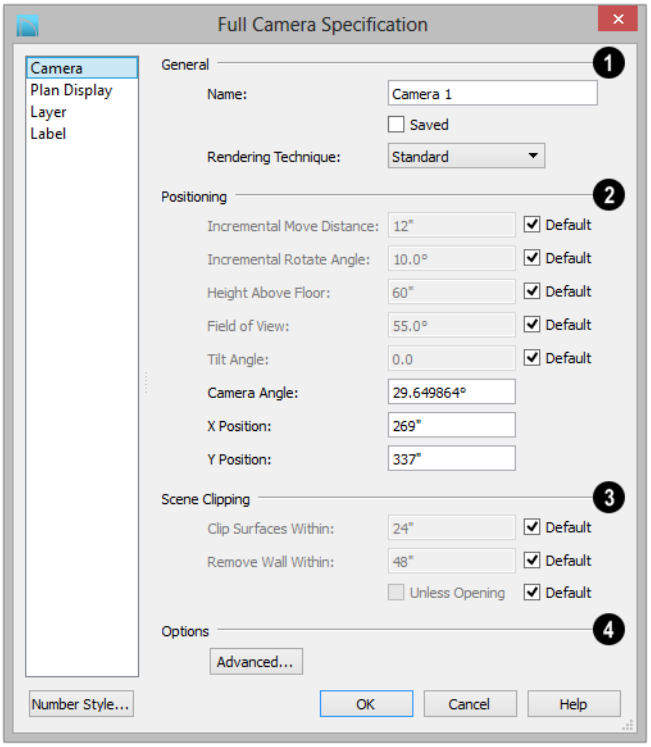
This dialog can also be accessed while a camera view or overview is active by selecting **3D> Edit Active Camera**  .

The selected view’s specific type is indicated in the dialog’s title bar: the specification

dialog for a **Full Camera** , for example, is named **Full Camera Specification**.

This dialog can only be opened for one camera at a time. If more than one camera symbol is selected, **Open Object** will not be available.

Camera Panel



Some settings only affect some types of views. Depending on the type of camera view selected, not all the settings may be available.

To change a setting, first uncheck **Default**, then type a new value in the text field.

1 **General** -

- Specify the **Name** that displays in the camera label in floor plan view and in the Project Browser. See “Project Browser” on page 1093.
- Check **Saved** to save this view with the plan. As soon as you type anything in the text field, this box becomes checked. If you click OK while this box is checked, it will become checked permanently. Saved cameras are listed in the Project Browser.

- Select the **Rendering Technique** used by the selected camera from the drop-down list. See “Rendering Techniques” on page 928.

❷ The **Positioning** settings determine the position and orientation of the camera. See “Repositioning Cameras” on page 889.

- The **Incremental Move Distance** controls how far the camera moves each time you Pan in any direction or Dolly forwards or backward. For interior views a small number is good, but for exterior you may want a larger increment.
- The **Incremental Rotate Angle** defines how many degrees the camera rotates each time you Tilt, Orbit, or Dolly side to side. A setting of 90° would make one full rotation in four moves.
- The **Height Above Floor** defines the height that the camera is above the floor level for the current floor.
- The **Field of View** defines the camera’s field of vision in angular degrees. See “Field of View” on page 895.


You can increase a camera’s Field of View when the view is active by pressing the W key, or decrease the Field of View by pressing the N key.

- The **Tilt Angle** determines the vertical angle that the camera is tilted. The camera maintains its focal point and position in floor plan view, but if the camera is tilted, the focal point is above or below the current camera height.
- Specify the selected camera’s **Camera Angle**. This is an absolute value: an angle of 0° points the camera toward the left in floor plan view.
- Specify the **X Position** and **Y Position** for the selected camera. These are absolute coordinates. Specifying zero for both places the camera at the plan’s origin point (0,0).
- Check **Default** for any value to use the default setting.

❸ The **Scene Clipping** settings control the extents of the camera view.

- **Clip Surfaces Within** - Objects located within this distance from the camera do not display in the view.
- **Remove Wall Within** - Remove the view of walls within this distance of the camera.

Both of these **Within** distances are measured as a radius from the camera position.

- Check **Unless Opening** to display a wall that is inside the **Remove Wall Within** range if the camera is pointing through an opening such as a door or window.
- Check **Default** for any value to use the default setting.

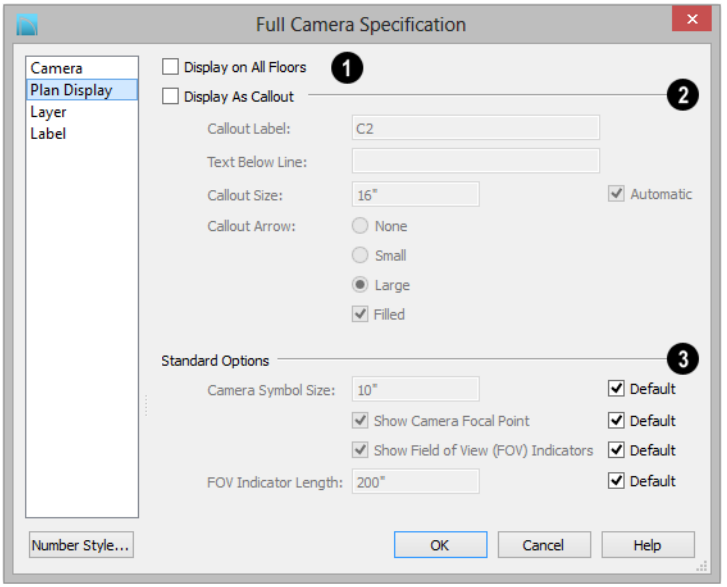
❹ Options -

- Uncheck **Show Lower Floors** to show only the current floor in the selected Floor Overview. When checked, the current floor plus any floors beneath it are included in the view. Only available for Floor Overviews. See “Floor Overview” on page 880.
- Click the **Advanced** button to open the **Advanced Camera Options** dialog and specify how hidden lines are handled in Vector Views when OpenGL is not used.

See “Advanced Camera Options Dialog” on page 871.

Plan Display Panel

The settings on the Plan Display panel control the appearance of the selected camera in floor plan view. See “In Floor Plan View” on page 886.



1 Check **Display on All Floors** to display the selected camera’s symbol in floor plan view on all floors. When unchecked, it only displays on the floor where the camera was created. See “Creating Camera Views” on page 879.

2 Check **Display As Callout** to use a callout symbol to represent the selected camera in floor plan view and enable these settings. Most of the Standard Options, below, are unavailable when Display as Callout is checked.

- Specify the **Callout Label**, which is the text that displays inside the callout circle. If no Text Below Line is specified, the Callout Label is centered in the callout.
- Specify the **Text Below Line** for a bottom row of text, if desired. Check **Automatic** to populate the Text Below Line with the camera’s Name, as specified on the Camera Panel. See “Camera Labels and Callouts” on page 887.
- To specify the **Callout Size**, uncheck **Automatic** and then type in the text field. When Automatic is checked, the size is based on the length of the Callout Label and the size of the current Text Style.

- Specify the appearance of the **Callout Arrow**. Choose **None**, a **Small** arrow, or a **Large** arrow. Uncheck **Filled** if you do not want a solid filled arrow.

Note: Callout arrows only display as filled when a camera is inactive. Inactive camera callout arrows are unfilled.

❸ The **Standard Options** settings allow you to specify the appearance of the selected camera's standard symbol. Uncheck **Default** beside any of these options to modify it. Most of these options are disabled when **Display As Callout** is unchecked. See "Dynamic Defaults" on page 74.

- The **Camera Symbol Size** is measured in plan inches (mm).
- Check **Show Camera Focal Point** to display the camera's focal point in floor plan view. When unchecked, the view's line of sight and focal point are hidden until the camera is selected; cross section/elevation camera clip plane indicators are suppressed in the same manner when this is unchecked.
- Check **Show Field of View Indicators** to display the camera's field of view indicators in floor plan view.
- You can also change the **FOV Indicator Length**, which is measured in plan inches (mm).

Layer Panel

For information about this panel, see "Layer Panel" on page 152.

Label Panel

In the **Camera Specification** dialogs, the settings on the Label panel are limited to Suppress Label checkbox and Position and Orientation settings.

Camera labels always use the **Camera Name** specified on the Camera panel. When callouts are used, the **Callout Label** and **Text Below Line** are specified on the Plan Display panel.

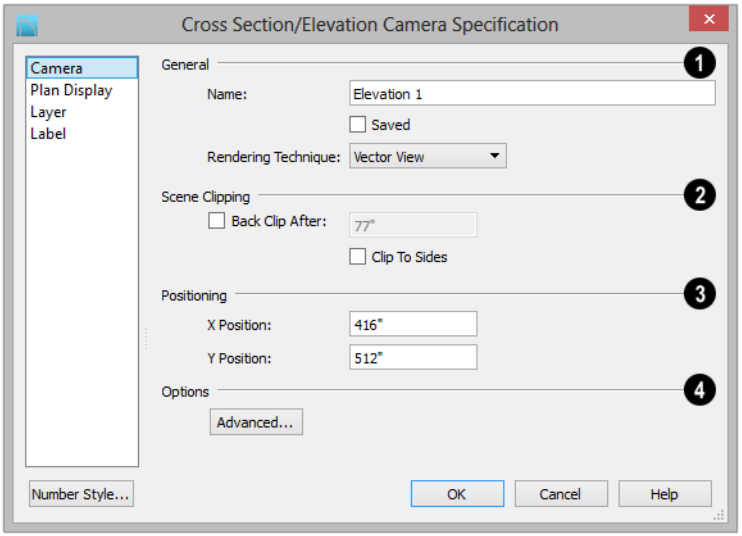
For information about this panel, see "Label Panel" on page 1243.

Cross Section/Elevation Camera Specification

The **Cross Section/Elevation Camera** and **Wall Elevation Camera Specification** dialogs can be accessed in floor plan view by selecting a single cross section/elevation camera symbol and clicking the **Open Object** edit button. See "In Floor Plan View" on page 886.

These dialogs can also be accessed while a cross section/elevation camera view is active by selecting **3D> Edit Active Camera**  .

Camera Panel



1 The **Camera Name** displays in floor plan view and is listed in the Project Browser. See “Project Browser” on page 1093.

- Check **Saved** to save this view with the plan. As soon as you type anything in the text field, this box becomes checked. If you click OK while this box is checked, it will become checked permanently. Saved cameras are listed in the Project Browser.
- Select the **Rendering Technique** used by the selected camera from the drop-down list. See “Rendering Techniques” on page 928.

2 The **Scene Clipping** settings control the extents of the camera view.

- **Back Clip After** - Enter the distance in inches (mm) from camera to backclip plane. If zero, no back clipping occurs.
- Check **Clip To Sides** to limit the selected camera view’s side-to-side extents to the length of its Clip Plane Indicator line(s) in floor plan view. When unchecked, the full width of the model is included in the view.
  The **Clip Plane Indicator Length** can be specified on the Plan Display panel when callouts are not used, or using the camera’s edit handles in floor plan view. See “Editing 3D Views” on page 893.
- Check **Ignore Railings and Invisible Walls** to ignore the room definition created by these types of walls in a selected **Wall Elevation** view. When this is unchecked, **Wall Elevation** views only recognize room definition created by regular walls. Only available for **Wall Elevation** views. See “Cross Section/Elevation Camera Tools” on page 882.

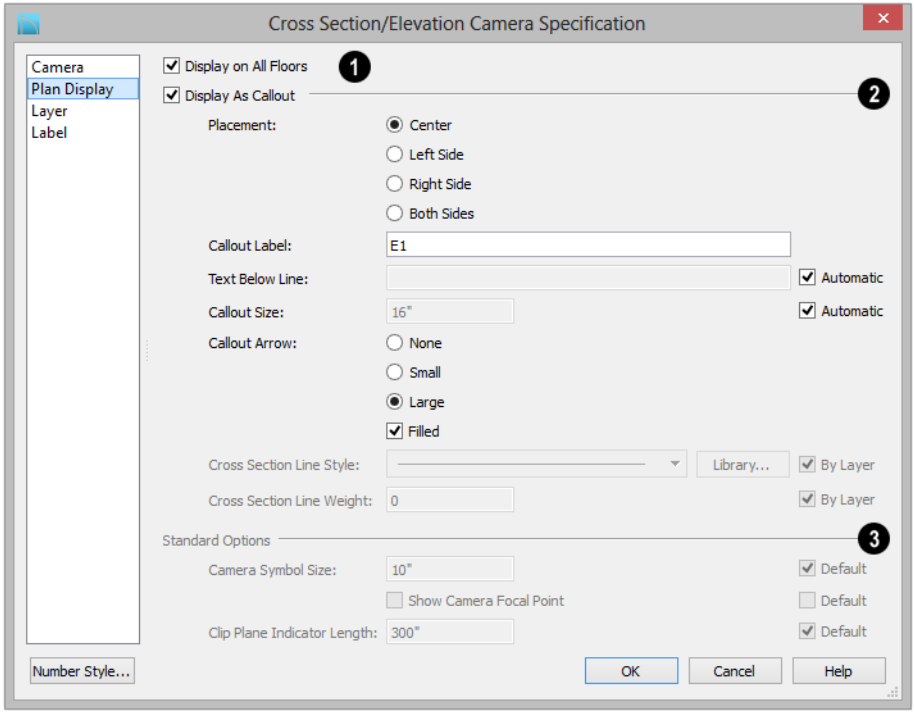
❸ Settings in the **Positioning** section determine the location of the camera in floor plan view.

- Specify the **X Position** of the camera in absolute coordinates.
- Specify the **Y Position** of the camera in absolute coordinates.

❹ Click the **Advanced** button to open the **Advanced Camera Options** dialog and specify how hidden lines are handled in Vector Views when OpenGL is not used. See “Advanced Camera Options Dialog” on page 871.

Plan Display Panel

The settings on the Plan Display panel control the appearance of the selected camera in floor plan view. See “In Floor Plan View” on page 886.



❶ Check **Display on All Floors** to display the selected camera’s symbol in floor plan view on all floors. When unchecked, it only displays on the floor where the camera was created. See “Creating Camera Views” on page 879.

❷ Check **Display As Callout** to use a callout symbol to represent the selected camera in floor plan view and enable the settings below. Most of the Standard Options, below, are unavailable when Display as Callout is checked.

- Specify the callout **Placement**, either at the Center, Left Side, Right Side, or Both Sides of a **Cross Section/Elevation**, **Backclipped Cross Section**, or **Wall Elevation** clip plane. If Center is selected, no clip plane line displays.
- Specify the **Callout Label**, which is the text that displays inside the callout circle. If no Text Below Line is specified, the Callout Label is centered in the callout.
- Specify the **Text Below Line** for a bottom row of text, if desired. Check **Automatic** to populate the Text Below Line with the layout page Label if the selected view is sent to layout. See "Camera Labels and Callouts" on page 887.
- To specify the **Callout Size**, uncheck **Automatic** and then type in the text field. When Automatic is checked, the size is based on the length of the Callout Label and the size of the current Text Style.
- Specify the appearance of the **Callout Arrow**. Choose **None**, a **Small** arrow, or a **Large** arrow. Uncheck **Filled** if you do not want a solid filled arrow.

Note: Callout arrows only display as filled when a camera is inactive. Inactive camera callout arrows are unfilled.

- Specify the **Cross Section Line Style**. Not available when Center is selected, above. Check **By Layer** to use the line style specified for the selected callout's layer, or choose a line style from the drop down list or the **Library**.
- Specify the **Cross Section Line Weight**. Not available when Center is selected, above. Check **By Layer** to use the line weight specified for the selected callout's layer, type a line weight in the text field.

❸ The **Standard Options** settings allow you to specify the appearance of the selected camera's standard symbol. Uncheck **Default** beside any of these options to modify it. Most of these options are disabled when **Display As Callout** is unchecked. See "Dynamic Defaults" on page 74.

- The **Camera Symbol Size** is measured in plan inches (mm).
- Check **Show Camera Focal Point** to display the camera's focal point in floor plan view. When unchecked, the view's line of sight and focal point are hidden until the camera is selected; cross section/elevation camera clip plane indicators are suppressed in the same manner when this is unchecked.
- Specify the **Clip Plane Indicator Length** in plan inches (mm). See "To create a Cross Section/Elevation view" on page 882.

Layer Panel

For information about this panel, see "Layer Panel" on page 152.

Label Panel

In the **Cross Section/Elevation Camera Specification** dialog, the settings on the Label panel are limited to **Suppress Label** checkbox and **Position** and **Orientation** settings.

Camera labels always use the **Camera Name** specified on the Camera panel. When callouts are used, the **Callout Label** and

Text Below Line are specified on the Plan Display panel.

For information about this panel, see “Label Panel” on page 1243.

Chapter 30:

Rendering and Ray Tracing

There are a variety of tools available to create 3D views of a model: simply click a button to create an overview, or click and drag to create a camera or cross section/ elevation view. See “3D Views” on page 867.

To improve the quality of the rendering and create a custom look, you can adjust lighting, edit the materials used in the plan, choose from a variety of rendering techniques and fine-tune 3D view quality settings. From most 3D views, you can create Final views of even higher quality.

You can also use Ray Tracing to create highly realistic images of your Chief Architect plans. As the name implies, ray tracing calculates the rays of light in a view as they travel through the 3D model and reflect off surfaces. As a result, ray tracing is slower than OpenGL rendering, but can be used to achieve much more complex effects such as reflections and highly realistic lighting.

Chapter Contents

Rendering Tips

There are a variety of factors which affect the appearance and quality of rendered 3D views. You can use these tools and settings to achieve renderings that meet your needs.

Lighting

Lighting is extremely important in most 3D renderings, in ray tracing, and in VRML file export. Lighting controls the visibility of objects in a view, affects the appearance of surfaces, and influences the appearances of colors and textures on those surfaces. Even small changes to light intensity, direction and color can have a large impact on image quality. See “Lighting” on page 914.

Shadows

Like lighting, shadows have an important effect on image quality. Shadows can be generated in any type of camera view using the Standard, Technical Illustration, Duotone, Painting, and Watercolor Rendering Techniques. See “Rendering Techniques” on page 928.

There are two ways to generate shadows in Chief Architect: standard and legacy shadows. Standard shadows are generate more quickly than legacy shadows but are of lower quality, while legacy shadows are slower but generally of higher quality. **Legacy Shadows** can be enabled or disabled in the **Preferences** dialog and will be enabled automatically if your video card does not support standard shadows. See “Render Panel” on page 122.

Because they can be time-consuming, by default shadows are only generated in **Final Views with Shadows**. You can, however, set them to generate in both previews and final views on the Render panel of the **Preferences** dialog. In order for a light source to cast shadows, it must be on in the current view and have **Cast Shadows** checked in its specification dialog. See “Light Data Panel” on page 632.

The quality of shadows is influenced by several settings on the Render panel of the **Preferences** dialog:

- **Legacy Shadows** produce shadows with quality that is generally higher than standard shadows but take significantly longer to generate.
- **Soft Shadows** creates shadows with soft edges instead of hard edges. This feature only takes effect when Software Edge Smoothing is used and can slow renderings considerably.
- A higher degree of **Software Edge Smoothing**, which affects the appearance of surface edges, can significantly improve the quality of shadows and other aspects of 3D views.

In addition to their appearance in camera views, sun shadows can also display in floor plan view to represent the shadows created by the sun at a particular date, time, and location. See “Sun Shadows” on page 922.

When standard shadows are enabled, sunlight can shine through windows into

interior rooms.See “Default Sun Light” on page 916.

Reflections

Reflections are another aspect of lighting that can increase a 3D view’s realism. When a flat surface is assigned a Mirror material, it can display the reflections of other objects in the scene. A material can be assigned the Mirror class in the **Define Material** dialog. See “Properties Panel” on page 848.

Note that a Mirror surface cannot display the reflection of another mirror. When one mirror can be seen in another, its material is shown rather than a reflection.

Reflections can slow down 3D view generation and responsiveness considerably and are turned off by default in rendered Previews. They can be turned on and off for both Previews and Final Views in the **Preferences** dialog. See “Render Panel” on page 122.

For reflections on curved surfaces as well as reflections within reflections, consider ray tracing. See “Ray Trace Views” on page 940.

Material Textures

Textures are graphic files that represent contoured surfaces of objects such as carpet, bricks, tile, and wood in rendered views. Textures are assigned to materials which in turn are assigned to objects. See “Patterns and Textures” on page 828.

The display of materials in rendered views is controlled by settings on the Texture and Properties panels of the **Define Material** dialog. See “Define Material Dialog” on page 841.

For realistic rendered views, it is important to adjust texture properties correctly. Textures can be mapped to objects for correct placement. See “Mapping Patterns and Textures” on page 835.

Brightness, shininess and transparency control how light sources affect the display of surfaces in rendered views. See “Lighting” on page 914.

If no texture is selected for a material or if the display of textures is turned off, affected surfaces are a solid color instead.

Images

Images are very important for the appearance of rendered views and exported VRML files. Images are picture files that represent individual objects such as trees, flowers, and vehicles. Images are represented in floor plan view by 2D symbol and are visible in Vector views. See “Placing Images” on page 1102.

Backdrops

A backdrop is an image, usually of an exterior view, that displays in the background of 3D views to help place the model into a realistic setting and add a sense of perspective. If a backdrop is not specified, Chief Architect applies a background color. See “3D Backdrops” on page 1122.

Previews vs Final Views

With the exception of Vector Views, 3D views are generated using the Preview settings in the **Preferences** dialog. Rather than produce the best quality possible, the

installed settings for Previews generate 3D views quickly but with reasonable quality, and are best when working on the model in 3D. See “Render Panel” on page 122.

Final Views produce much higher quality images that are more suitable for printing or saving as graphics files. Final Views often take significantly longer to generate than Previews, so the 3D view reverts back to the Preview settings as soon as anything is changed within the view.

When you have finished making adjustments in the 3D view, select **3D> Camera View Options> Final View**  or **Final View with Shadows**  .

Final View  is not available in Vector Views. **Final View with Shadows**  is not available in Vector View, Glass House, or Line Drawing views. See “Rendering Techniques” on page 928.

Higher Quality Rendering

The settings on the Render panel of the **Preferences** dialog allow you to adjust rendering quality and speed so that you can strike a balance that best suits your needs.

For high quality Final Views, consider experimenting with these settings:

- **Hardware Edge Smoothing** - A higher degree of surface edge smoothing can significantly improve the quality of 3D views.
- **Software Edge Smoothing** - As with Hardware Edge Smoothing, increasing surface edge smoothing improves quality.
- **Triangle Size** - When you use triangles, the program divides surfaces in most 3D views into triangles which are used to illuminate the surfaces properly. Generally speaking, the smaller the Triangle Size, the slower the rendering, but the higher-quality result you can achieve. Triangles are not used in the Standard and Technical Illustration Rendering Techniques. See “Rendering Techniques” on page 928.
- **Use Transparency** - Necessary to display transparent or semi-transparent surfaces such as the glass in windows in rendered views.


To generate a high-quality picture of your scene, consider ray tracing. See “Ray Trace Views” on page 940.

Lighting

In most rendered views, lighting is calculated on a room-by-room basis; only the light sources in the room containing the camera are used. This limitation does not apply in ray trace views, however.

When the camera is outside a building, the program normally uses sunlight for lighting calculations and turns off all other light sources. You can turn the sunlight off and use all the other exterior lights to simulate night time views.

The maximum number of light sources that can be turned on in a view at the same time is determined by your video card. If your video

card's maximum number of lights is eight, the program only uses the eight light sources closest to the camera's position. You can manually turn on and off individual lights in order to get the desired lighting effects. See "Displaying Lights" on page 916.

Each individual light source has a set of Rendering properties, such as intensity and color, that can be defined. See "Light Data Panel" on page 920.

Ambient Light

Ambient light is used to simulate the way light "bounces" around a scene and approximates this by ensuring that all objects are at least as bright as the specified ambient value, which is set in the **3D View Defaults** dialog. See "Options Panel" on page 873.

Ambient light is in addition to other light sources in a room or scene. Too much ambient light can give a rendered view a flat appearance.

- **Interior Ambient** controls the ambient light in interior rendered views of the model.
- **Daytime Ambient** controls the ambient light in exterior rendered views of the model when **Toggle Sunlight**  is on. See "Sun Angles and Shadows" on page 921.
- **Nighttime Ambient** controls the ambient light in exterior rendered views of the model when **Toggle Sunlight**  is off.

In addition to the ambient lighting specified in the **3D View Defaults** dialog, there are four ways to create light sources for rendered or ray trace views:

- Default Lights
- Light Fixtures
- Added Lights
- Default Sun Light

Default Lights

If you create an interior rendered view of a room and no lights have been placed there, the program creates a Default Light source within that room. The Default interior light acts like a central point light source.

By default, a parallel light source is also added to interior views which shines straight up to add extra illumination to ceilings. The intensity of this light is adjusted with the Interior Ambient intensity, and it can be turned off entirely in the **3D View Defaults** dialog.

The Default Light cannot be adjusted in any way. If you want to control the light in an interior rendered view, you must add a light to the room that you are rendering by placing a lighting fixture or by adding a light source using **3D> Lighting> Add Lights**  .

Light Fixtures

An electric symbol that represents a Light Fixture can have one or more light sources associated with it. Properties for each light source such as light type, color and intensity can be modified in the fixture's specification dialog. See "Electrical Service Specification Dialog" on page 630.

If the light source is a Point or Spot Light, you can also adjust its Offset, or position relative to the fixture. If you choose to **Show**

Position in Camera View, you can see where the light source is located.

Light sources look most realistic when they are offset from a surface.

Added Lights

 In floor plan view, select **3D> Lighting> Add Lights** to quickly add a light source to a plan. Added Lights and their labels are placed on the "Light Sources" and "Light Sources, Labels" layers by default.

Added lights only act as light sources in plan files that have at least one room defined. They display 2D symbols in floor plan view but do not display as objects in 3D views.

While Added Lights do not display as objects in 3D, you can specify that an Added Light's position be represented by a cross hairs in rendered views that use lighting. See "Light Data Panel" on page 632.

Added lights can be placed into objects that normally do not generate light, such as a TV.

There are three types of added light sources:

- Parallel Light sources
- Point Light sources
- Spot Light sources

See "Light Types" on page 918.

Default Sun Light

If you create a rendered view and no Sun Angle exists, the program creates a **Default Sun**. The Default Sun acts like a parallel light source but its position is not based on any real world locations.

When standard shadows are enabled, sunlight can shine through windows into interior rooms.See "Shadows" on page 912.

The Default Sun can be modified in a rendered view by selecting **3D> Lighting> Adjust Lights**  . See "Default Sun Light Specification Dialog" on page 927.

If you place a **Sun Angle**  in floor plan view, the Default Sun is no longer used as a light source in exterior rendered views. Instead, sun light is generated based on specific date, time, latitude, and longitude information. See "Sun Angles and Shadows" on page 921.

Displaying Lights

 The display of light fixtures and Added Lights in floor plan and 3D views is controlled in the **Layer Display Options** dialog. See "Layer Display Options Dialog" on page 148.

In addition, they can serve as sources of light in rendered and/or ray trace 3D views. They can be turned on and off, as well as set to cast shadows.

In Floor Plan View

Light fixtures are placed on the "Electrical" layer by default, and Added Lights, on the "Light Sources" layer. See "Displaying Objects" on page 144.

In floor plan view, both light fixtures and Added Lights can display labels when the "Electrical, Labels" and/or "Light Sources,

Labels" layers are is turned on. See "Object Labels" on page 1241.

An Added Light's automatic label in floor plan view indicates which of these attributes the light has:

- R - Used in Standard rendered views.
- T - Used in ray trace views.
- S - Casts shadows.

A Point Light that casts shadows in both rendered and ray trace views

These same abbreviations can be displayed at the end of a light fixture's automatic label.

- Make sure that the "Electrical, Labels" layer is turned on. See "Displaying Electrical Objects" on page 628.
- Check **Include Type** in the **Electrical Schedule Defaults** dialog. See "Label Panel" on page 1239.

In 3D Views

Both light fixtures and Added Lights can serve as sources of light in rendered and/or ray trace views.

To turn a light on or off

There are several ways to turn a light fixture or Added Light on or off:

- Select one or more fixtures or Added Lights and click the **Turn Light(s) Off in 3D** or **Turn Light(s) On in 3D** edit button.
- Uncheck **On** in the object's specification dialog. See "Light Data Panel" on page 632.
- Clear the **On/Off** checkbox in the **Adjust LIghts** dialog.

Added Lights are not associated with a 3D fixture, but you can specify that any light source's location be represented in rendered 3D views using a cross hairs. See "Light Data Panel" on page 632.

Light source position indicators will only display when the light is in use in the current 3D view. That is, it must be:

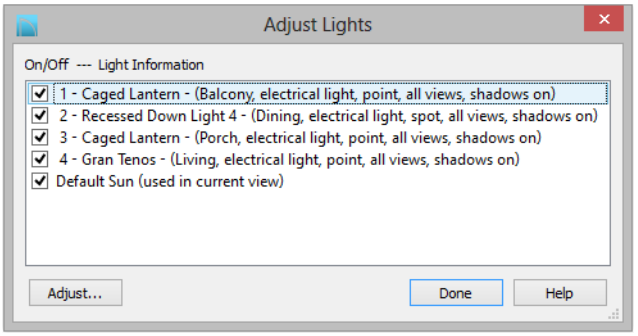
- Turned on.
- Specified for use in Camera views.
- One of the light sources in use per your video card's limitations.
- Either located in a room or in a view with Sunlight toggled off.

Sunlight will shine through windows into interior rooms when shadows are enabled. See "Shadows" on page 912.

Adjust Lights Dialog

Light sources in the current plan - including light fixtures, Added Lights, the Default Sun, and Sun Angles - can be accessed and edited using the **Adjust Lights** dialog. Select **3D> Lighting> Adjust Lights** to open this dialog in floor plan or any 3D view.

The Adjust Lights dialog is an efficient way to control which lights are turned on in 3D views.



All lights in the current plan are listed here using the same names as their labels. Additional information about each light follows in parentheses. If this dialog is opened while a 3D view is active, the Default Sun Light will be included in the list. See "Default Sun Light" on page 916.

- Check the box beside a light's name to turn it on or uncheck the box to turn it off.
- To adjust the properties of a light in the list, double-click on its name or select it and click the **Adjust** button. Make changes to the light in its specification dialog and click **OK**. For more information, see "Default Sun Light Specification Dialog" on page 927, "Light Specification Dialog" on page 920 or "Electrical Service Specification Dialog" on page 630.

Multiple lights can be selected by holding down the Shift key. If multiple lights are selected, clicking the Adjust button opens the **Light Data** dialog, which is similar to the Light Data panel of a single object's specification dialog.

If you are in a 3D view that displays lighting, the view will regenerate based on the new light settings.

Light Types

There are three types of light source, each of which generates light in a different way and allows you to create a variety of lighting effects:

- Parallel Light sources
- Point Light sources
- Spot Light sources

Parallel, Point, and Spot lights can be specified for electrical light fixtures in the **Electrical Service Specification** dialog. See "Light Data Panel" on page 632.

In addition, these three light types can be placed in a plan as **Added Lights**, which are light sources that are not associated with a fixture. As with light fixtures, the lighting properties of Added Lights can be specified in their specification dialog. See "Light Specification Dialog" on page 920.

Parallel Lights

A **Parallel Light** has a direction but no position. The light appears to illuminate all objects with equal intensity, as if it were at an infinite distance from the object. A Parallel Light source is commonly used to simulate distant light sources, such as the sun and works best when placed on the exterior of a structure.

To add a Parallel Light

1. In floor plan view, select **3D> Lighting> Add Lights**.
2. Click and drag in floor plan view two or more plan feet (600 mm) in any direction.
3. When you have dragged a sufficient distance, the light preview will change to a parallel light icon.
4. When you release the mouse, a parallel light pointing in the direction that you dragged is created.

Point Lights

Like a bare light bulb, a **Point Light** radiates light equally in all directions from its origin. Point lights are a realistic representation of non-directional electric lighting.

If no user defined light exists, Chief Architect creates a Point Light source to represent a light within a room. Any light source, except a Sun Angle, can be changed into a Point Light.

To create a Point Light source

1. In floor plan view, select **3D> Lighting> Add Lights**.
2. Click in floor plan view. Do not drag the pointer when you click the screen, or you will create a spot or parallel light.

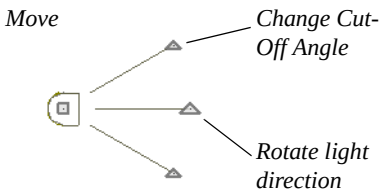
Spot Lights

A **Spot Light** focuses the light in a specified direction. The location, tilt angle, intensity, and more can be specified in a Spot Light's specification dialog.

To create a Spot Light source

1. In floor plan view, select **3D> Lighting> Add Lights**.
2. Click and drag in floor plan view no more than two plan feet (600 mm) in any direction.
3. As you drag, the light preview will look like a Spot Light icon. If you drag too far, it will change to a Parallel Light icon.
4. When you release the mouse, a Spot Light pointing in the direction that you dragged is created.

You can also use a Spot Light's edit handles in floor plan view to move it, as well as change its direction and Cut Off Angle.

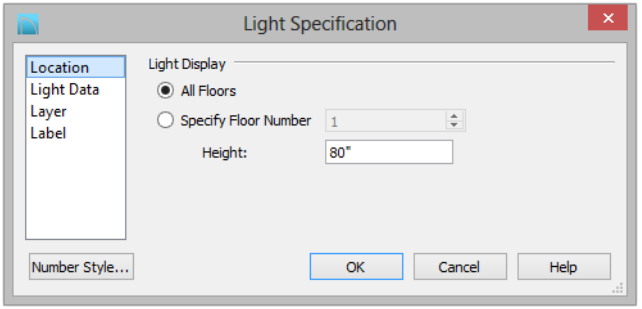


Light Specification Dialog

Select one or more Parallel, Point or Spot Lights and click the **Open Object** edit button to open the **Light Specification** dialog.

You can also select **3D> Lighting> Adjust Lights** to access a list of the light sources present in the current plan and open the specification dialog for any of them. See “Adjust Lights Dialog” on page 917.

Location Panel



Light Display - Specify where the selected Added Light displays in floor plan and 3D views.

- Select **All Floors** to display the selected light on all floors in floor plan view.
- Select **Specify Floor Number** to display the light on one floor only, then choose a floor number from the drop-down list.

Note: The floor or floors that an Added Light displays on in floor plan view is totally independent of where it displays in 3D.

- Specify the selected light’s **Height**, relative to 0, which is the default height of Floor 1. See “Multiple Floors” on page 425.

Light Data Panel

The settings on this panel are also found on the same panel of the **Electrical Service Specification** dialog. See “Light Data Panel” on page 632.

Depending on the type of light(s) selected, the options available here may vary.

Layer Panel

For information about the settings on this panel, see “Layer Panel” on page 152.

Label Panel

Labels for Added Lights display in floor plan view when the “Light Sources, Labels” layer is turned on and use the Text Style assigned to that layer. See “Text Styles” on page 1030.

For information about the settings on this panel, see “Label Panel” on page 1243.

Sun Angles and Shadows

In addition to the functional and aesthetic properties of ambient light and light sources in rendered views, the direction and angle of the sun’s light and shadows are an important consideration. Two tools allow you to generate sun light and sun shadows with accuracy:

- **North Pointers** allow you to specify the direction of true north in a plan.
- **Sun Angles** let you specify an exact location, date, and time for sun light and shadow generation.

North Pointer

The **North Pointer** tool is used to define the direction of true north in a plan. The direction of north does not affect the orientation of the Snap and Reference grids, but it does affect the direction of sun light and shadows, how conditioned area totals are calculated, and how bearing information is interpreted by the program.

Every bearing is defined relative to North, so it is best to establish this direction before entering survey information for a site plan. See “Creating a Plot Plan” on page 182 of the User’s Guide.

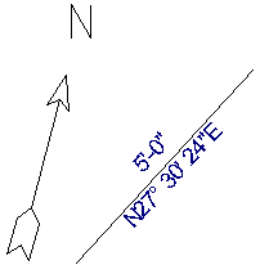
If a **North Pointer** is not used, north is assumed to be straight up on screen in floor plan view.

Select **CAD> North Pointer**, then click and drag to draw the pointer, starting at the tail and dragging toward the point. Once it is drawn, you can define its exact length and angle in its specification dialog. See “Line Specification Dialog” on page 1052.

Multiple North Pointers can be drawn in a given plan file, and will always point in the same direction automatically. If you rotate one of them, the others will automatically rotate to match. Similarly, if you draw a new North Pointer at a different angle, existing North Pointers will rotate to that angle automatically.

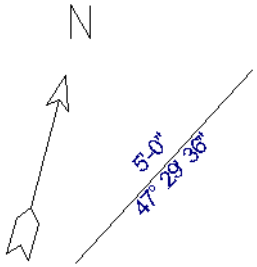
If you choose to display line angles when a North Pointer exists, be sure to select the appropriate format in the **CAD Defaults** dialog. See “CAD Defaults and Preferences” on page 1040.

- If angles are set to **Bearings**, they are relative to the North Pointer.



The same line’s angle is set to show Bearings, which reference the North Pointer.

- If angles are set to show as **Degrees**, the angle relates to 0° (horizontal to the right) even if a North Pointer is present.



Line angle shown in degrees. This does not reference the North Pointer.

A North Pointer can be selected and edited using its edit handles and edit toolbar buttons. All attributes of the N aside from its size are drawn from the Text Style assigned to the layer it is are placed on. For more information, see “Editing Line Based Objects” on page 184.

Sun Angles

Sun Angles let you establish exactly where your plan’s building site is located, and a precise date and time. This information allows the program to determine the sun’s location in the sky and generate sunlight and sun shadows with accuracy.

Note: Sun Angle calculations do not adjust for elevation. They are based on formulas published by the United States Naval Observatory and have limited accuracy as documented by the USNO.

Sun Angles are also Parallel Lights. When an exterior 3D view is rendered, the program looks for any Sun Angles that are turned on. If it finds none, the Default Sun is used. See “Default Sun Light” on page 916.

To create a Sun Angle

1. In floor plan view, go to Floor 1 or Floor 0. Sun Angles can only be created on these floor levels. See “Multiple Floors” on page 425.
2. Select **CAD> Lines> Sun Angle** and click in the drawing area to place a Sun Angle arrow at that location.
3. In the **Sun Angle Specification** dialog, specify the Sun Angle’s Earth Data and other information. See “Sun Angle Specification Dialog” on page 924.
4. After it is created, a Sun Angle cannot be rotated; but it can be moved as well as resized using its edit handles. Shadows are not affected.

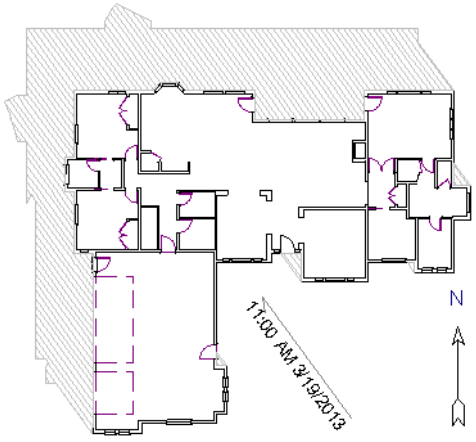
Multiple Sun Angles can be created, each with different specifications; however, only one can be used as a light source in a given 3D view. If more than one Sun Angle is turned on, the program will use the first one listed in the **Adjust Lights** dialog. See “Adjust Lights Dialog” on page 917.

Sun Angles can display their date and time in floor plan view and can also produce sun shadow polylines in floor plan view. Both Sun Angles and their shadows are on the “Sun Angles & Shadows” layer by default.

Sun Shadows

Sun Angles allow the program to produce shadows cast by a building that reflect the exact position of the sun in the sky in a particular location and at a specific date and time.

In floor plan view, sun shadows are represented by polylines filled with a hatch pattern. If a Terrain Perimeter is present, the shape of a sun shadow polyline is affected by changes in terrain height. If no Terrain Perimeter exists, sun shadows fall on an imaginary plane at a height of zero, the default height for Floor 1



A Sun Angle and shadows for Coeur d'Alene, ID

These sun shadows are shown in **Final Views with Shadows** and Ray Trace views and can also display in floor plan view.

No sun shadow generates if the sun is below the horizon or if it is so low on the horizon that the shadow would be extremely long.

The direction and length of a sun shadow is based on the information in the **Sun Angle Specification** dialog.

To generate the sun shadows associated with a particular Sun Angle, select the Sun Angle and click the **Open Object** edit button. See "Sun Angle Specification Dialog" on page 924.

- To display its shadows in Final Views with Shadows and Ray Trace views, make sure that **Casts Shadows** is checked on the Lighting Data panel of the **Sun Angle Specification** dialog.
- To display sun shadow polylines in floor plan view, click the **Make Shadow** button on the Earth Data panel.

Multiple Sun Angles can be placed in the same plan to allow the simultaneous display of shadows cast at different times in floor plan view. Only one should be turned on in 3D views at any given time, however.

Specify different line colors and/or styles for shadows cast by multiple Sun Angles on the Line Style and Fill Style panels of the Sun Angle Specification dialog.

There are several ways to delete a sun shadow polyline:

- In floor plan view, select and delete the defining polyline.
- In floor plan view, select and delete the Sun Angle arrow.
- In the **Sun Angle Specification** dialog, click the **Delete Shadow** button. See "Earth Data Panel" on page 924.
- In the **Sun Angle Specification** dialog, click the **Make Shadow** button to delete existing shadows and create new ones.

Sun Angle Specification Dialog

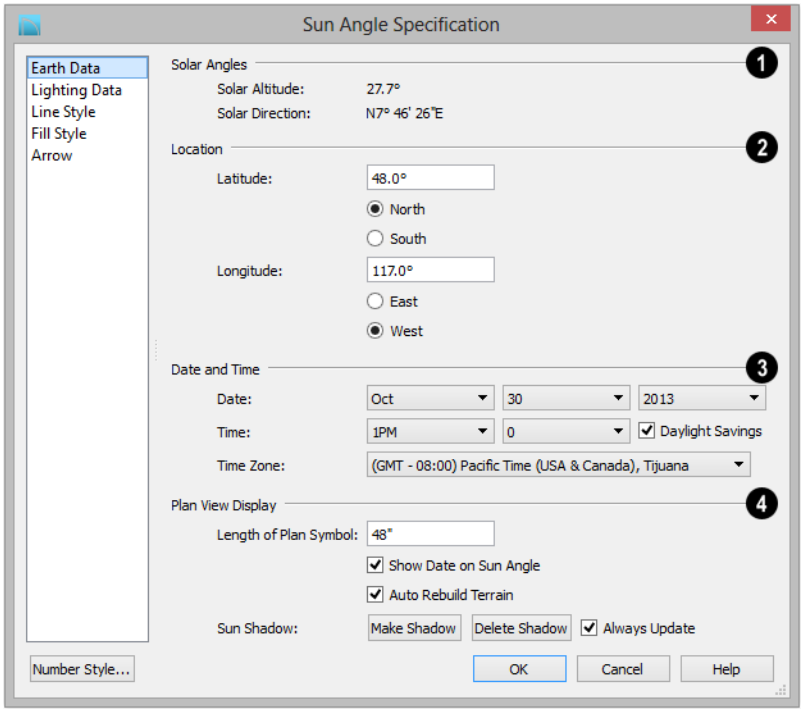
Select **CAD> Lines> Sun Angle**, then click in floor plan view to open the **Sun Angle Specification** dialog and create a new Sun Angle. See “Sun Angles and Shadows” on page 921.

To open the **Sun Angle Specification** dialog for an existing Sun Angle, select it and click the **Open Object** edit button.

Earth Data Panel

The settings on the Earth Data panel let you establish exactly where your plan’s building site is located, and exactly when the sun’s light should be calculated. This information allows the program to generate sunlight and sun shadows with accuracy.

The initial location and time zone can be set in the **Preferences** dialog. See “Sun Angle Panel” on page 109.



1 The **Solar Angles** display for reference and may update as changes are made to the settings on this panel.

- The **Solar Altitude** is the angle of the sun above the horizontal plane, in degrees.
- The **Solar Direction** is the angle between true North and the sun's direction. This is the angle the Sun Angle arrow points in floor plan view relative to the direction of North. See “North Pointer” on page 921.

❷ Specify the **Location** of the selected Sun Angle.

- Specify the **Latitude**, which is measured either **North** or **South** of the equator, depending on which radio button you select.
- Specify the **Longitude**, which is measured either **East** or **West** of the Greenwich meridian, depending on which radio button you select.

❸ Specify the **Date and Time** of the selected Sun Angle.

- Specify a **Date** for the selected Sun Angle. Select a month from the first drop-down list, a day from the second, and a year from the third.
- Specify a **Time** for the selected Sun Angle. Select an hour from the first drop-down list; minutes in 15 minute increments can be selected from the second list.
- If you want the Sun Angle to observe **Daylight Savings Time**, check this box.
- Specify the **Time Zone** that the building site is located in. The initial values default to the settings in the **Preferences** dialog. See “Sun Angle Panel” on page 109.

❹ Specify the **Plan View Display** of the selected Sun Angle.

- Specify the **Length of Plan Symbol**, which is the length of the Sun Angle arrow in floor plan view.
- Check **Show Date on Sun Angle** to have the date and time display on the Sun Angle arrow in floor plan view. This label uses the Text Style assigned to the “Sun Angle & Shadows” layer. See “Text Styles” on page 1030.
- Check **Auto Rebuild Terrain** to rebuild the terrain automatically whenever you create a sun shadow. If this is unchecked and you regenerate sun shadows, the program will prompt you to rebuild the terrain. See “Building the Terrain” on page 709.

When you use the **Build Terrain** command in floor plan view, all sun shadows in the plan are automatically updated.

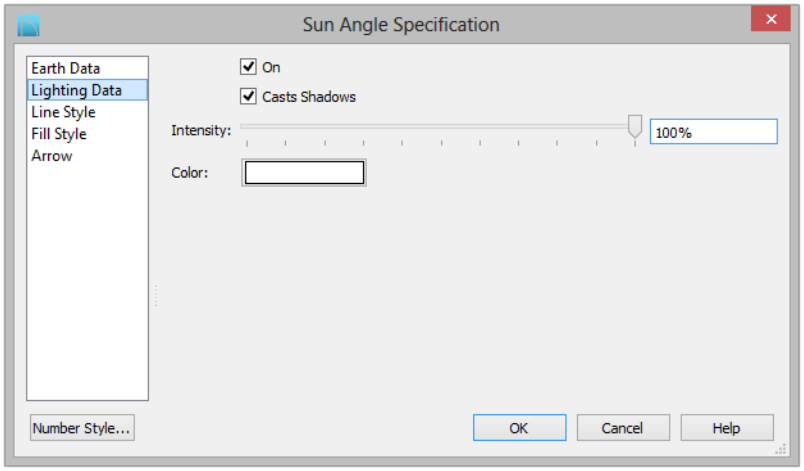
- Click the **Make Shadow** button to create or regenerate the sun shadow in floor plan view. See “Sun Shadows” on page 922.
- Click the **Delete Shadow** button to remove the sun shadow from floor plan view.
- Check **Always Update** to have the program update the selected Sun Angle’s shadow whenever any of the defining information is changed. When this is checked, the program may be slower when changes are made in this dialog.
- If Always Update is unchecked and you make changes in this dialog, click the **Make Shadow** button to generate a new shadow.

Note that the **Make Shadow** option does not affect 3D views. To view sun shadows in a 3D view, use **Final View with Shadows** . See “Previews vs Final Views” on page 913.

Lighting Data Panel

A Sun Angle can be used as a light source in 3D views. The settings on the Lighting Data panel control attributes of the sunlight associated with the selected Sun Angle.

The settings defined on the Lighting Data panel do not affect the sun shadow in floor plan view: they only affect 3D views in which lighting and shadows can display.



- Check **On** to specify the selected Sun Angle as a Parallel Light source, replacing the Default Sun. See “Default Sun Light” on page 916.

Multiple Sun Angles can be turned on; however, only one can be used in a given 3D view. See “Adjust Lights Dialog” on page 917.

- Check **Casts Shadows** to have this light source cast shadows. These shadows are similar to the shadow shown in floor plan view, but may render differently based on the presence of other light sources.
- Use the **Intensity** slider bar or text field to define the relative strength of the light source. The time of day as set on the Earth Data panel does not affect how the Sun Angle renders as a light source, but this does.
- Click the **Color** button to select a color for the sunlight associated with the selected Sun Angle. See “Color Chooser/ Select Color Dialog” on page 853.

Line Style Panel

For information about the Line Style panel, see “Line Style Panel” on page 1053.

Fill Style Panel

The settings on the Fill Style panel control the appearance of the selected Sun Angle's shadow in floor plan view. For information about these settings, see "Fill Style Panel" on page 1067.

Arrow Panel

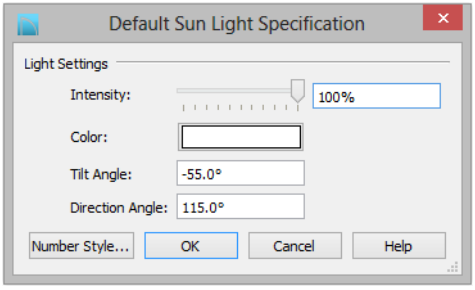
For information about the settings on the Arrow panel, see "Arrow Panel" on page 1055.

Default Sun Light Specification Dialog

When no **Sun Angle** is present in the current plan, the **Default Sun Light Specification** dialog allows you to control the intensity, direction and color of the Default Sun light source. See "Default Sun Light" on page 916.

While in a 3D view, select **3D> Lighting> Adjust Lights**, then select **Default Sun** from the list in the **Adjust Lights** dialog and click the **Adjust** button. See "Adjust Lights Dialog" on page 917.

If there are no light fixtures or added lights in the plan, this dialog will open as soon as **Adjust Lights** is selected.



- Use the **Intensity** slider bar or text field to control how bright the default sun light appears in rendered views.
  An intensity of 0% is the same as turning the sun light off. An intensity of 100% is the maximum brightness allowed.
- Click the **Color** bar to define the color of the light being modeled. Colored sun light may be used to achieve special lighting effects, but may alter the appearance of your material colors and textures.
- Specify the **Tilt Angle**, which is the angle of the sun light with respect to the horizon. A value of 90° means that the light points straight up, while a value of -90° means that the light points straight down. 0° is parallel to the horizon.
- Specify the **Direction Angle**, which is the direction that the sun light points toward. Zero degrees is measured horizontally on screen, pointing to the right. Positive values rotate in a counter-clockwise direction from there, while negative values rotate clockwise.
- Specify the **Num Style** button to specify the format used to enter angle values. See "Dialog Number/Angle Style Dialog" on page 126.

The Default Sun light color is pure white, which has the least effect on the material colors and textures.

Rendering Techniques

Any camera view, cross section/ elevation view, or overview can be generated using a variety of Rendering Techniques to produce views for a range of different purposes: from detail drawings to artistic presentation views. When a 3D view is active, select **3D> Rendering Techniques** to access these tools.

There are two ways to create a view using a particular Rendering Technique:

- Create a 3D view, then select the desired rendering technique from the menu.
- Select the desired rendering technique in the **Camera Defaults** dialog, then create a 3D view. See “Camera Defaults Dialog” on page 869.

Many of the Rendering Techniques have default settings that control their initial appearance. Once a view is created, these settings can be adjusted for that particular view in the **Rendering Technique Options** dialog. See **“Rendering Technique Options” on page 931**.

If a camera view is saved, its Rendering Technique settings are saved, as well. See “Saving and Printing 3D Views” on page 900.

You can specify which Rendering Techniques use a backdrop image. See “Backdrop Panel” on page 875.

The Painting, Watercolor and Line Drawing techniques require more time to generate than other Rendering Techniques. To save time, adjust the camera’s perspective before using one of these techniques. See “Editing 3D Views” on page 893.

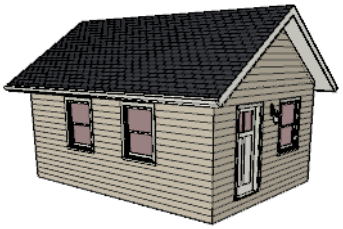
Standard Rendering

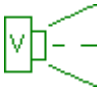
Standard rendering is a photo-realistic technique that represents materials using textures, models lighting, and can also display shadows. Surface edge lines are not drawn and no special colors or effects are applied. Lighting is limited to the room containing the camera and the capabilities of your video card.

In floor plan view, the camera symbol for a view using the **Standard** technique displays an S in its center. See “Displaying 3D Views” on page 885.

Vector View

In Vector Views, surface edge lines are drawn and pattern lines and colors are used to represent materials. Textures, lighting, and shadows are not used, and special colors and effects are not applied.



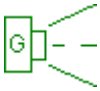


In floor plan view, the camera symbol for a view using the **Vector View** technique displays a V in its center.

Glass House rendering uses different shades of a single color to display the model with surface edge lines and semi-transparent surfaces. Lighting and shadows are not modeled, and materials are not represented, so neither pattern lines nor textures are used.

Glass House

Glass House rendering uses different shades of a single color to display the model with surface edge lines and semi-transparent surfaces. Lighting and shadows are not modeled, and materials are not represented, so neither pattern lines nor textures are used.



In floor plan view, the camera symbol for a view using the **Glass House** technique displays a G in its center.

Duotone

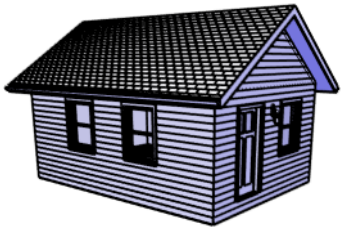
Duotone rendering represents materials using textures and models lighting and shadows. Surface edge and pattern lines are not drawn and two colors, one Light and one Dark, are applied over the surfaces, allowing you to create special effects such as sepiatone or grayscale.

In floor plan view, the camera symbol for a view using the **Duotone** technique displays a D in its center.

Technical Illustration

Technical Illustration rendering draws surface edge and pattern lines, and uses shades of two colors, Warm and Cool. The warm shade is applied to surfaces that face the light source in the view, and the cool shade,to surfaces that face away from it.

Only one light source is used: the light with the hightest Intensity found in the room containing the camera. In exterior views, this light is always the Default Sun Light. If no lights are on, a fallback light is used. Lighting is modeled as non-photorealistic, stylized highlights and shadows are supported. See “Lighting” on page 914.



In floor plan view, the camera symbol for a view using the **Technical Illustration** technique displays a T in its center.

Painting

Painting rendering draws views by placing small regions of color and then stroking them along the surfaces in multiple layers. This technique uses textures to represent materials and models lighting and shadows, and can produce a variety of distinct non-photo-realistic painting styles.

In floor plan view, the camera symbol for a view using the **Painting** technique displays a P in its center.

Watercolor

Watercolor rendering approximates the effects of watercolor painting such as pigment pooling and flow. It uses textures to represent materials and models lighting and shadows. When **Line Drawing on Top** is enabled, pattern lines are also used.

In floor plan view, the camera symbol for a view using the **Watercolor** technique displays a W in its center.

Line Drawing

In a **Line Drawing** rendering, surface edges are represented by lines with a hand-drawn style. Surfaces are completely opaque and patterns are used, but textures, lighting,and shadows are not.

In floor plan view, the camera symbol for a view using the **Line Drawing** technique displays an L in its center.

Note: In some plans, the Painting, Watercolor and Line Drawing techniques may take a considerable amount of time. You can press the Esc key to cancel the rendering.

Rendering Technique Options

The settings in the **Rendering Technique Options** dialog allow you to control the specific effects of each rendering technique on an active 3D view. To access this dialog, create a camera view, cross section/elevation view, or overview and select **3D> Rendering Techniques> Technique Options**.

The **Rendering Technique Options** dialog can also be accessed by double-clicking the

Rendering Techniques  parent button.

The settings in the **Rendering Technique Defaults** dialog are the same as those in the this dialog, but control the initial settings of each technique when it is first applied.

In the **Rendering Technique Options** dialog, select a technique from the list on the left to make its options active on the right. When this dialog is first opened, the technique currently used by the view is selected. If the view is new, the settings are based on those in the **Rendering Technique Defaults** dialog.

As changes are made in the **Rendering Technique Options** dialog, the 3D view behind the dialog box automatically updates to reflect those changes for all techniques except Painting, Watercolor and Line Drawing. To update views using these techniques, which take more time to draw than the others, click the **Update** button in the dialog.

When a 3D view is saved, its Rendering Technique Options settings are saved, as well. See “Saving 3D Views” on page 900.

Standard Rendering

There are no Rendering Technique Options for Standard rendering; however, you can specify the ambient lighting for rendered views in the **3D View Defaults** dialog. See “3D View Defaults Dialog” on page 873.

There are a variety of other tools that affect the appearance of standard rendered views. See “Displaying 3D Views” on page 885.

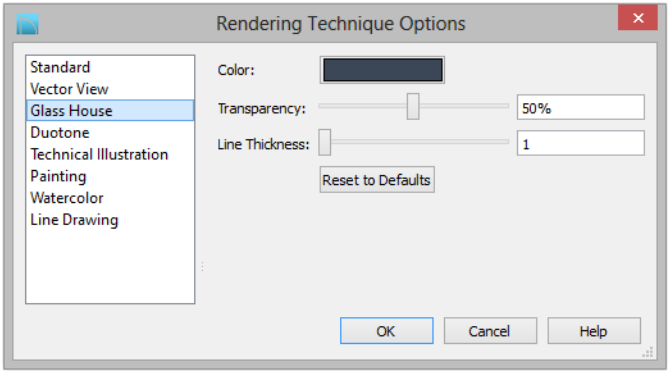
Vector View

There are no Rendering Technique Options for Vector View rendering; however, a variety of settings that affect the appearance of Vector Views an be set in the **3D View Defaults** dialog. See “3D View Defaults Dialog” on page 873.

There are a variety of other tools that affect the appearance of Vector Views. See “Displaying 3D Views” on page 885.

Glass House

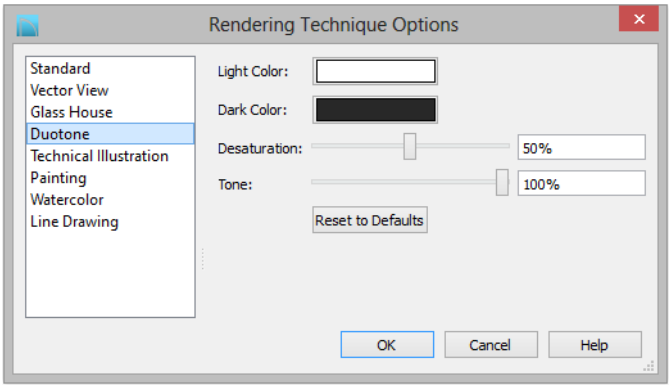
The active 3D view immediately updates to reflect any changes made to the Rendering Technique Options settings for Glass House renderings.



- Click the **Color** bar to select a color for the semi-transparent surfaces and lines in a Glass House view. See “Color Chooser/ Select Color Dialog” on page 853.
- Specify the **Transparency** of the surfaces in Glass House view. For example, to create a wireframe line drawing of your structure, turn transparency to full and minimize line thickness.
- Specify the **Line Thickness** of surface lines in Glass House view.
- Click **Reset to Defaults** to apply the Glass House settings defined in the **Rendering Technique Defaults** dialog. If clicked in the defaults dialog, the originally installed settings are restored.
- In the **Rendering Technique Defaults** dialog, the **Restore Initial Settings** button is available instead. Click this to reset the options on this panel to the originally installed settings.

Duotone

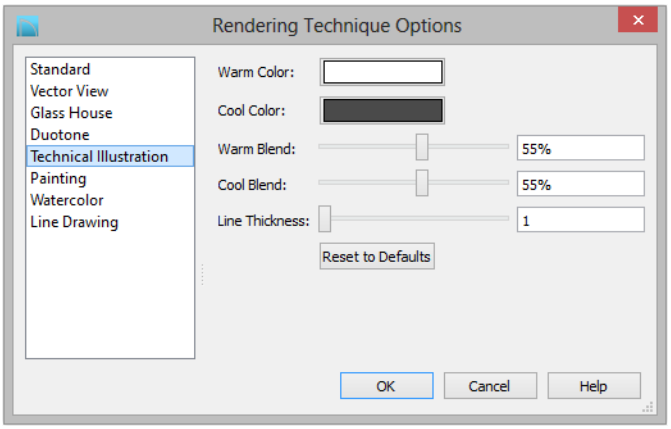
The active 3D view immediately updates to reflect any changes made to the Rendering Technique Options settings for Duotone renderings.



- Click the **Color** bars to select a **Light Color** and **Dark Color** for surfaces and lines in a Duotone view. See “Color Chooser/Select Color Dialog” on page 853.
- Specify the **Desaturation**, which is the degree to which color is removed from the original image. A value of 0% retains the original colors in the view while a 100% results in a grayscale image.
- Specify the **Tone**, which is the extent to which the **Light** and **Dark Colors** cover the original colors in the view. A value of 100% completely obscures the view’s original colors as well as the effects of Desaturation.
- Click **Reset to Defaults** to apply the Duotone default settings set in the **Rendering Technique Defaults** dialog.
- In the **Rendering Technique Defaults** dialog, the **Restore Initial Settings** button is available instead. Click this to reset the options on this panel to the originally installed settings.

Technical Illustration

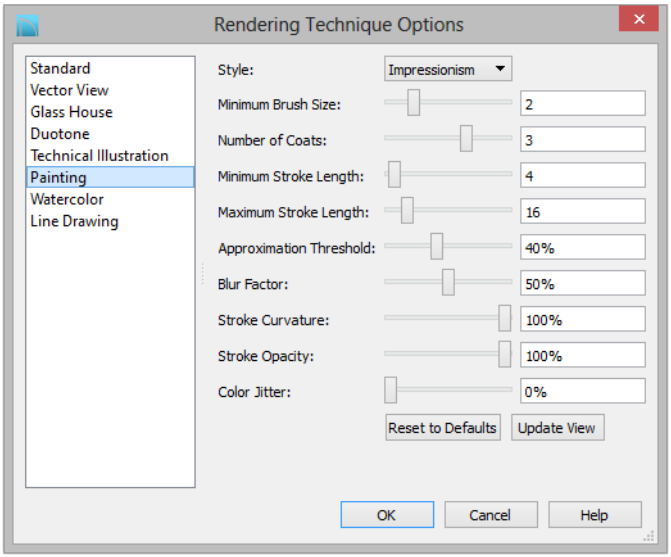
The active 3D view immediately updates to reflect any changes made to the Rendering Technique Options settings for Technical Illustration renderings.



- Click the **Color** bar to select a **Warm Color** for surfaces that face the light source and a **Cool Color** for surfaces that face away from the light. See “Color Chooser/Select Color Dialog” on page 853.
- Specify the **Warm Blend**, which is the degree to which the selected Warm Color is blended with original colors on well-lit surfaces in the view.
- Specify the **Cool Blend**, which is the degree to which the selected Cool Color is blended with original colors on shaded surfaces in the view.
- Specify the **Line Thickness** of all surface edge and pattern lines in the view.
- Click **Reset to Defaults** to apply the Technical Illustration settings defined in the **Rendering Technique Defaults** dialog..
- In the **Rendering Technique Defaults** dialog, the **Restore Initial Settings** button is available instead. Click this to reset the options on this panel to the originally installed settings.

Painting

In order for the active 3D view to reflect changes made to the Rendering Technique Options settings for Painting renderings, you must click the **Update View** button in the dialog.

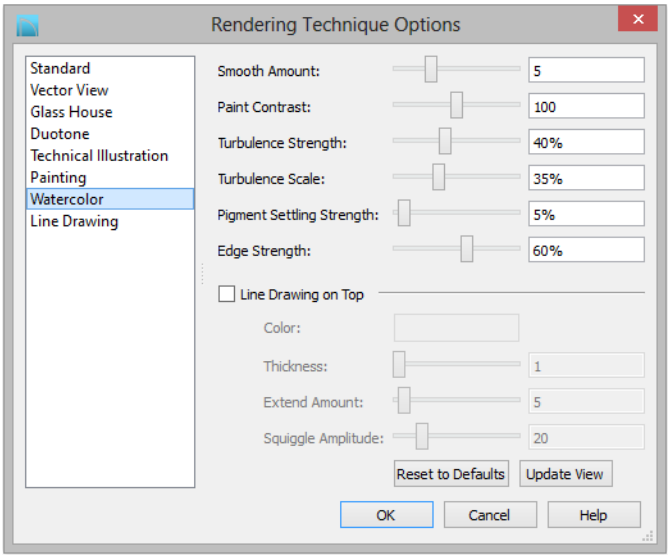


- Select a predefined painting **Style** from the drop-down list. The settings that follow reflect the selected style. If you customize any of the settings, the selected style will be “Custom”.
- Specify the **Minimum Brush Size**, which is the size of the brush used to paint the final layer.
- Specify the **Number of Coats**, which is the number of times the view is painted using progressively smaller brushes.
- Specify the **Minimum Stroke Length** of the brushes used to draw the view. A low value produces finer detail while a higher value creates a choppier appearance.
- Specify the **Maximum Stroke Length** of the brushes used to draw the view.
- Specify the **Approximation Threshold**, which is how closely the painted rendering conforms to the original view.
- Specify the **Blur Factor**, which is the degree to which the original image is blurred. A low value retains more detail in the original view and thus a more accurate representation of the original view
- Specify the **Stroke Curvature** , which is the degree to which brush strokes are curved. A low value produces straight curves while a high value creates small, tight strokes.
- Specify the **Stroke Opacity**, or how transparent the paint brushed over the original view is. A value of 0% results in completely transparent paint.
- Specify the **Color Jitter**, which is the amount of random colors added to brush strokes.
- Click **Reset to Defaults** to apply the Painting settings defined in the **Rendering Technique Defaults** dialog.

- In the **Rendering Technique Defaults** dialog, the **Restore Initial Settings** button is available instead. Click this to reset the options on this panel to the originally installed settings.
- Click **Update View** to apply any changes made to these settings to the active 3D view.
- Click **OK** to close the dialog and redraw the active 3D view based on these settings. Depending on your plan, this may take several moments.

Watercolor

In order for the active 3D view to reflect changes made to the Rendering Technique Options settings for Watercolor renderings, you must click the **Update View** button in the dialog.



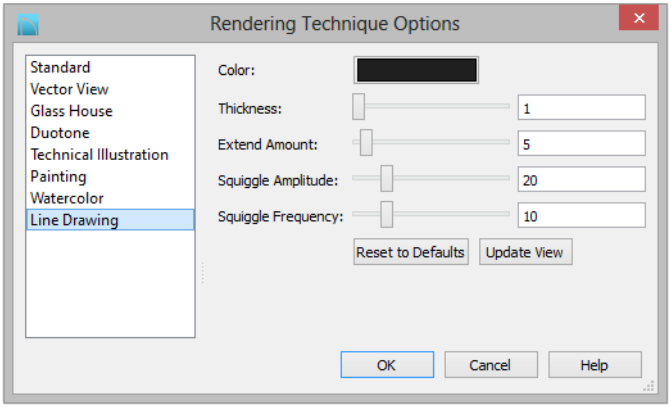
- Specify the **Smooth Amount**, which is the degree to which details are removed from the original view.
- Specify the **Paint Contrast**, which determines the extent to which variations in pigment color are used.
- Specify the **Turbulence Strength**, which produces “pooling”, or variations in the strength of pigment colors.
- Specify the **Turbulence Scale**, which controls the size of the areas of pooling.
- Specify the **Pigment Settling Strength**, which is creates the appearance of pigment settling into low areas in paper.
- Specify the **Edge Strength**, which is how well-defined surface edge lines are.
- Check **Line Drawing on Top** to generate pattern lines and surface edge lines with a

hand-drawn appearance, as in the Line Drawing Technique. When checked, the four settings that follow are enabled.

- Click the **Color** bar to specify the color of the lines drawn on top of the rendering.
- Specify the **Thickness** of the lines drawn on top of the rendering.
- Specify the **Extend Amount**, which is the distance that lines may extend past intersecting surface edges.
- Specify the **Squiggle Amplitude**, which controls the average amount of curvature in the lines' squiggles. A value of 0 produces straight lines.
- Click **Reset to Defaults** to apply the Watercolor settings defined in the Rendering Technique Defaults dialog..
- In the **Rendering Technique Defaults** dialog, the **Restore Initial Settings** button is available instead. Click this to reset the options on this panel to the originally installed settings.
- Click **Update View** to apply any changes made to these settings to the active 3D view.
- Click **OK** to close the dialog and redraw the active 3D view based on these settings. Depending on your plan, this may take several moments.

Line Drawing

In order for the active 3D view to reflect changes made to the Rendering Technique Options settings for Line Drawing renderings, you must click the **Update View** button in the dialog.



- Click the **Color** bar to select a color for the lines used to draw the view. See "Color Chooser/Select Color Dialog" on page 853.
- Specify the **Thickness** of the lines, in pixels.
- Specify the **Extend Amount**, which is the distance that lines may extend past intersecting surface edges.

- Specify the **Squiggle Amplitude**, which controls the average amount of curvature in the lines' squiggles. A value of 0 produces straight lines.
- Specify the **Squiggle Frequency**, which controls how often the lines have curves. A value of 0 produces straight lines.
- Click **Reset to Defaults** to apply the Line Drawing settings defined in the **Rendering Technique Defaults** dialog.
- In the **Rendering Technique Defaults** dialog, the **Restore Initial Settings** button is available instead. Click this to reset the options on this panel to the originally installed settings.
- Click **Update View** to apply any changes made to these settings to the active 3D view.
- Click **OK** to close the dialog and redraw the active 3D view based on these settings. Depending on your plan, this may take several moments.

Speeding up 3D View Generation

Depending on the speed of your processor, how many cores your processor has, and your computer's video memory, a 3D view may generate in a few seconds or less.

When you have a large, complex model with a lot of detail, many objects, extensive terrain, or patterns composed of many lines, it may take a few minutes to generate a 3D view of everything in the model. During this process, progress information may display in the Status Bar and in a message window.

There are several ways to speed up the generation time of views.

You can turn on "Show Screen Redraw Time" in the Preferences dialog to see how your changes affect 3D view generation time. See "Appearance Panel" on page 90.

Turn Off Layers

The display of objects in 3D views can be turned on or off by layer in the **Layer Display Options** dialog. Turning off the display of unneeded objects in 3D views can speed up 3D view generation time. See "Layer Display Options Dialog" on page 148.

Each camera view and overview uses the default layer set for Camera Views. Changes made to this layer set in one view affect all other views using that set. See "Layer Set Management" on page 147.

Halt Generation with Esc Key

Using the Esc key, you can interrupt the modeling process at any point and display the incomplete model "as is." This is particularly helpful when you just need to reorient a model on the screen for a specific angle or view.

The Esc option allows you to place the view quickly, then press the F5 function key to refresh the display with all 3D faces intact.

Faster Rendering

To increase rendering speed, consider turning off some or all of the following options in the **Preferences** dialog. Bear in mind that render quality may be affected. See “Render Panel” on page 122.

Use **Optimizations** - Many video cards with OpenGL are capable of optimizing 3D views for subsequent redraws. The effects of this option varies from video card to video card.

In general, you should leave this option turned on unless you are experiencing crashes when rendering.

Show Shadows - This option has the greatest impact on rendering speed and should only be used for Final Views, unless you have an extremely fast OpenGL-accelerated video card.

When rendering shadows, a percentage complete value may display in the Status Bar.

In general, you should make sure you are only using a minimum number of lights to cast shadows.

Soft Shadows - Only used when Show Shadows is turned on, this significantly slows down the rendering speed. To save time, only use this option for Final Views, and consider ray tracing as an alternative way to generate a high-quality image.

Software Edge Smoothing - Only use this option for Final Views, as this slows down even the fastest video cards.

Use Textures - Some older video cards slow down significantly using textures. If you find that you need to uncheck this box often, you may want to upgrade your video card.

Use Triangles - This improves the quality of lighting effects on larger surfaces in certain views. Triangles are not used in the Standard, Technical Illustration, or Vector View Rendering Techniques.

View Panel Factors

Vector Views are drawn using an adaptive method that saves time by dividing the screen into horizontal and vertical panels.

The Options panel of the **3D View Defaults** dialog has two tuning factors that allow you to adjust the way the adaptive method works. See “Options Panel” on page 873.

Higher Quality Rendering

There are a number of settings you can use to improve the quality of your renderings. Some can affect rendering times, so you may want to consider optimizing them for your needs in Final Views only. See “Previews vs Final Views” on page 913.

Hardware Texture Filtering - Improves the appearance of textures, particularly on surfaces angled away from the camera. Not supported by some video cards.

Use Triangles - When you have lights in your scene, triangles are used to make those lights appear to illuminate objects properly. Generally speaking the smaller you set your **Triangle Size**, the slower the render, but the higher-quality result you can achieve.

Use Transparency - Necessary to display transparent or semi-transparent surfaces in a rendered view.

Software Edge Smoothing - Though slow, this can significantly improve the quality of 3D views.

To generate a high-quality picture of your scene, consider ray tracing.

Ray Trace Views

Ray tracing is a method of generating high-quality 3D views in which the paths of individual rays of light are calculated, making it possible to model effects like reflectivity. Ray tracing a scene can be time consuming, but when lighting and materials are set up properly, the results can be impressively realistic.

Ray trace views are generated in their own view window and are static images of the model - not dynamic. That is, if you make changes to the 3D model, any previously created ray trace views will not be affected.

To create a ray trace

1. Create a 3D camera view or overview.
   - The Standard Rendering Technique must be used. See “Standard Rendering” on page 928.
   - Perspective views are preferable to Orthographic views for ray tracing because they are more realistic to the human eye. See “Perspective and Orthographic Views” on page 868.
2. Position the camera as needed. Do not use the Zoom or Pan tools. See “Editing 3D Views” on page 893.
3. If the Ray Trace Configuration you plan to use has **Use Active Window Size** checked, adjust the shape of the view window as needed.
4. Select **3D> Ray Trace Current View**  .
5. In the **Ray Trace Current View** dialog:
   - Select a Ray Trace Configuration from the drop-down list and click the **Ray Trace** button. See “Ray Trace Current View/Ray Trace Defaults Dialog” on page 942.
6. A ray trace can be cancelled at any time:
   - In the **Preparing to Ray Trace** progress dialog, click the **Cancel** button.
   - Once the ray trace view window is open, you can cancel the process by selecting **File> Close**  .
7. To stop a ray trace in progress without cancelling it, select **File> Stop Ray Trace**  .
8. When the ray trace is completed, save the resulting image for future use:
   - Select **File> Print Image**  to print the image. See “Print Image Dialog” on page 1197.
   - Select **File> Export Picture**  to save the image in any of several file formats including **.jpg**, **.bmp**, and **.png**. See “Exporting Pictures” on page 1109.
   - Select **File> Send to Layout**  to send the ray trace view to a layout

page. See “Sending Views to Layout” on page 1208.

Progressive Ray Tracing

Chief Architect’s ray tracer begins by generating a low-quality preview of the model based on the current Ray Trace Configuration’s settings. Once the initial ray trace is complete, the ray tracer performs additional passes to incrementally refine the view’s lighting quality and effects.

If **Save Image to File** is checked in the **Ray Trace Options** dialog, the program will save the ray trace as an image file and will update the file after every pass of the ray tracer. See “General Panel” on page 943.

You can specify the how long these additional passes are performed in the **Ray Trace Options** dialog, and can stop a ray trace in progress whenever it meets your needs by selecting **File> Stop Ray Trace**  . See “General Panel” on page 943.

The Ray Trace Window

When the ray trace view window is active, the image will regularly update as the ray trace progresses and its status will display in the Status Bar. When it is finished, the number of passes and cumulative time, including pre-processing time, will display there. See “The Status Bar” on page 39.

Unlike rendered views, you can minimize a ray trace window or switch to a different view while the view is being generated and perform other tasks. Simply restore your ray trace window when you are ready to view the image. See “Working in Multiple Views” on page 861.

You can specify whether your computer’s processor allocates more resources for the ray trace or for working in the program in the **Preferences** dialog. See “Ray Trace Panel” on page 124.

If you have specified an image size larger than your monitor and saved the results as an image file, you may only see one corner of the total view. You can, however, use the scroll bars and/or **Zoom In**  or **Zoom Out**  . See “Zoom Tools” on page 859.

Ray Trace Configurations

Ray trace views are generated based on settings that control the size of the final image and lighting properties.

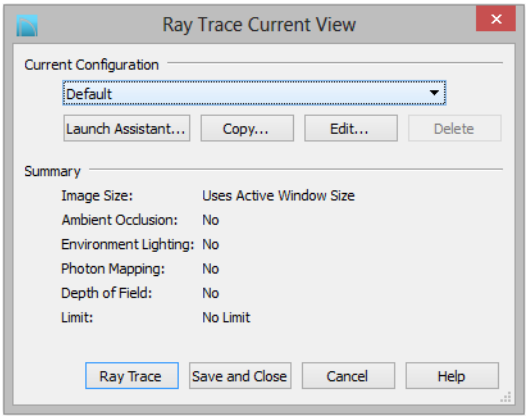
You can save multiple ray trace configurations for different purposes, and then select the one best suited to the view you want to ray trace. See “Multiple Saved Defaults” on page 75.

To access the ray trace configurations saved in the current plan, select **Edit> Default Settings**  . Click the + beside “Camera”, then select “Ray Trace” and click the **Edit** button to open the **Ray Trace Defaults** dialog. See “Default Settings” on page 72.

You can also access the available ray trace configurations by selecting **3D> Ray Trace**

Current View while a 3D camera view or overview is active. The **Ray Trace Current View** dialog will open.

Ray Trace Current View/ Ray Trace Defaults Dialog



- Select the name of the **Current Configuration** from the drop down list. A **Summary** of the selected configuration's setting displays in the bottom portion of the dialog box.
- Click the **Launch Assistant** button to launch the **Ray Trace Assistant**. See "Ray Trace Assistant" on page 948.
- Click the **Copy** button to create a copy of the Current Configuration.
- Click the **Edit** button to open the **Ray Trace Options** dialog, where you can make changes to the selected Current Configuration. See "Ray Trace Options" on page 942.
- Click the **Delete** button to permanently remove the Current Configuration from the plan. Not available if there is only one configuration in the list.
- If the **Ray Trace Current View** dialog was accessed via **Ray Trace Current View**, click the **Save and Close** button to close the dialog without ray tracing the current view. Any new configurations or changes that you may have made to existing configurations are retained.
- If the **Ray Trace Current View** dialog was accessed via **Ray Trace Current View**, click the **Ray Trace** button to begin ray tracing the active 3D view using the Current Configuration and retain any new configurations or changes made to exiwting configurations.
- If the **Ray Trace Defaults** dialog was accessed via **Default Settings**, click **OK** to close the dialog and save any newly created or renamed configurations.
- Click the **Cancel** button to close the dialog without saving any changes. Any renamed or newly created configurations will not be retained unless you click Next in the warning message box that displays.

You can add your preferred ray trace configurations to your template plan. See "Template Files" on page 82.

Ray Trace Options

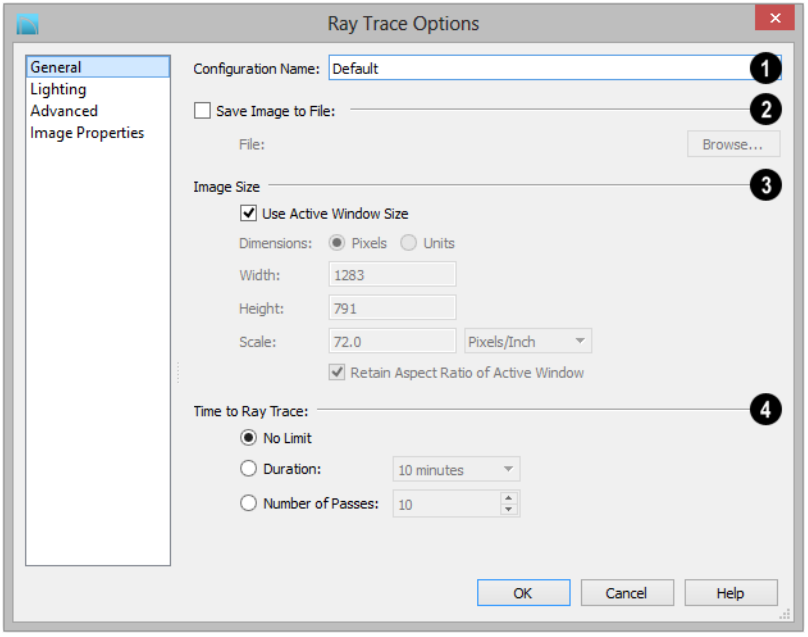
The **Ray Trace Options** dialog can be opened in either of two ways:

- In any view, select **Edit> Default Settings** and expand the “Camera” category. See Default Settings.
- In a Standard rendered view, select **3D> Ray Trace Current View** .

In either case, you will first need to select the current ray trace configuration in the **Ray Trace Configurations/Ray Trace Current View** dialog. See “Ray Trace Current View/ Ray Trace Defaults Dialog” on page 942.

When the **Ray Trace Options** dialog opens, the Current Configuration specified in the **Ray Trace Current View** dialog is active.

General Panel



1 Specify the **Name** of the current Ray Trace Configuration. Names must be unique.

2 Check **Save Image to File**, then click the **Browse** button to save the ray trace image directly to a **.jpg**, **.bmp**, **.png**, or **.tif** file after every pass of the progressive ray tracer. If a file has been specified, its pathname will display to the right of the **Choose** button.

If the specified file already exists, the program will ask if you to wish to overwrite the existing file or choose a new name and/or location when you start a ray trace.

3 Specify the **Image Size** of the ray trace.


To enable the Image Size settings, uncheck Use Active Window Size.

- Specify whether the ray trace image's **Width/Height Dimensions** are measured using **Pixels** or drawing **Units** (inches or mm).
- Specify the **Width** and **Height** of the ray trace image in either Pixels or Units.
- Check **Retain Aspect Ratio** to maintain the width to height ratio of the original image and prevent the ray trace from being stretched or distorted.
- Uncheck **Use Active Window Size** to enable the other Image Size settings. Whcn checked, the ray trace image uses the current size of the active 3D view window.
- Specify the **Scale** of the ray trace image, in either Pixels/Inch or Pixels/mm. Only available when the image size is specified in Units.

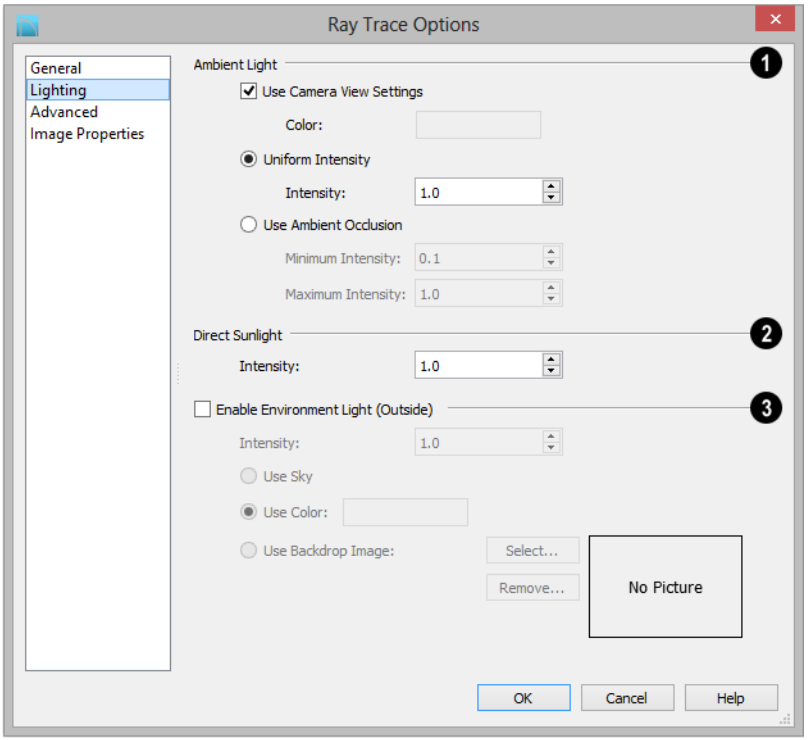
4 Specify a **Time to Ray Trace**, which determines how long a ray trace runs and thus its final quality. See "Progressive Ray Tracing" on page 941.

- Select **No Limit** to run the ray tracer until you select **File> Stop Ray Trace**  .
- Select a **Time** to ray trace from the drop-down list. The ray tracer will complete as many passes as possible during this time.
- Specify a **Number of Passes**. The ray tracer will run as long as needed to complete this number of passes.

You can stop any ray trace at any time by selecting **File> Stop Ray Trace**  .

Lighting Panel

The settings on the Lighting panel control the appearance of light in a ray trace scene that isn't associated with a particular light source. See "Lighting" on page 914.



1 The **Ambient Light Settings** control the appearance of the light present throughout a scene that does not come from a particular source. Ambient light exists everywhere, including shadowed areas. See "Ambient Light" on page 915.

- Uncheck **User Camera View Settings** to enable the **Color** bar and specify the color of the ambient light. See "Color Chooser/Select Color Dialog" on page 853.
- When **Use Camera View Settings** is checked, the ambient light is grey in color and its brightness is based on the ambient light settings in the **3D View Defaults** dialog. Low ambient values result in darker grey; higher values result in lighter grey. See "Options Panel" on page 873.
- Click the **Uniform Intensity** radio button to enable the **Intensity** setting below, then specify the strength of the ambient light throughout the scene either by typing a decimal value in the text field or by clicking the up and down arrows. Values between 0 and 10 can be used.
- Click the **Use Ambient Occlusion** radio button to enable the **Min** and **Max Intensity** settings below. Ambient Occlusion allows variation in the strength of the Ambient Light and is more realistic than Uniform Intensity, but takes longer to ray trace.

- Specify the **Minimum Intensity**, which is the strength of the ambient light on surfaces with minimum exposure to it.
- Specify the **Maximum Intensity**, which is the strength of the ambient light on surfaces fully exposed to it.

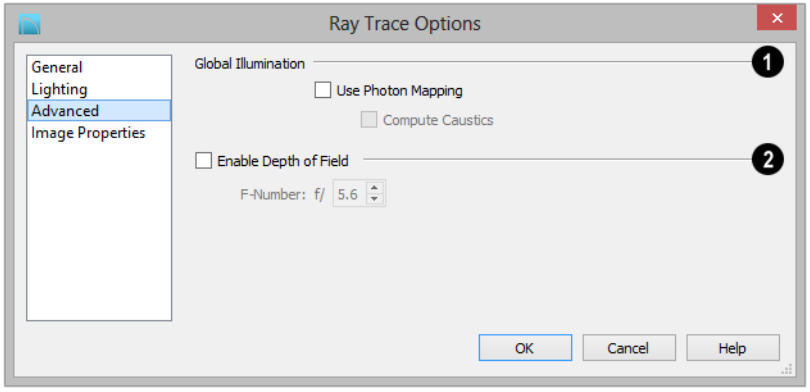
❷ Specify the **Intensity** of the **Direct Sunlight** throughout the scene either by typing a decimal value in the text field or by clicking the up and down arrows. Values between 0 and 10 can be used.

❸ Specify the appearance of atmospheric lighting in exterior views.

- Check **Enable Environment Light** to enable the settings below. When checked, exterior scenes are lit using an encompassing sphere of light, which simulates how light bounces around within the atmosphere. When unchecked, only the Default Sun Light is used. See "Default Sun Light" on page 916.
- Specify the **Intensity** value, which is the strength of the Environmental Light.
- Click the **Use Sky** radio button to use the Generated Sky as a basis for the Environmental Light's color. See "3D Backdrops" on page 888.
- Click the **Use Color** radio button, then click the **Color** bar to specify the color of the outdoor Environmental Light.
- Click the **Use Image** radio button, then browse to select an image to use as a basis for the Environmental Light's color. The image is wrapped around the scene's encompassing sphere and influences the color of the Environmental Light, but does not actually appear in the ray trace view.
- Click the **Select Image** button to select a different image.
- Click the **Remove Image** button to remove the currently selected image and use a color instead.

Advanced Panel

The settings on the Advanced panel allow you to specify lighting quality and focal blur.



1 Global Illumination -

- Check **Use Photon Mapping** to accurately calculate bounced lighting in a scene. When unchecked, ray traces have low quality lighting effects but generate more quickly.

> In order for Photon Mapping to function, at least two different objects must be present in the model.

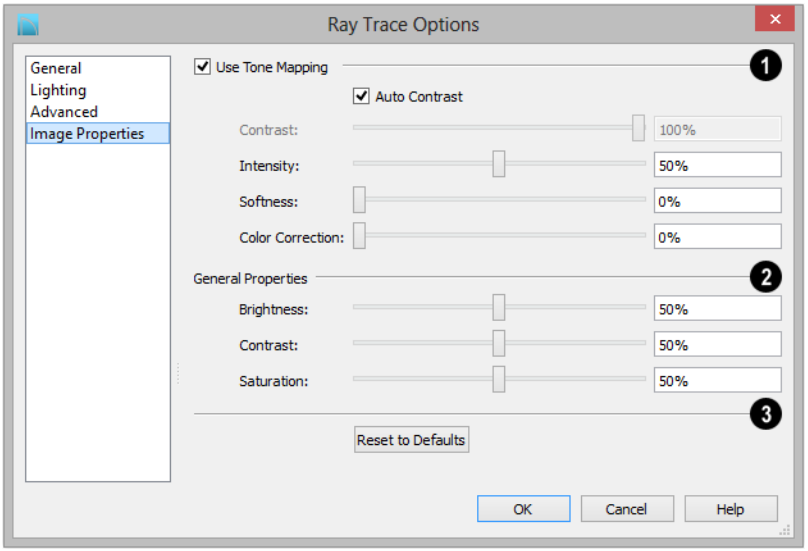
- Check **Compute Caustics**, to use caustic photons, which are photons used in areas of focused light. Caustic photons are helpful when modeling certain effects such as light shining through glass.

2 Check **Enable Depth of Field** to enable the F-Number setting below.

- Specify the **F-Number** value, which defines the camera focal blur and is the like the f-stop in photography. Decrease this value for more focal blur or increase it for less blur.

Image Properties Panel

The settings on the Image Properties panel allow you to customize the properties of colors in Ray Trace views. Once a Ray Trace has been started, these settings can be modified. See “Adjusting Ray Trace Properties and Effects” on page 953.



1 Chief Architect’s ray tracer works with a color range greater than what your monitor or printer can display. When **Use Tone Mapping** is checked, these colors are intelligently mapped to a displayable range. Uncheck this box to simplify how the colors are converted and disable the settings below.

- Uncheck **Auto Contrast** to enable the Contrast setting below. When checked,

the program chooses a Contrast value based on the image's properties.

- Specify the **Contrast**, which is the relative difference between light and dark colors in the view, using the slider bar or by typing in the text field
- Specify the **Intensity**. or brightness of the image. This value not necessarily uniform throughout the view and is similar to a camera's exposure setting.
- Specify the **Softness**, which determines whether color intensity is based on pixel or overall image intensity.
- Specify the **Color Correction**, which is the extent to which strong color casts are removed from the image.

It's not unusual for ray traced images to initially be too dark or too bright. Try adjusting the Tone Mapping Intensity.

❷ **General Properties** -

- Specify the **Brightness** of the image, which controls how dark or light the image is overall.
- Specify the **Contrast**, or relative difference between light and dark colors. This setting is similar to the setting of the same name, above, but is not as fine a control because it takes place after tone mapping has been done.
- Specify the **Saturation**, which is the intensity of colors in the view.

Don't be afraid to over-saturate your image slightly in very bright scenes – this is a common occurrence in actual photographs.

If you are ray tracing an interior scene where the primary source of light is the sun through a window or door, you may need to adjust your image brightness.

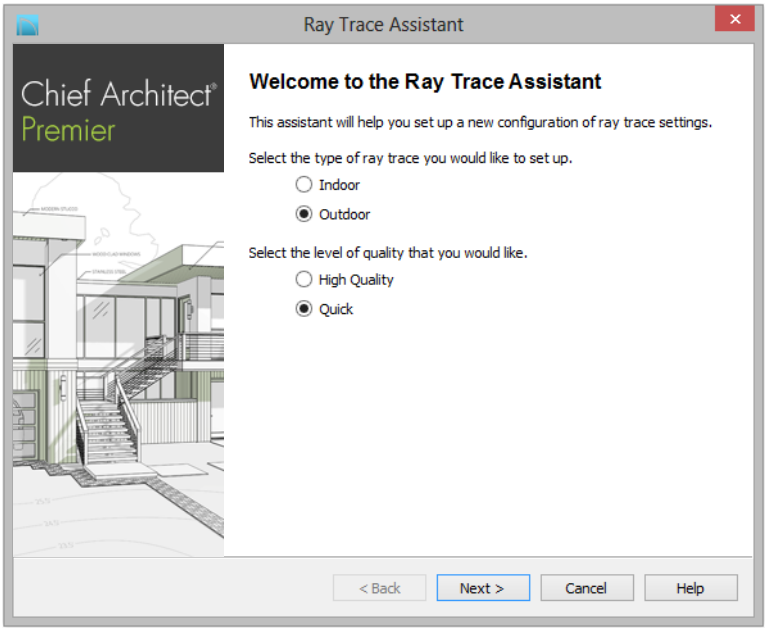
❸ Click the **Reset to Defaults** button to restore the settings in this dialog to their initial, installed values.

Ray Trace Assistant

The **Ray Trace Assistant** is an easy way to set up new ray trace configurations. It can be accessed by clicking the **Create New** button in the **Ray Trace Current View/Ray Trace Defaults** dialog. See "Ray Trace Current View/Ray Trace Defaults Dialog" on page 942.

The choices in the **Ray Trace Assistant** correspond to settings in the **Ray Trace Options** dialog. See "Ray Trace Options" on page 942.

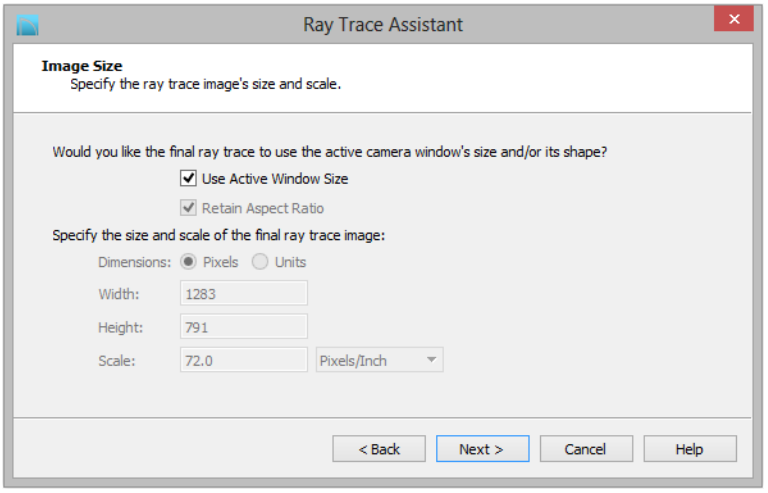
Welcome



Specify the level of quality for the ray trace you would like to create. The options here correspond to the number of **Samples** selected in the **Ray Trace Options** dialog. See “General Panel” on page 943.

- Select **Indoor** or **Outdoor** for a ray trace with lighting effects suitable for the type of view.
- Select **High Quality** for a high quality image that takes a long time to produce.
- Select **Standard** to create an image that balances quality and time.
- Select **Quick** for a relatively low quality image, useful to preview effects such as lighting in the scene.

Image Size

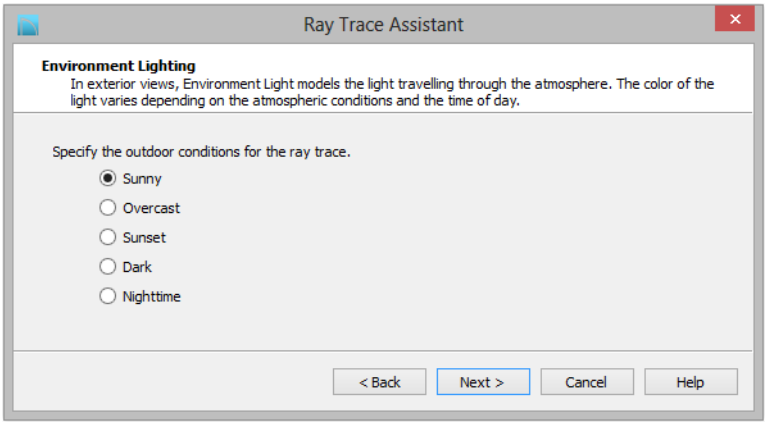


Specify the size of the final ray trace image. The options here correspond to the Image Size settings in the **Ray Trace Options** dialog See “General Panel” on page 943.

- Specify the**Width** and **Height** of the ray trace image, in either **Pixels** or drawing **Units**.
- Check **Retain Aspect Ratio** to maintain the width to height ratio of the original image and prevent the ray trace from being stretched or distorted.
- Check **Use Active Window Size** to set the ray trace to the current size of the active 3D view window. When this is checked, the other settings on this panel are disabled.
- Specify the **Scale** of the ray trace image, in either Pixels/Inch or Pixels/mm. Only available when the image size is specified in Units.

To enable the settings on this panel, uncheck Use Active Window Size.

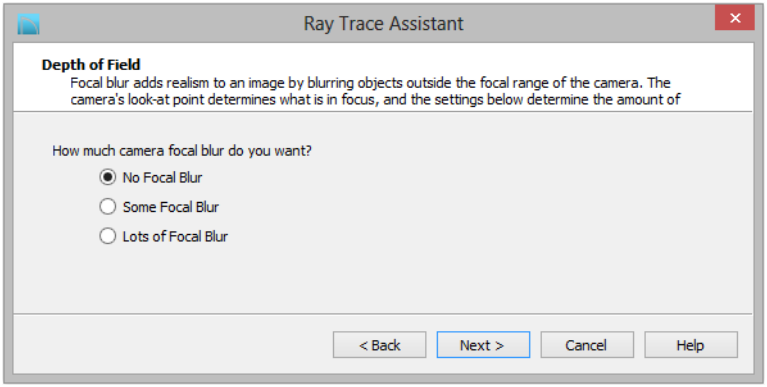
Environment Lighting



The Environment Lighting panel is only available when Exterior is selected on the Welcome page. Specify the atmospheric conditions of the exterior view you would like to ray trace. The options here correspond to the **Outdoor Render Settings** in the **Ray Trace Options** dialog. See “Lighting Panel” on page 944.

- Select **Sunny** for environmental lighting that is white in color.
- Select **Overcast** for environmental lighting that uses a pale gray color.
- Select **Sunset** for environmental lighting that uses a pale orange color.
- Select **Dark** for environmental lighting that uses a dark blue color.
- Select **Nighttime** for environmental lighting that uses a dark blue color with a greater intensity than Dark uses.

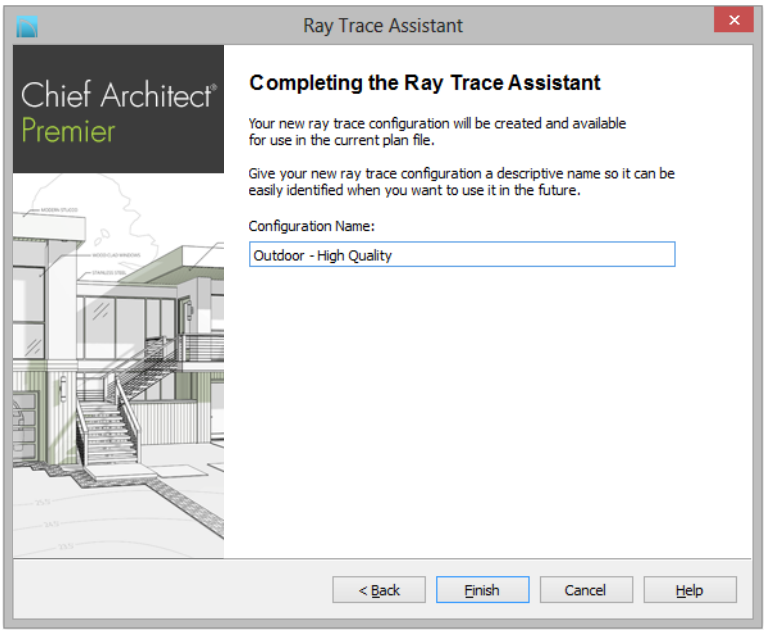
Depth of Field



Specify the amount of focal blur to use in the ray trace. The options here correspond to the **F-Number** in the **Ray Trace Options** dialog. See “Advanced Panel” on page 946.

- Select **No Focal Blur** to disable Depth of Field when this configuration is used.
- Select **Some Focal Blur** to use an F-Number of 5.6.
- Select **Lots of Focal Blur** for to use an F-Number of 2.8.

Completing the Assistant



Specify a name for the newly created ray trace configuration. This name will be listed in the **Ray Trace Current View/Ray Trace Defaults** dialogs, and can also be changed there in the future. See “Ray Trace Current View/Ray Trace Defaults Dialog” on page 942.

The initial name created by the program is based on the settings from the Welcome page. If you click the **Back** button and change these settings, this name will adjust as well, provided that you did not change it in any way.

Click **Finish** to create the new ray trace configuration and return to either the **Ray Trace Current View** or **Defaults** dialog, where it will be selected as the Current Configuration.

In order to retain a newly created ray trace configuration, you must click the Ray Trace button in the Ray Trace Current View dialog. If you click Cancel, the configuration will not be saved.

Adjusting Ray Trace Properties and Effects

A number of attributes of a ray trace image can be adjusted while the view is being generated or after it is complete.

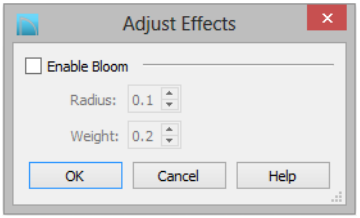
If **Save Image to File** is checked in the **Ray Trace Options** dialog, the program will automatically save to the specified image file if changes are made to it using either the **Adjust Image Properties** or **Adjust Effects** tools and the ray trace view window is closed. See “General Panel” on page 943.

Adjust Image Properties

Select **File> Adjust Image Properties** to open the **Image Properties** dialog. The settings in this dialog are the same as those in the **Ray Trace Options** dialog, where their initial values are set. See “Image Properties Panel” on page 947.

Adjust Effects

Select **File> Adjust Effects** to open the **Adjust Effects** dialog.



- Check **Enable Bloom** to enable the settings below. Bloom, or light bloom, can occur around areas of intense illumination and looks as though the light is ‘bleeding’ beyond the edges of the light source.
- Specify the **Radius**, which is the width of the bloom area beyond a light source. The higher the Radius setting, the longer the bloom calculation will take.
- Specify the **Weight**, which is the intensity or strength of the bloom effect.
- Click **OK** to close the dialog and apply your changes to the view. Depending on your settings, this could take some time. A progress indicator will display at the bottom of the window. You can press the Esc key to cancel the bloom operation at any time.

Ray Tracing Tips

Ray Tracing gives you the ability to produce high quality, photo-realistic images of your model; however, it is also a resource intensive process that can be quite time-consuming. For best results, there are a number of variables to consider.

Ray Trace Configurations

A Ray Trace Configuration is a group of Ray Trace Options settings saved in the current plan. You can create your own custom configurations for a variety of purposes. See "Ray Trace Options" on page 942.

Ray Trace Configurations can be saved in your template plans, saving you the effort of reproducing them for each new project. See "Template Files" on page 82.

Creating the Camera View

To create a ray trace image in Chief Architect, begin by creating a camera view or overview of the model. The camera position, field of view, and orientation determine the scene's appearance in the ray trace window. See "Editing 3D Views" on page 893.

In order to ray trace a view, the Standard Rendering Technique must be active. See "Standard Rendering" on page 928.

Ray trace views can be created from both Orthographic and Perspective views; however, Perspective views appear more realistic to the human eye and are better suited to producing photo-realistic images. See "Perspective and Orthographic Views" on page 868.

Lighting

Lighting is an extremely important aspect of high-quality ray trace views. For photo-realistic results, be prepared to add light sources to your model and spend some time making adjustments to their positions and light data settings. See "Lighting" on page 914.

Unlike rendered views, which can support only a limited number of lights, ray trace views can handle as many lights as you like. Lighting in ray trace views is also more realistic than the lighting used in rendered views in that lights are not limited to the current room. Instead, all light sources that are turned "On" in their specification dialog and have been set to **Use in Ray Tracing** can be used. See "Light Data Panel" on page 632.

To increase ray tracing speed, the program will identify any lights that do not contribute direct lighting to the scene when a ray trace is preprocessing and will remove them from the ray trace lighting calculations.

For light sources that cast shadows in a ray trace scene, consider using the **Soft Shadows** option. Soft Shadows requires more ray tracing time, but smooths the appearance of shadows created by a light, improving their appearance. See "Light Data Panel" on page 632.

Most other Render settings, including your Render Preferences, are not used for generating a ray trace view, although Ambient Light, set in the **3D View Defaults** dialog, is. See "Options Panel" on page 873.

It's not unusual for ray traced images to initially be too dark or too bright. Try adjusting the Tone Mapping Intensity. See "Adjusting Ray Trace Properties and Effects" on page 953.

Material Definitions

The attributes of the materials applied to objects in the scene have an extremely important effect on the final quality of any ray trace. Material definitions can affect ray trace views can be adjusted in the **Define Material** dialog. See "Properties Panel" on page 848.

A prime example is reflectivity, which helps convince the eye that a ray trace image is a real photograph. For example:

- For outdoor scenes, ensure that your windows are slightly reflective. You may want to set up a building across the street that, though not in the scene, appears in the reflections in the windows.
- In interior scenes, use partly reflective materials on objects such as stovetops, tile floors, and coffee pots.

Bump Maps

A bump map is an image that can be used to make a surface appear contoured rather than flat in ray trace views. Though the effects of bump maps are sometimes subtle, they add to an image's quality. For example, wood grain that shades appropriately to the lighting in the room lends to an appearance of realism.

Any image file or texture can be used as a bump map, with dark areas of the image corresponding to low points in the bump map, and brighter areas corresponding to high points. A bump map can be assigned to any material in the **Define Material** dialog. See "Properties Panel" on page 848.

Bump map calculation can be time-consuming, so bump maps should not be used when ray tracing speed is a primary concern.

Interior Views

When creating an interior ray trace view in which sunlight shines through windows, bear these settings mind:

- To improve the quality of sunlight shining through windows and glass doors or other transparent objects, **Photon Mapping** should be enabled and **Caustic Photons** used. See "Advanced Panel" on page 946.
- The **Direct Sunlight Intensity** setting for interior views should be set higher than for exterior views. A value of 5 is a good starting point, but you may wish to experiment. See "Lighting Panel" on page 944.
- When your ray trace is finished and the ray trace window is active, select **Edit> Adjust Image Properties** and adjust the **Brightness** value as needed. See "Adjust Image Properties" on page 953.

Nighttime Views

For best results when creating a nighttime ray trace view, there are a few considerations to bear in mind:

- While the Standard rendered view you wish to ray trace is active, select **3D> Lighting> Toggle Sunlight** to turn off the sun as a light source. See "Default Sun Light" on page 916.

- Use the **Ray Trace Assistant** to create an **Outdoor** ray trace configuration. Choose **Dark** or **Nighttime** as the outdoor conditions on the Environment Lighting page. See “Ray Trace Assistant” on page 948.
- When the new configuration is finished, click the **Edit** button in the **Ray Trace Options** dialog and enable **Photon Mapping**. The **Use Caustics** option improves the quality of light shining through transparent objects. See “Advanced Panel” on page 946.
- When your ray trace is finished and the ray trace window is active, select **Edit**> **Adjust Image Properties** and either lower the **Intensity** value or uncheck **Use Tone Mapping** to turn this feature off altogether. See “Adjust Image Properties” on page 953.

Faster Ray Tracing

Depending on the scene, a ray trace can quite literally take days to produce. There are several things you can do to reduce the time required:

- Reduce the number of surfaces in the 3D model by turning off all layers not used in the scene to be ray traced. For example, you may be able to turn off terrain layers for interior views, or cabinet layers for exterior views. See “Layers” on page 143.
- An even more effective way to reduce the size and complexity of a 3D model is to use **Save As** to create a copy of the plan, then delete all areas of the model that do not affect the scene to be ray traced. Depending on the scene, you may be able to delete entire rooms - or even entire floors.
- Image size is a significant factor in the speed of a ray trace. As you adjust the lighting and other variables in a scene, you can save time by creating smaller ray traces for preview purposes. To do this, specify a relatively small image size in the **Ray Trace Options** dialog. When you are ready to create a final ray trace, specify a larger image size. See “General Panel” on page 943.

CPU Usage

Ray tracing is a data intensive process that can require a lot of resources on any computer. You can specify whether Chief Architect or the ray trace engine has access to more of your computer’s processor resources when both are running in the **Preferences** dialog. See “Ray Trace Panel” on page 124.

Queueing Ray Trace Jobs

Because Chief Architect’s ray trace engine is a separate process from the program, you can set up a queue of multiple ray trace jobs, much like you can queue multiple print jobs for a printer.

Ray traces are generated one at a time, so in order for a queue of multiple ray traces to be completed, they must all use Ray Trace Configurations set to use a defined period of time or number of passes. See “General Panel” on page 943.

Do not use the No Limit option when queueing ray trace jobs.

To queue multiple ray traces

1. Start your first ray trace and then return to floor plan view without closing the ray trace window. See “Working in Multiple Views” on page 861.
2. Open or create the next camera view that you would like to ray trace.
3. Choose the desired Ray Trace Configuration and begin the ray trace.
4. Repeat these steps to queue as many ray traces as you need. As soon as one finishes, the next one will begin.

You can work on other tasks on your computer while your ray traces run, or you can walk away. You can lock your computer and even turn off the monitor; but do not exit our of Chief Architect or shut down the computer or your queue will be lost.

POV-Ray

The **Persistence of Vision Ray Tracer** (POV-Ray) is a high-quality ray tracer that has been used for years to generate images of virtually anything imaginable. POV-Ray has even been used on the Space Shuttle!

Hobbyist ray tracers can learn more about POV-Ray by visiting the POV-Ray Web site at www.povray.org.

Chief Architect version X2 and prior used a special version of POV-Ray to generate ray trace images. If you have a copy of POV-Ray installed and wish to use it rather than Chief Architect’s ray tracer, you can export a Standard rendered view from Chief Architect and ray trace it in POV-Ray.

Positioning the Camera

Using the **Zoom Tools** or panning the display in a Perspective view has no effect on a view exported to POV-Ray. If you have zoomed or panned in a Perspective view and then try to ray trace it, a warning message will inform you that these changes will not be reflected in the ray trace. See “View and Window Tools” on page 857.

To position a Perspective camera prior to exporting to POV-RAY, use any of the camera editing tools:

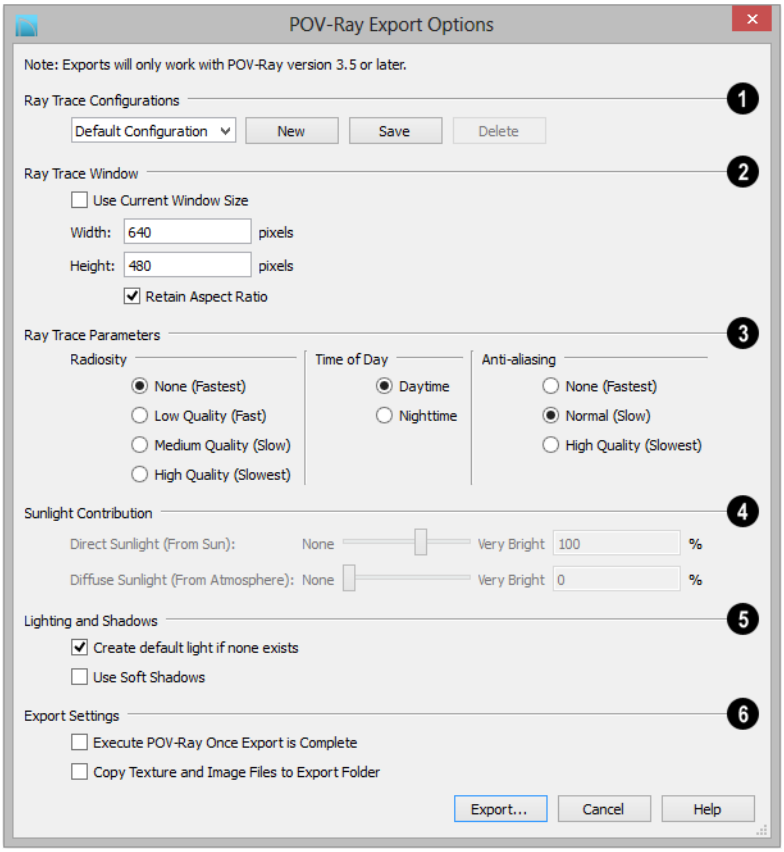
- Move Camera with Mouse
- Move Camera with Arrow Keys
- Move Camera Tools
- Orbit Camera Tools
- Tilt Camera Tools

For more information, see “Editing 3D Views” on page 893.

You can, alternatively, check **Zoom Using Field of View** in the **Preferences** dialog to modify a camera’s field of view when you zoom using the scroll wheel. See “Render Panel” on page 122.

POV-Ray Export Options Dialog

While a Standard rendered view is active, select **File> Export> POV-Ray (.POV)**.



1 **Ray Trace Configurations** are saved groups of ray trace settings. Please note that the configurations saved for POV-Ray export are different from those saved for ray tracing within Chief Architect and are only listed in this dialog.

- Select a configuration from the drop-down list.
- Click the **New** button to create a new configuration, and make any changes to the settings that follow to customize it.
- Click the **Save** button to save a new configuration or any changes made to the selected configuration.
- Click the **Delete** button to remove the selected configuration from the list. Not available if there is only one configuration in the list.

2 **Ray Trace Window** - Specify the size of the final ray trace image.

- Check **Use Current Window Size** to set the ray trace to the size of the original 3D view window.

- Specify the **Height** and **Width** of the ray trace image you wish to create, in pixels.
- Check **Retain Aspect Ratio** to maintain the width to height ratio of the original image and prevent the ray trace image from appearing stretched or distorted.

❸ **Ray Trace Parameters** - Specify the lighting properties and image quality of the ray trace.

- Specify the level of **Radiosity**, or the calculation of light bouncing around in the scene. **None** produces lighting effects similar to Standard rendering but is fast, while **High Quality** produces photo-realistic effects but is very time-consuming.
- Specify the **Time of Day**. Similar to the Toggle Sunlight options in a rendered view, choose whether to create a **Daytime** or **Nighttime** ray trace view.
- Specify the level of **Anti-aliasing**, which generates smooth edges in the ray trace view.

❹ Specify the **Sunlight Contribution** in the view. Only available when Radiosity is used.

- The **Direct Sunlight** setting controls the intensity of the light coming from the sun.
- The **Diffuse Sunlight** setting controls the brightness of the sunlight in the surrounding atmosphere.

❺ **Lighting and Shadows** -

- Check **Use Soft Shadows** to display shadows with soft edges instead of hard edges and can add to ray tracing time. Only light sources set to create soft shadows will produce them. See “Light Data Panel” on page 632.
- When **Create default light if none exists** is checked, a light source is created in views where none are present so that the ray trace is not calculated in total darkness. Uncheck this box only if you do not want this to occur. See “Default Lights” on page 915.

❻ **Export Settings** -

- Check **Execute POV-Ray Once Export is Complete** to launch POV-Ray so you can begin ray tracing the scene as soon as the export process is finished.
- Check **Copy Texture and Image Files to Export Folder** to make a copy of all textures and images used in the model into the same directory as the destination for your POV-Ray export.

Write POV-Ray File Dialog

After you click OK in the **POV-Ray Export Options** dialog, the **Write POV-Ray File** dialog will open. This is a standard Save dialog which lets you specify the file name and save location of your **.pov** file and any associated textures and images. See “Exporting Files” on page 56.

Chapter 31:

Dimensions

Chief Architect provides a variety of manual and automatic dimensioning tools for measuring walls, doors, windows, and many other objects in various 2D and 3D views.

Dimensions can be used to accurately position objects relative to other objects. In addition, dimension lines and extensions can be selected and customized.

Chapter Contents

Compatibility With Previous Versions

Dimensions function differently in versions 9.0 and later of Chief Architect than they did in previous versions. Being familiar with these changes is necessary if you plan to open plans from earlier versions.

Extension Lines

In Version 8, extension lines had two modes: normal and short. Version 9 and later offer full control over extension lines. If **Chief Version 8 Compatible Extensions** is checked, you do not have this control. See “Extensions Panel” on page 972.

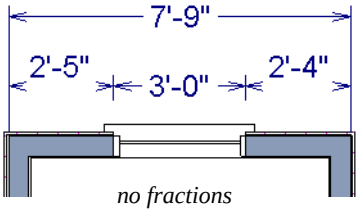
Accuracy

When the model is drawn with greater accuracy than dimensions are set to display, rounding may be required. The **Rounding Method** in the **Dimension Defaults** dialog controls how Chief Architect handles dimensions that require rounding. See “Setup Panel” on page 964.

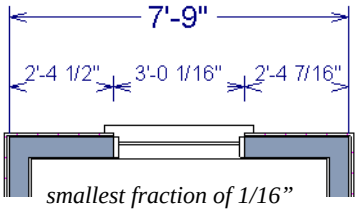
In Chief Architect version 8 and prior, dimensions used Distance Rounding, which shows the distance between equally spaced objects correctly, but dimension runs are not always accurate when added.

In Versions 96 and later, dimensions use Grid Rounding, which always add up dimension runs correctly, but individual distances may be inaccurate in order to achieve this.

Dimensioning the same object using these two rounding methods will obtain the same results as long as objects are placed with the same accuracy as the precision of the dimension lines. If an object is placed using more precision than the dimensions, results may vary between methods.



no fractions



smallest fraction of 1/16”

A good approach to accurate dimensioning is to turn on the accuracy indicators and position objects so that the inaccuracy indicators do not display.

Dimension Preferences and Defaults

There are a number of settings in the **Preferences** dialog that affect dimensions, as well as several dimension defaults dialogs.

Preferences

All plan and layout files save measurements in either Imperial or metric units. The type of unit used is determined when the file is first created and cannot be changed later. See “Creating a New Plan or Layout” on page 52.

You can specify either metric or Imperial files to be used as the templates whenever you open a new, blank plan or layout file in the **Preferences** dialog. See “New Plans Panel” on page 102.

You can also specify the minimum on-screen display size for dimension numbers in the **Preferences** dialog. See “Appearance Panel” on page 90.

Default Settings

Select **Edit> Default Settings** or double-click the **Dimension Tools** parent button or any of its child buttons . There are seven dimension defaults dialogs:

- Dimension Defaults Dialog
- Five Auto Dimension Defaults Dialogs
- Temporary Dimension Defaults Dialog

When **Angle Snaps** are enabled, dimensions can be drawn at the **Allowed Angles** set in the **General Plan Defaults** dialog. Regardless of their angles, however, dimensions will only locate objects that are parallel to one another. See “General Plan Defaults Dialog” on page 86.

Annotation Sets

Manually drawn dimensions are among the items associated with Annotation Sets, which are groups of Saved Defaults that can be customized and activated for specific drawing tasks. See “Annotation Sets” on page 78.

Dimension Defaults Dialog

Select **Edit> Default Settings**, expand the “Dimension” category, select “Dimensions”, and click the **Edit** button to open the **Dimension Defaults** dialog.

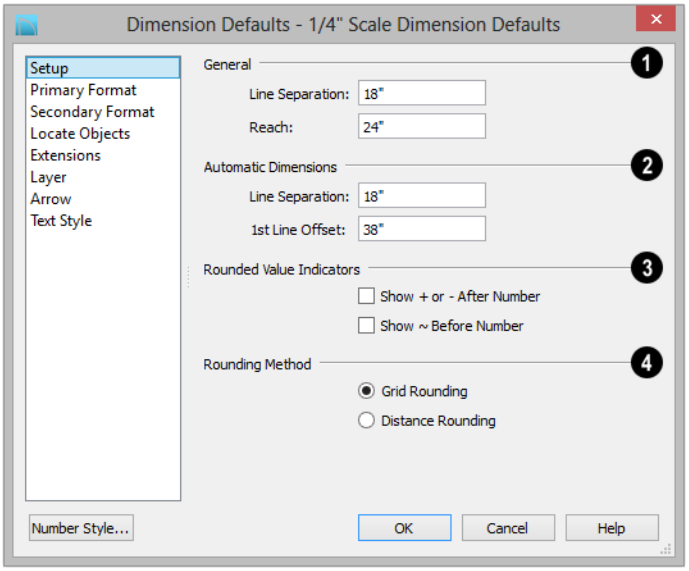
You can also double-click either the **Dimension Tools** or **Automatic Dimension Tools** parent button to open the this dialog.

Manually drawn dimensions are able to support multiple Saved Defaults for specific drawing tasks. See “Multiple Saved Defaults” on page 75.

- When you access the **Dimension Defaults** dialog via the **Default Settings** dialog, the **Saved Defaults** dialog will open first, allowing you to select which Saved Manual Dimension Default that you wish to edit.
- When you access this dialog by double-clicking the **Dimension Tools** button, the defaults dialog for the currently active Saved Default is opened directly. If you would like the **Saved Defaults** dialog to open first in this situation, you can enable this option in the **Preferences** dialog. See “General Panel” on page 96.
- In either case, the name of the Saved Default being edited will display in the title bar at the top of the dialog box.

The settings in this dialog are dynamic defaults, which means that any changes made here may affect existing dimension lines in the drawing that are using the Saved Manual Dimension Default being edited. See “Dynamic Defaults” on page 74.

Setup Panel



1 **General** -

- Specify the **Baseline Separation**, which is the distance between Baseline Dimension lines in plan inches (mm). This value should always be greater than the font size. If two formats are used, it should be at least twice the font size.
- Specify how far manually drawn dimension lines **Reach** to locate walls and/or objects specified on the Locate Objects panel. The default is 24" (450 mm) in plan files and 1" (10 mm) in layout.

2 Specify the initial spacing of **Automatic Dimensions**. See "The Automatic Dimension Tools" on page 980.

- Specify the **Line Separation**, which is the distance between Auto Exterior Dimension lines in plan inches (mm). This value should always be greater than the font size. If two formats are used, it should be at least twice the font size.
- Specify the **1st Line Offset**, which is the distance between each wall and the nearest Automatic Dimension line that measures its length in plan inches (mm).

3 Specify the use and appearance of **Rounded Value Indicators**, which can display when the degree of accuracy in use is not sufficient to describe a dimension's true value.

- Check **+ or - After Number** to indicate that the actual dimension value is higher or lower than the value shown.
- Check **~ Before Number** to indicate dimension values that are not accurate with the ~ symbol.

❹ **Rounding Method** - Specify how the sections of dimension lines that locate more than two objects are rounded.

- **Grid Rounding** ensures that the sum of the parts of a dimension line add up to the whole distance. To produce this result, some sections may not be rounded accurately. This is the recommended rounding method and is selected by default.
- **Distance Rounding** addresses each section of a dimension line individually, which could result in the sum of these sections not being equal to the whole. This option is selected by default for files created in Version 8 or prior but is not recommended for newer files. See "Compatibility With Previous Versions" on page 961.

You can avoid the appearance of inaccuracy that rounding may cause by placing the objects in your plan precisely and by drawing with Grid Snaps enabled. See "Grid Snaps" on page 164.

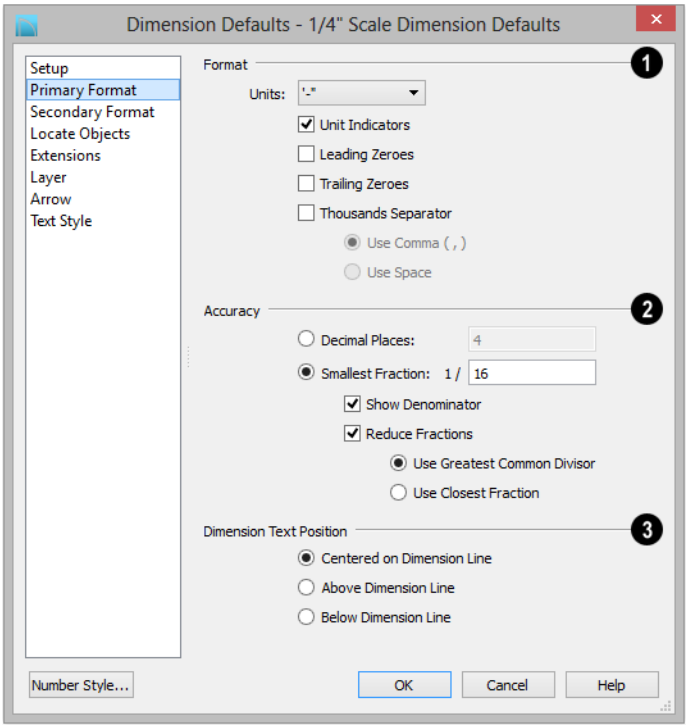
Primary Format Panel

The settings on the Primary Format panel allow you to specify the units, degree of accuracy, and position of dimension numbers.

These settings are the same as those on the Primary Format panel of the **Dimension Line Specification** dialog and the Dimension Format panel of the **Room Label Defaults** dialog. See "Dimension Line Specification Dialog" on page 991 and "Room Label Defaults" on page 324.

In addition to these Primary dimension numbers, you can display a set of Secondary dimension numbers that indicate the dimension's length using different units, degree of acuracy, and/or location.

The settings on this panel also control the format of numbers indicating object length in the Status Bar. See "The Status Bar" on page 39.



1 Specify the numbering **Format** for dimension numbers.

- Select the **Units** of measurement to be used by dimensions from the drop-down list. The choices in this list correspond to all units measuring length specified in the **Preferences** dialog. See “Unit Conversions Panel” on page 103.

Note: Although you can select Imperial or metric units in any plan or layout, it is best to use the same unit type that the file uses to save measurements. See “Units of Measurement” on page 53. .

- Check **Unit Indicators** to display the unit of measurement along with the dimension number.
- Check **Leading Zeros** to include the zero before a decimal less than 1 or to display 0’ or 0” when the ft-in or ’-” unit formats is used.
- Check **Trailing Zeros** to display trailing zeros at the end of decimal values. When the ft-in or ’-” unit format is used and fractional inches are specified, 0” will be included.
- Check **Thousands Separator** to use a digit grouping symbol for values greater than 999.

- Select the **Use Comma**, **Use Dot**, or **Use Non-Breaking Space** radio button to specify the thousands separator used by dimensions. Which option is available will depend on your operating system settings. See “Region and Language Settings” on page 73.
- Select the **Use Space** radio button to use a space as the thousands separator.

❷ Specify the degree of **Accuracy** used by dimension numbers.

- Select the **Decimal Places** radio button for dimension numbers in decimal format. In the text field, specify the number of decimal places to use, from 0 to 20. If 0 is used, no decimal places are used.
- Select the **Smallest Fraction** radio button for dimension numbers using whole numbers and fractions. In the text field, specify the largest denominator to use, from 1 to 128. If 1 is entered, whole numbers are used.
- Uncheck **Show Denominator** to turn off the display of fraction denominators used by dimension lines. Typically, denominators are only turned off when eighths are desired.
- Uncheck **Reduce Fractions** to always use the denominator specified above. When checked, the lowest possible denominator will be used.

When Smallest Fraction is selected, specify how fractions are reduced:

- Select the **Greatest Common Divisor** radio button to reduce fractions using the largest value that divides equally into the numerator and the denominator specified above. This option is best for fractional inches.
- Select the **Closest Fraction** radio button to reduce fractions without referring to the denominator specified above. Should only be used with **Distance Rounding**. Not recommended when fractional inches are used.

A value of 0.33333 is represented by the fraction 5/16 when Greatest Common Divisor is used and the Smallest Fraction denominator is 16. When Closest Fraction is selected, this value is represented by 1/3.

❸ Specify the **Dimension Text Position**, which is the location of dimension numbers relative to the dimension line.

- **Center** primary dimension numbers on the dimension line. If two formats are used, the primary format is placed above the line and the secondary format, beneath it.
- Position dimension numbers **Above Line**.
- Position dimension numbers **Below Line**.

Secondary Format Panel

In addition to the Primary dimension label, you can display a set of secondary numbers that indicate the dimension’s length using different units and/or degree of accuracy.

The settings on the Secondary Format panel of the **Dimension Defaults** dialog are similar

to those on the Primary Format panel, with one addition:

- Check **Include Second Format** to use a secondary dimension label and enable the settings on this panel.

The settings on this panel are also the same as those on the same panel of the **Dimension Line Specification** dialog. See “Dimension Line Specification Dialog” on page 991.

If you choose to use a second format, you may want to increase the default Line Separation on the Setup panel.

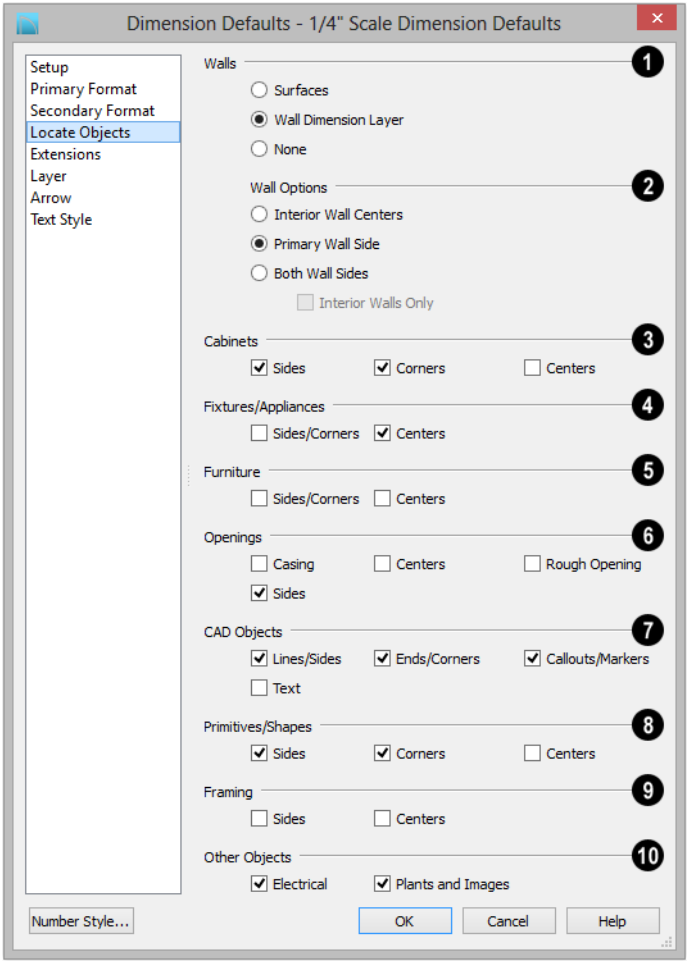
Locate Objects Panel

The settings on the Locate Objects panel specify whether or not dimension lines locate specific types of objects. Changes made on this panel only affect new dimension lines, not those already drawn.

These settings affect dimension lines as they are drawn. Once created, their extension lines can be edited so that they locate objects in ways not specified here. See “Editing Extension Lines” on page 986.

The Locate Objects panel is also found in most **Auto Dimension Defaults** dialogs. The options available will vary for each defaults dialog. See “Auto Dimension Defaults Dialogs” on page 973.

In the **Auto NKBA® Elevation Dimension Defaults** and in the **Dimension Defaults** dialogs for a layout file or CAD Detail window, only the **CAD Objects** settings on this panel will be available.



1 The **Walls** settings affect Manual and Interior Dimensions and are also available in most **Auto Dimension Defaults** dialogs. See “The Manually Drawn Dimension Tools” on page 977 and “Auto Dimension Defaults Dialogs” on page 973.

The first two settings also determine the marked location in wall assemblies referred to by Extension Lines as well as the Reach and 1st Line Offset settings. See “The Dimension Layer” on page 296.

- Select **Surfaces** to locate exterior walls by outer surface and interior walls by one of their surfaces.
- Select **Wall Dimension Layer** to locate walls at the Dimension Layer. A wall’s Dimension Layer is specified in its wall type. See “Wall Type Definitions Dialog” on page 298.

- Select **None** to prevent Manual and End to End Dimensions from locating walls.

❷ The **Wall Options** settings control how dimensions locate interior walls where they intersect exterior walls, and only apply to interior walls drawn perpendicular to the exterior walls they intersect. They are available in the **Auto Exterior Dimension Defaults** dialog but not the other **Auto Dimension Defaults** dialogs.

- Select **Interior Wall Centers** to have dimension lines locate the centers of interior walls. If Wall Dimension Layer is selected above, dimensions locate interior walls at the center of their Main Layers. See "The Main Layer" on page 295.
- Select **Primary Wall Side** to have dimension lines locate one side of interior walls.
- Select **Both Wall Sides** to have dimension lines locate both surfaces of interior and exterior walls. Wall thicknesses are also dimensioned.
- Check **Interior Walls Only** for dimensions to ignore the interior surface of exterior walls and the thicknesses of interior walls. Only available when Both Wall Surfaces is selected.

Note: Walls specified as No Locate will not be located by some dimension tools. See "No Locate" on page 278.

❸ The **Cabinets** options affect how dimension lines locate objects cabinets and cabinet fillers and are also available in the **Auto Interior** and **Auto Elevation Dimension Defaults** dialogs.

- Check **Sides** to locate the sides of cabinet objects. The sides must be perpendicular to the dimension line.
- Check **Corners** to locate the corners of all cabinet objects within the Reach area. Angled cabinets are dimensioned to their corners at a right angle to the dimension line. A cabinet's front or sides do not need to be perpendicular or parallel to the dimension line for its corners to be located.
- Check to locate the **Centers** of all cabinet objects within the Reach area. A cabinet's front or sides do not need to be perpendicular or parallel to the dimension line for its center to be located.

❹ The **Fixtures/Appliances** options affect how dimension lines locate appliances and other fixtures and are also available in the **Auto Interior** and **Auto Elevation Dimension Defaults** dialogs.

- Check to locate the **Sides/Corners** of appliances and other fixtures. For sides to be located, they must be perpendicular to the dimension line.
- Check to locate the **Centers** of all fixtures within the Reach area. An object's front or sides do not need to be perpendicular or parallel to the dimension line for its center to be located.

❺ The **Furniture** options control how furnishings are located by dimension lines and are also available in the **Auto Interior** and **Auto Elevation Dimension Defaults** dialogs.

- Check to locate the **Sides/Corners** of furnishings. For sides to be located, they must be perpendicular to the dimension line.

- Check to locate the **Centers** of all furnishings within the Reach area. An object's front or sides do not need to be perpendicular or parallel to the dimension line for its center to be located.

Note: In cross section/elevation views, dimensions can only locate furniture at points where a surface is present.

6 The **Openings** options control how wall openings are located by dimension lines and are also available in most **Auto Dimension Defaults** dialogs.

- Select **Centers** for dimensions to locate the centers of wall openings.
- Select **Sides** to locate both sides of wall openings. This option locates the nominal width - not the rough opening.
- Select **Casing** to locate both sides of wall openings at the outer edges of the casing. Because interior and exterior casing often has different widths, an opening may have different interior and exterior dimensions when this option is selected.
- Select **Rough Opening** to locate both sides of windows and doors at the rough opening.
- Select **None** for dimensions to not locate wall openings. This setting does not affect Auto Exterior Dimensions.

Note: Openings in walls specified as No Locate will not be located by Auto Exterior Dimensions. See "No Locate" on page 278.

7 The **CAD Objects** options control how dimension lines locate 2D CAD objects as well as CAD-based objects such as slabs and polyline solids, and stairs. They are also available in the **Auto NKBA® Dimension Defaults** dialog.

- Check **Line/Sides** to locate lines and edges that are perpendicular to the dimension line. If the lines or edges are not perpendicular to the dimension line, they are not dimensioned.
- Check **Ends/Corners** to locate all ends of lines or corners of polylines, no matter what angle they are in relation to the dimension line.
- Check **Callouts/Markers** to locate these objects.
- Check **Text** to locate text objects.

8 The **Primitives/Shapes** options affect how dimension lines locate objects drawn with the **Primitive Tools**  . See "Primitive Tools" on page 759.

- Check **Sides** to locate the sides of primitive/shape objects. The sides must be perpendicular to the dimension line.
- Check **Corners** to locate the corners of all primitive/shape objects within the Reach area. Corners are dimensioned at a right angle to the dimension line. An object's front or sides do not need to be perpendicular or parallel to the dimension line for its corners to be located.
- Check to locate the **Centers** of all primitive/shape objects within the Reach area. An object's front or sides do not need to be perpendicular or parallel to the dimension line for its center to be located.

9 The **Framing** options affect how dimension lines locate framing objects.

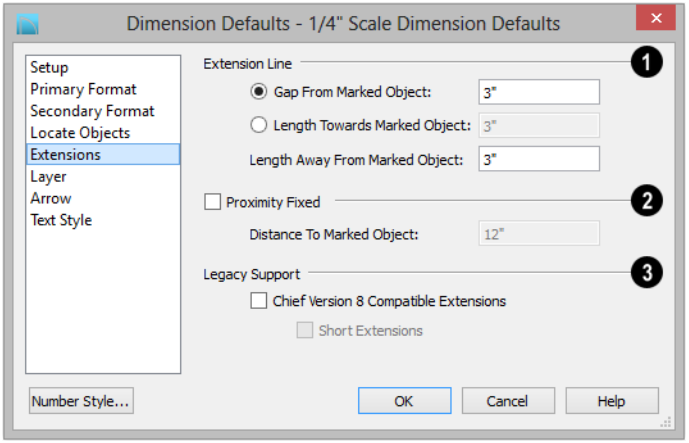
- Select **Centers** for dimensions to locate the centers of framing objects.

- Select **Sides** to locate both sides of framing objects.

10 The **Other Objects** options affect how dimension lines locate additional object types. The Electrical option is available in the **Auto Interior** and **Auto Elevation Dimension Defaults** dialogs.

- Check **Electrical** to locate electrical objects. Use this option when you want to precisely position electrical objects.
- Check **Plants and Images** to locate these objects.

Extensions Panel



1 Specify the length and spacing of **Extension Lines** relative to the marked location on an object.

- Select **Gap From Marked Object** to specify the distance between the end of extension lines and their marked location in plan inches or mm. If a dimension line is moved, extension lines update, and the size of this gap is maintained.
- Select **Length Towards Marked Object** to specify a fixed length for the portion of an extension line that extends from the dimension line toward the object it locates. If the dimension line is moved, this length remains the same but the size of the gap updates.
- Specify the **Length Away From Marked Object**, which is the length of the portion of an extension line that extends from the dimension line in the opposite direction of the object it locates.

2 Check **Proximity Fixed** to specify a fixed distance between the marked object and the dimension line. You can only fix the proximity for a single extension line. See “Using Proximity Fixed” on page 988.

- **Distance to Marked Object** - When Proximity Fixed is checked, you can specify the distance from the dimension line to the marked object using a positive value.

Gap From Marked Object

\+ Length Toward Marked Object

= Distance to Marked Object

Proximity Fixed only affects dimension lines that locate an object using an extension line. When a dimension line arrowhead points directly to the object without using an extension line, this option has no effect.

Auto Exterior Dimensions ignore Distance to Marked Object and use the default 1st Line Offset and Line Separation values. See "Setup Panel" on page 964.

Extension Line and Gap lengths are measured from the marked location on a wall. See "The Dimension Layer" on page 296.

❸ **Legacy Support** - Specify how dimensions behave in files created in Chief Architect Version 8 or prior. See "Compatibility With Previous Versions" on page 961.

- Check **Chief Version 8 Compatible Extensions** to make extensions function as they did in Chief Architect Version 8.
- Check **Short Extensions** to have short, uniform-length extension lines instead of extension lines that reach all the way to the objects they locate.

Note: If you select an extension line, Chief Version 8 Compatible Extensions will be turned off automatically.

Layer Panel

The Layer panel is found in the specification dialogs for many different objects. For more information, see "Layer Panel" on page 152.

If an automatic dimension line is edited, it will no longer be considered Automatic and the **Default** checkbox on this panel will be unchecked. See "Editing Dimension Lines" on page 984.

Arrow Panel

For information about the Arrow panel, see "Arrow Panel" on page 1055.

Text Style Panel

The settings on the Text Style panel control the size, font and other attributes of automatic, manually drawn, and temporary dimension line labels. See "Dimension Labels" on page 983.

For information about the settings on this panel, see "Text Style Panel" on page 1031.

Temporary dimension labels always use the color assigned to their layer - not the color specified in the **Dimension Defaults** dialog.

Auto Dimension Defaults Dialogs

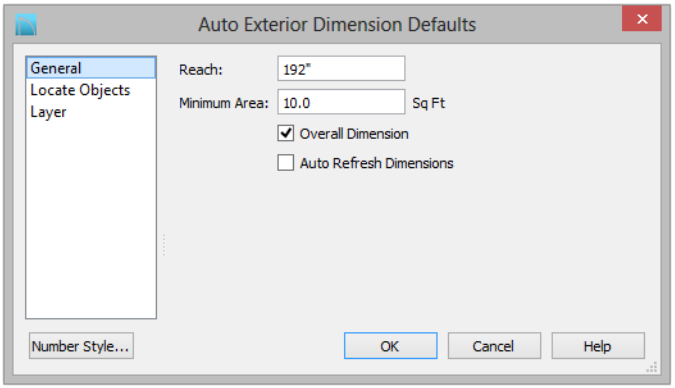
Select **Edit> Default Settings** or double-click either the **Automatic Dimension Tools** or **Dimension Tools** parent button. Expand the **Dimension** category, select one of the "Auto" subcategories , and click the **Edit** button.

The settings in the five **Auto Dimension Defaults** dialogs allow you to control the initial appearance and behavior of dimensions created using the various **Auto Dimension** tools. See "The Automatic Dimension Tools" on page 980.

You can also add buttons to your toolbars that you can click to quickly open each of these dialogs. See "To add a button to a toolbar" on page 132.

The default **Line Separation** and **First Line Offset** values for automatic dimensions are set in the **Dimension Defaults** dialog. See "Setup Panel" on page 964.

General Panel



- Specify how far **Auto Exterior Dimension** lines **Reach** to locate objects set back from exterior walls. The default is 192 inches (4800 mm). If exterior walls are set back further than this distance, additional dimension lines are produced to dimension the set-back walls. Only available in the **Auto Exterior Dimension Defaults** dialog.
- Specify the **Minimum Area**: the minimum enclosed area needed for Auto Dimensions to generate. Not available in the **Auto Elevation** or **Auto NKBA®** **Elevation Dimension Defaults** dialogs.
- Check **Overall Dimension** to generate the overall dimensions of a plan when Auto Dimensions are created. Not available in the **Auto NKBA®** or **Auto NKBA®** **Elevation Dimension Defaults** dialogs.
- Check **Auto Refresh Dimensions** to delete and replace Auto Exterior Dimensions whenever a change is made to the model that affects them. Not available for other Auto Dimensions.

Locate Objects Panel

The settings on the Locate Objects panel are also found on the same panel of the **Dimension Defaults** dialog. The available options will vary in each defaults dialog, depending on the functionality of the tool. See "Locate Objects Panel" on page 968.

In the **Auto NKBA® Elevation Dimension Defaults** dialog, only the **CAD Objects** options are available. The Locate Objects panel is not found in the **Auto NKBA® Dimension Defaults** dialog at all.

Layer Panel

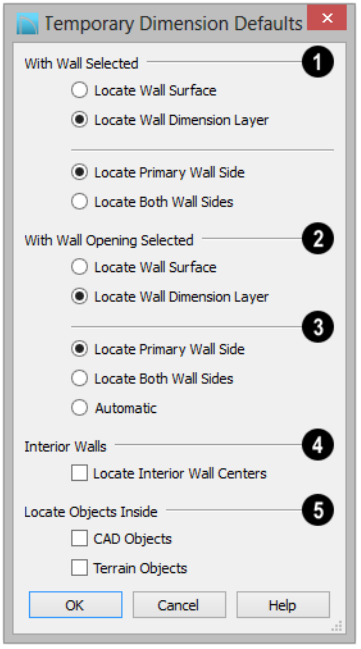
The Layer panel allows you to specify what layers dimensions created using the **Auto Dimension** tools are placed on. It is found in the specification dialogs for many different objects. For more information, see “Layer Panel” on page 152.

Temporary Dimension Defaults Dialog

The settings in the **Temporary Dimension Defaults** dialog allow you to control how Temporary Dimensions locate walls and CAD objects. See “Temporary Dimensions” on page 980.

Select **Edit> Default Settings**, expand the **Dimension** category and choose “Temporary”, and click **Edit** to access this dialog. You can also open this dialog by clicking the **Temporary Dimension Defaults** button, which you can add to your toolbars. See “To add a button to a toolbar” on page 132.

The appearance of Temporary Dimensions, including their size, format, and extension lines, are set along with those of manual and automatic dimensions in the **Dimension Defaults** dialog. See “Dimension Defaults Dialog” on page 963.



1 **With Wall Selected** - Specify how walls are located by temporary dimensions when a wall is selected.

- Select **Locate Wall Surface** to locate wall surfaces.
- Select **Locate Wall Dimension Layer** to locate wall dimension layers as specified

in the **Wall Type Definitions** dialog. See “Wall Type Definitions” on page 295.

The next two settings control how temporary dimensions locate interior walls.

- Select **Primary Wall Side** to locate one side of interior walls.
- Select **Both Wall Sides** to locate both surfaces of a selected interior wall. Wall thicknesses are not dimensioned.

Note: Temporary Dimension Defaults do not affect the temporary wall length dimensions that displays when a waill is selected. See “Measuring Walls” on page 277.

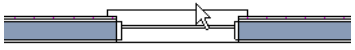
❷ **With Opening Selected** - Specify how walls are located by temporary dimensions when a door, window, or masonry fireplace in that wall is selected.

- Select **Locate Wall Surface** to locate the wall’s surfaces, or **Locate Wall Dimension Layer** to locate the wall’s dimension layer.
- Select **Locate Primary Wall Side** to locate the wall along their exterior, or choose **Both Wall Sides** to locate walls on both sides.

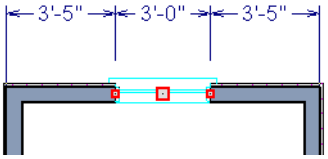
If **Both Wall Sides** is selected, dimensions will locate both sides of interior walls; if **Primary Wall Side** is selected, only one side of each interior wall will be located.

When **Automatic** is selected, you can locate a wall’s exterior with temporary dimensions by clicking on a wall opening near its exterior side, or locate the wall’s interior by clicking on a wall opening near its interior side.

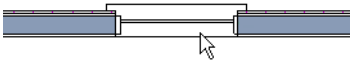
Clicking on the exterior side of a window



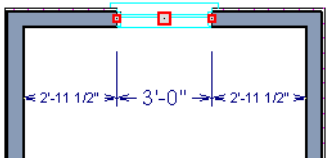
produces temporary dimensions that locate the wall’s exterior side



Clicking on the interior side of a window



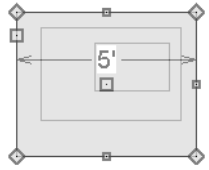
produces temporary dimensions that locate the wall’s interior side



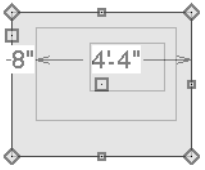
❸ Check **Locate Interior Wall Centers** to locate interior walls at their centers instead of their surfaces. When checked, this option overrides the other settings in this dialog for interior walls.

❹ **CAD Options** - Specify how CAD objects inside a selected CAD object are located by temporary dimensions.

- Select **Ignore Objects Inside** for temporary dimensions to ignore any other objects inside a selected CAD object.
- Select **Locate First Objects Inside** to locate the first edge of another CAD object drawn inside a selected CAD object.



Ignore Objects Inside



Locate First Objects Inside

The Manually Drawn Dimension Tools

Select **CAD> Dimensions** to access the Dimension Tools. Manually drawn dimensions are created by clicking and dragging like other line-based objects and can be drawn in floor plan view, cross section/elevation views, CAD Details, and on layout pages.

With the exception of **Angular Dimensions**, dimension lines only locate objects that are parallel or nearly parallel to one another and should be drawn orthogonal, or at right angles, to the objects being located.

Dimension lines locate objects using **Object Snaps**, although they do not need to be enabled in order to draw dimensions. See “Object Snaps” on page 160. Bear in mind, though, that Object Snaps must be enabled in order to:

- Locate parallel objects drawn at angles other than Allowed Angles.
- Locate more than one object drawn in the same space, such as a CAD line drawn over a wall.

The zoom factor of the current view affects whether objects drawn close together are dimensioned or not. If you try to dimension an array of objects but the dimension line locates only the first and last objects along its path, **Zoom** in on the objects and try again. Similarly, if you want to dimension between two objects but the dimension locates unwanted objects between them, **Zoom** out. See “Zoom Tools” on page 859.

Once created, both manually drawn and automatically generated dimension lines can be selected and edited. See “Editing Dimension Lines” on page 984.

Manual Dimensions

To display the distance between two objects, select **CAD> Dimensions> Manual Dimension** and drag a dimension line near or through the objects.

Manual Dimensions locate objects as specified on the Locate Objects panel and lying within the Reach distance specified in the **Dimension Defaults** dialog. See “Dimension Defaults Dialog” on page 963.

End-to-End Dimensions

Use the **End-to-End Dimension** tool to dimension between any two defined

objects in floor plan view, cross section/ elevation views, CAD Details and on layout pages.

Select **CAD> Dimensions> End-to-End Dimension**  , then click and drag the dimension from the first object to the second object. The dimension line snaps to each object, ignoring any other objects located between either end.

End-to-End Dimensions locate objects as specified on the Locate Objects panel and lying within the Reach distance specified in the **Dimension Defaults** dialog.

Angular Dimensions

The **Angular Dimension** tool measures the angle between any two straight edges, including lines, walls, the sides of boxes, the straight sides of polylines, cabinets, and soffits. Any straight line or side within a CAD block can be dimensioned, as well. Edges nested up to four levels deep within a CAD block can be dimensioned.

To create an angular dimension, click on the first edge to be dimensioned, then drag an arc and release on the second edge.

As with other dimension lines, Angular Dimensions adjust if one of the dimensioned objects is moved. Angular Dimensions can also be selected and moved using its edit handle. As it is moved, an Angular Dimension maintains the location of its arc center.

Like other dimension lines, an Angular Dimension can be included in a CAD block. When the block is exploded, the Angular Dimension may become invalid and disappear when edited or changed. If this occurs, it can be redrawn.

Interior Dimensions

Draw **Interior Dimension** lines parallel to walls in floor plan view to create interior dimensions.

The **Interior Dimension**  tool locates interior wall surfaces only. It does not dimension between layer surfaces in the same wall, and it does not locate walls unless it actually intersects them.

Interior Dimensions  locate either wall surfaces or the Main Layer, depending on the settings in the Locate Objects panel of the **Dimension Defaults** dialog. See “Locate Objects Panel” on page 968.

Point to Point Dimensions

The **Point to Point Dimension** tool places Point Markers at the start end and points of a dimension line as it is drawn and dimensions between them. See “Markers” on page 1028.

Point to Point Dimensions can be drawn in either of two ways:

- When the **Default**  edit behavior is active, a Point to Point Dimension places Point Markers at its start and end points, which it locates. Any objects along the dimension line’s length are ignored. See “Point Markers” on page 1046.
- When the **Alternate**  edit behavior is active, a Point to Point Dimension locates objects along its length as well as objects or Point Markers at its start and end. See “Edit Behaviors” on page 176.

Point Markers can be selected and edited. See “Editing Markers” on page 1030.

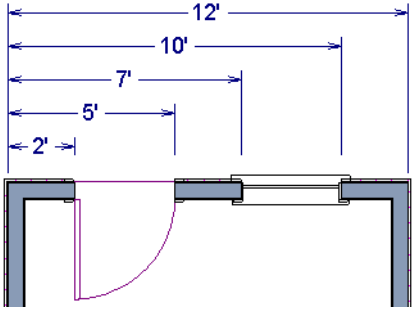
If the objects or point markers located by a **Point to Point Dimension** line are moved, the dimension updates to reflect the change.

Objects and Point Markers located by a **Point to Point Dimension** line can be accurately relocated by specifying new dimension values. See “Moving Objects Using Dimensions” on page 989.

Baseline Dimensions

The **Baseline Dimension** tool creates a series of dimension lines that all share the same origin instead of continuing from each previous location. **Baseline Dimensions** are independent and can be edited separately. This tool is not available in layout files.

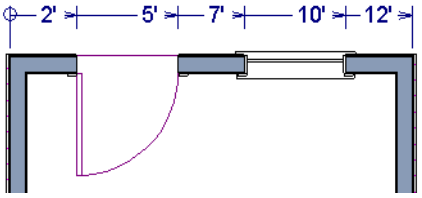
In floor plan view, a cross section/elevation view or a CAD Detail, select **CAD> Dimensions> Baseline Dimension**, click near an object and drag a dimension line near or through the objects requiring dimensions.



The spacing between lines is the default **Line Separation** value. See “Setup Panel” on page 964.

Running Dimensions

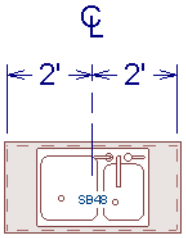
The **Running Dimension** tool is similar to the Baseline Dimension tool in that it produces multiple measurements from a single point of origin. It is different, though, in that these measurements display on the same dimension line rather than on multiple lines. The start point of a **Running Dimension** line is marked by a circle. The circle’s size is the same as the dimension line’s Arrow Size.



Centerline Dimensions

The **Centerline Dimension** tool is available in floor plan and cross section/elevation views. It allows you to locate the centers of walls, wall openings, cabinets, fixtures, appliances, electrical objects, CAD blocks, and CAD arc centers using special centerline extension lines. Centerline extensions can be distinguished by a dashed line style and a symbol.

Both free-standing fixtures and appliances as well as those placed into cabinets can be located by Centerline Dimensions.



Cabinet, fixture and appliance, furniture, and wall opening centers are only located as a dimension line is drawn when **Centers** is selected for these object types. See “Locate Objects Panel” on page 968.

The centers of a variety of other objects - including stairs, footings, electrical, and CAD objects - can also be located with a Centerline by adding an extension at the object midpoint. Electrical and CAD objects are only located when these options are selected in the **Dimension Defaults** dialog.

Centerline Dimensions can also locate the edges of other types of architectural objects, as well as CAD objects, and will locate walls as specified on the Locate Objects panel of the **Dimension Defaults** dialog.

You can also specify any extension line as a Centerline in the **Dimension Line Specification** dialog. See “Extensions Panel” on page 994.

Temporary Dimensions

Temporary Dimensions display when an object is selected and show the distance between the object’s selected edge and other objects. Select **View> Temporary Dimensions** to turn on or off the display of temporary dimensions. This toggle affects all views and is saved between launches of Chief Architect.

As with other dimension lines, Temporary Dimensions only locate objects that are parallel or nearly parallel to one another. They will also locate the endpoints of CAD lines and the corners of objects located past the end of the selected edge, within 4 feet (1200 mm) of the point where you click to select the object.

A temporary dimension will not display when an object is selected if a manually drawn dimension line is already present that shows the same information.

You can control how temporary dimensions locate objects in the **Temporary Dimension Defaults** dialog. See “Temporary Dimension Defaults Dialog” on page 975.

Tape Measure

Use the **Tape Measure** tool to draw a temporary dimension line between any two points in the drawing area. The tool will place temporary markers at the start and end points of the dimension line. These points and the line both disappear when you release the mouse button. If **Object Snaps** are enabled and an object is located by the temporary line, you can snap to it.

The Automatic Dimension Tools

The **Automatic Dimension Tools** allow you to generate dimensions in floor plan and cross section elevation views for specific purposes.

If you edit an **Auto Dimension** line, it will be converted to a manual dimension, so if Auto Dimensions are later regenerated, your changes will not be lost.

Each of the **Automatic Dimension** tools has its own defaults dialog so that you can customize the functionality of each independent of the others. See “Auto Dimension Defaults Dialogs” on page 973.

Auto Exterior Dimensions

The **Auto Exterior Dimensions** tool generates dimensions around a plan’s exterior in floor plan view. The dimension lines locate walls and openings as specified in the **Auto Exterior Dimension Defaults** dialog.

Auto Exterior Dimensions do not generate properly if there is a gap in the exterior walls. If automatic dimensions do not generate, try Build> Wall> Fix Wall Connections. See “Fix Wall Connections” on page 273.

There are a maximum of three rows of automatically generated dimensions per exterior wall direction. The innermost dimension line locates exterior walls, interior walls, and all openings in exterior walls. The second dimension line locates exterior and interior walls. The outermost dimension line is the overall exterior dimension.

Auto Interior Dimensions

The **Auto Interior Dimensions** tool can be used in floor plan view in either of two ways:

- Select one or more rooms and click the **Auto Interior Dimensions** edit tool to generate interior dimensions that measure each wall defining the selected room(s).
- Select **CAD> Automatic Dimensions> Auto Interior Dimensions** to generate a set of interior dimensions in every room on the current floor.

Auto Interior Dimensions lines are generated inside of the rooms they measure and locate walls, openings, and other objects as specified in the **Auto Interior Dimension Defaults** dialog.

Auto Interior Dimensions do not recognize the **No Locate** setting for walls. If a wall is specified as No Locate, Auto Interior Dimensions will locate it anyway. See “No Locate” on page 278.

Auto NKBA® Dimensions

The **Auto NKBA® Dimensions** tool can be used to measure Kitchen, Bath and Master Bath rooms in floor plan view in either of two ways:

- Select **CAD> Automatic Dimensions> Auto NKBA® Dimensions** to generate interior dimensions measuring each wall defining rooms specified as Kitchen and Bath types on the current floor.
- Select one or more Kitchen and/or Bath rooms and click the **Auto NKBA® Dimensions** edit tool to generate interior dimensions that measure each wall defining the selected room(s).

Auto NKBA® Dimensions lines only measure the walls defining Kitchen and Bath rooms and are generated outside of they measure. See “Room Types” on page 329.

Auto NKBA® Dimensions lines locate walls and openings in accordance with NKBA® standards as specified in the **Auto NKBA® Dimension Defaults** dialog. See “NKBA® Kitchen and Bathroom Guidelines” on page 1275.

Auto NKBA® Dimensions do not recognize the **No Locate** setting for walls. If a wall defining a Kitchen or Bath is specified as No Locate, Auto NKBA® Dimensions will locate it anyway.

Auto Elevation Dimensions

The **Auto Elevation Dimensions** tool generates dimensions that locate walls and other objects in cross section/elevation views, as specified in the **Auto Elevation Dimension Defaults** dialog.

Auto NKBA® Elevation Dimensions

The **Auto NKBA® Dimensions** tool generates dimensions that locate walls and other objects in cross section/elevation views in accordance with NKBA® standards, as specified in the **Auto NKBA® Elevation Dimension Defaults** dialog.

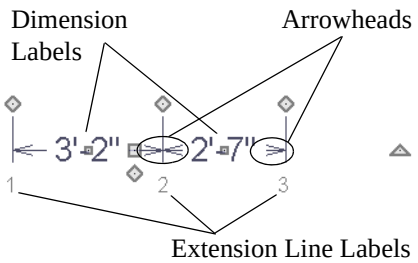
Displaying Dimension Lines

The display of dimension lines is controlled in the **Layer Display Options** dialog. See “Displaying Objects” on page 144.

You can customize the display of dimension lines for different purposes. See “Annotation Sets” on page 78.

Dimension lines created by any of the dimension tools share the same components.

- **Dimension Lines** run parallel with the distance being measured.
- **Extension Lines** are perpendicular to dimension lines, indicating what they locate. If a dimension line locates more than two objects, extension lines divide the dimension line into segments.
- **Arrowheads** display at the intersections of dimension and extension lines.
- **Dimension Labels** display at the mid-point of dimension line segments and indicate the distance that each segment measures.



If a manual dimension line is on a layer that is turned off and you select an object located by that dimension line, it will display for reference using the Move color specified in the **Preferences** dialog. See “Colors Panel” on page 92. This will happen only if

Temporary Dimensions are turned on. See “Temporary Dimensions” on page 980.

Extension Lines

If a dimension line is offset from the objects it locates, extension lines can help clarify exactly what is being located. You can specify the default length of extension lines in the **Dimension Defaults** dialog. See “Extensions Panel” on page 972.

Once drawn, the appearance of extension lines can be edited. See “Editing Extension Lines” on page 986.

Any extension line can be specified as a Centerline that displays the ℄ symbol. See “Centerline Dimensions” on page 979.

Dimension Labels

Manually drawn, automatic and temporary dimension labels use the Text Style specified in the **Dimension Defaults** dialog. Unlike many objects that use Text Styles, by default dimensions use a Text Style specified in the defaults dialog rather than the Text Style assigned to their layer. See “Text Style Panel” on page 973.

Like other text, dimension labels are subject to scaling. For example, A font size of 6” prints a 1/8” tall number at 1/4” = 1’ scale. A font size of 125 mm prints a 3 mm tall number at 1 m = 50 m scale. See “Printing Text and Dimensions” on page 1190.

By default, dimension labels have a solid fill that is the same as the **Background Color** set in the **Preferences** dialog. You can instead specify that labels use a Text Style that has a transparent or other fill.

You can also specify the minimum size of dimension numbers displaying on screen in the **Preferences** dialog. See “Appearance Panel” on page 90.

Labels can both a primary and secondary format and can be centered on dimension lines or located either above or below them. See “Primary Format Panel” on page 965.

Dimension labels have their own edit handle and can be moved when a dimension line is selected.

Dimension Arrowheads

You can specify the style, color and size of dimension arrows in the **Dimension Defaults** and **Dimension Line Specification** dialogs. See “Arrow Panel” on page 1055.

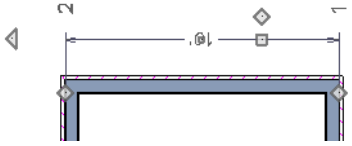
The arrow at the end of a dimension line will not display if it is close enough to to another dimension arrow that the two will overlap. A typical example of this is where two sections of an Interior Dimension locate two sides of an interior wall.

Selecting Dimension Lines

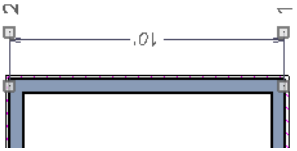
Before a manually-drawn or automatic dimension line can be edited, it must be selected. To select a dimension or a group of dimensions, click on it when the **Select Objects** or **Manual Dimension** tool is active.

The edit handles that are available when a dimension line is selected depend on where you clicked to select it:

- Click on the dimension line to display a full set of dimension edit handles. See “Editing Dimension Lines” on page 984.



- Click on an extension line to display resize edit handles only on the ends of the dimension line’s extensions. See “Editing Extension Lines” on page 986.



If you select an extension line by mistake, press the Esc key to display the full set of dimension line edit handles.

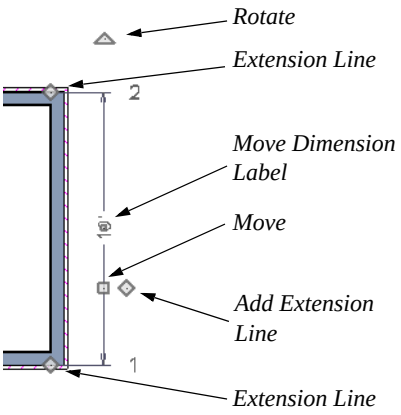
Editing Dimension Lines

With the exception of Temporary Dimensions, dimension lines can be selected and edited using the mouse, the edit toolbar buttons, and the **Dimension Line Specification** dialog. See “Dimension Line Specification Dialog” on page 991.

If an Auto Dimension line is edited, it will no longer be considered an automatic dimension line and will not be deleted and replaced the next time the **Auto Dimensions** tool is used.

Using the Mouse

When a dimension line is selected, its edit handles can be seen. There are four types of dimension line edit handles. More than one of some types display, depending on how many extension lines are present.



- The **Extension Line** handles mark the location being dimensioned and are used to move or delete extension lines. See “Moving Extension Lines” on page 987.
- The **Add Extension Line** handle displays to the side of the Move handle and is used to add extension lines to the dimension line. Dimension lines do not extend unless an object can be located. See “Adding Extension Lines” on page 986.
- The small, square **Move Dimension Label** handle is located at the center of the selected label. Use this handle to move the dimension number for each dimension line section. The pointer changes to a four-headed arrow ✣ when moved over this handle.
- The **Move** handle is located where you clicked to select the dimension line and is used to move the entire dimension line, including any subsections, perpendicular to itself. Extension lines are resized as appropriate. The pointer changes to a two-headed arrow ↔ when moved over this handle.
- The **Rotate** handle is located one plan foot past the end of the dimension line and is used to rotate the dimension line.

Note: A selected dimension lines cannot be moved if Proximity Fixed is checked in the Dimension Line Specification dialog. See “Extensions Panel” on page 994.

Using the Edit Tools

Dimension lines can be repositioned, copied, and deleted using the edit toolbar buttons just like other objects in the program can. See “The Edit Toolbar” on page 35.

Click the **Edit Dimension Ends** edit button to edit the dimension line using edit handles similar to those on line based objects. See “Editing Line Based Objects” on page 184.

Edit Dimension Ends is useful for locating a point on an object that it might not locate otherwise, such as the corner of a polyline.

Click the **Edit Extensions** edit button to edit the lengths of the selected dimension’s extension lines. See “Editing Extension Lines” on page 986.

Dimension Number Size

The initial size of dimension numbers is specified in the **Dimension Defaults** dialog. See “Dimension Defaults Dialog” on page 963.

You can specify number height for individual dimension lines in the **Dimension Line Specification** dialog. See “Dimension Panel” on page 992.

As with text and other objects, dimension number size is subject to scaling when sent to layout or printed. See “Printing Text and Dimensions” on page 1190.

Copying and Pasting Dimension Lines

Dimension lines can be copied and pasted into any view type that supports dimensions. If a dimension line is copied independent of the objects it originally locates, the pasted dimension line will locate point markers.

Dimension lines can also be copied and pasted from one plan or layout file to another. Bear in mind that dimension lines use dynamic defaults. If the destination file has a Saved Manual Dimension Default with the same name as that used by the dimension line being copied, the pasted dimension will refer to it. If no such saved default exists in the destination file, the pasted dimension will become associated with the currentlly active Saved Manual Dimension Default.

Deleting Dimension Lines

There are several ways to delete dimension lines.

You can select any manual or automatic dimension line or group of dimension lines, then press the Delete key or click the

Delete edit button. See “Deleting Objects” on page 249.

The **Delete Objects** dialog allows you to delete all manually drawn and/or automatic dimension lines at once. See “Delete Objects Dialog” on page 249.

Individual dimension line segments located between extension lines can also be deleted. If a segment is located between two other segments along the same dimension line, that dimension will be broken in two.

To delete a portion of a dimension line

1. Select any **Dimension Tool** aside from Angular or Auto Exterior Dimensions.
2. Manually draw a dimension line over the segment that you wish to remove, dragging from extension line to extension line.

Editing Extension Lines

Extension lines can be added, edited, and deleted using the mouse. Extension lines are also affected by settings in the **Dimension Line Specification** dialog. See “Extensions Panel” on page 994.

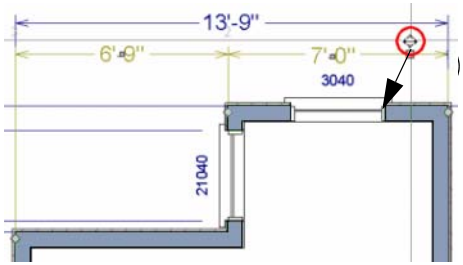
Adding Extension Lines

To add an extension line

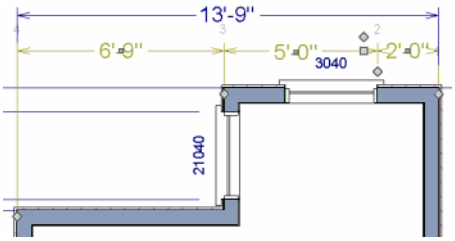
1. Select the dimension line.
2. Click the diamond-shaped Add Extension Line edit handle which displays

near the Move edit handle. The pointer changes to a two-headed arrow ↔.

3. Drag the handle to the object that you want to locate with a new extension handle. This example adds an extension line to the window edge.



4. Release the mouse button to add an extension line.

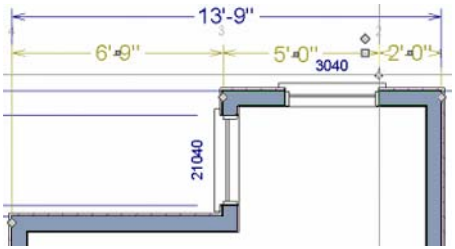


Moving Extension Lines

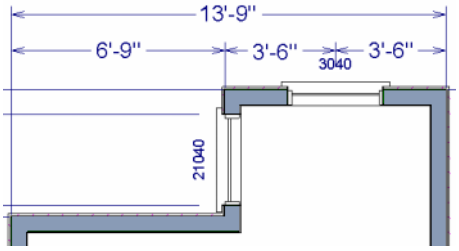
Extension lines can be moved to locate the centers, sides, or surfaces of most objects. In this example an extension line is moved from the windows edge to the center.

To move an extension line

1. Select the dimension line it is connected to, not the extension line itself.
2. Click the Extension Line edit handle. The pointer changes to a two-headed arrow ↔.



3. Drag the handle to a new location. The extension line snaps to possible marks as the handle is moved.
4. Release the mouse button at the new location.



Not all library symbols can be located by a dimension line as it is drawn. Once a dimension is drawn, however, you can move or add an extension line to locate the library object.

Resizing Extension Lines

You can resize extension lines in the **Dimension Line Specification** dialog or using their edit handles. See “Extensions Panel” on page 972.

To resize an extension line

1. Click on the extension line or select the dimension line and click the **Edit**

Extensions edit button to display two handles along the extension line.

2. Click either handle, turning the pointer into a two-headed arrow ↔.
3. Extend or contract the extension line and release the mouse.

Using Proximity Fixed

The **Proximity Fixed** option allows you to specify a fixed length for one extension line that will not change if the object the extension line locates is moved.

To use Proximity Fixed

1. Select a dimension line that locates multiple independent objects and note the Extension Number of extension line that you would like to have a fixed length.
2. Open the **Dimension Line Specification** dialog and go to the Extensions panel. See "Extensions Panel" on page 972.
   - Select the Extension Number that you noted in step 1 from the **Selected Extension** drop-down list.
   - Check **Proximity Fixed**.
   - Specify the desired **Distance to Marked Object**, which is the distance from the selected dimension line to the object that the Selected Extension locates. This distance includes the Gap From Marked Object.
   - Click **OK**.

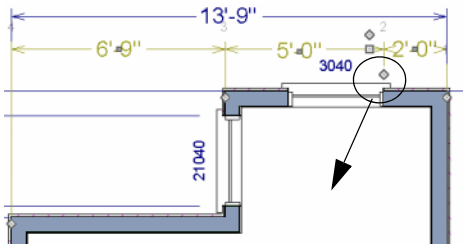
To see how Proximity Fixed works, select the object that the extension line with Proximity Fixed specified and move it. Notice that the dimension line moves in response and that all extension lines' lengths adjust except for the one with Proximity Fixed.

Deleting Extension Lines

When an extension line is deleted, the remaining dimensions update. If a dimension line hasonly two extension lines, they cannot be deleted.

To remove an extension line

1. Select the dimension line it is connected to, not the extension line itself.
2. Click the Extension Line edit handle.



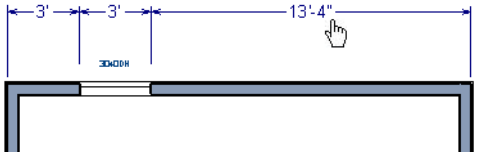
3. Drag it perpendicular to the direction of the arrows, away from any dimensionable object, and release the button when the extension line disappears.

Add Additional Text

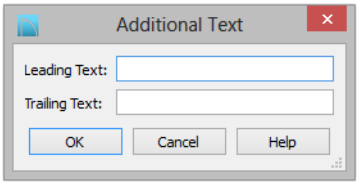
Text can be added to any manual or automatic dimension line using the **Add Additional Text** edit tool.

To add text to a dimension label

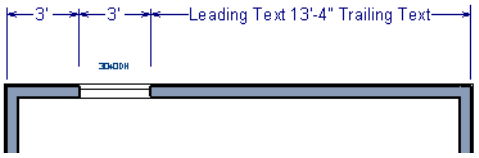
1. Select a dimension line that you would like to add text to.
2. Click the **Add Additional Text** edit button.
3. Click on the segment of the dimension line with the label you wish to add text to.



4. In the **Additonal Text** dialog:



   - Type any **Leading Text** that you want to display before the dimension value
   - Type any **Trailing Text** that you want to display after the dimension value
5. When you click OK, the segment you selected will display the added text.



Additional Text can also be added and edited in the **Dimension Line Specification** dialog. See “Additional Text Panel” on page 995.

Note: Dimension lines with text added are not supported when exported to .dxf/.dwg. When exported, they are converted to text and CAD lines. The same occurs when CAD Detail from View is used. See “CAD Detail from View” on page 1086.

Moving Objects Using Dimensions

Most objects can be moved by changing an automatic, manual or temporary dimension value that locates it. This technique can be applied in nearly any situation where dimensions are present, including angular dimensions. See “Moving Objects” on page 217.

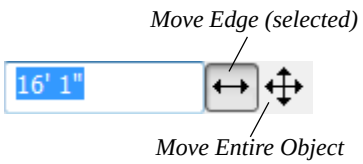
In addition, some objects can be resized using dimensions. See “Resizing Objects” on page 226.

Your pointer indicates which dimensions can be used to relocate the selected object by changing to a pointing hand icon.

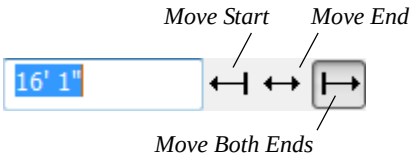
Another way to tell is to select an object and drag it in the desired direction. As you drag, note which dimensions update. These dimensions are the dimensions that can be used to move that object.

To move an object using dimensions

1. Select the object and click on a dimension line that locates it. An inline text field opens at the location where you clicked.
   - The actual distance displays in the text field using the default primary format. See "Primary Format Panel" on page 965.
   - If the dimension is locating two different objects, the **Move Edge** and **Move Entire Object** buttons display to the right of the text field.



   - If the dimension describes a selected wall's length, the **Move Start**, **Move End** and **Move Both Ends** buttons display to the right instead.



2. Click the **Move** button of your choice.
3. Enter a new value in text field. The unit of measurement is set in the **Number Style/Angle Style** dialog.
   - To use a different unit, include its indicator after the value. See "Dialog Number/Angle Style Dialog" on page 126.
   - To move the selected object past a second object, to its opposite side, enter a negative value.
4. The selected object moves or resizes when you press the Enter key or click outside of the text field.
5. If **Bumping/Pushing** is enabled, the object being moved will bump into any objects in its move path and not move the entire distance. Hold down the Ctrl key when you press Enter to override this move restriction. See "Bumping/Pushing" on page 218.

To resize an object using dimensions

1. Select the object along the edge that you would like to move. See "Selected Edge" on page 181.
2. Click on a dimension line that indicates its distance from the object's opposite side.
3. In the inline text field, enter a value.
4. Click **Move edge** to move the selected edge only.
5. The selected edge moves, resizing the object, when you press the Enter key.

You can cancel a move or resize operation using dimensions at any time by pressing the Esc key.

Resizing a House Using Exterior Dimensions

When resizing a house using dimensions, it is important to work your way around the house in one direction. Relocate one wall at a time in succession so that you do not redefine the same dimension more than once.

For more information, see “Measuring Walls” on page 277.

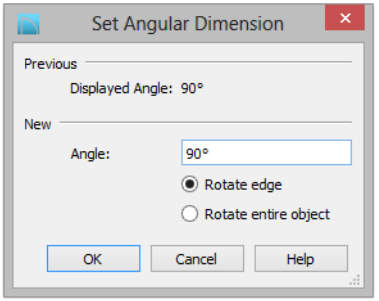
Using Angular Dimensions

Angular Dimensions are useful for adjusting the angles of polyline-based objects and walls.

To change an angular dimension

1. Draw an **CAD> Dimensions> Angular Dimension**, then click and drag to draw an arc within the angle you wish to measure.
2. Select the edge that you want to move.
3. Click the dimension value to open the **Set Angular Dimension** dialog.

The **Set Angular Dimension** dialog indicates the **Previous Value** in degrees, minutes and seconds.



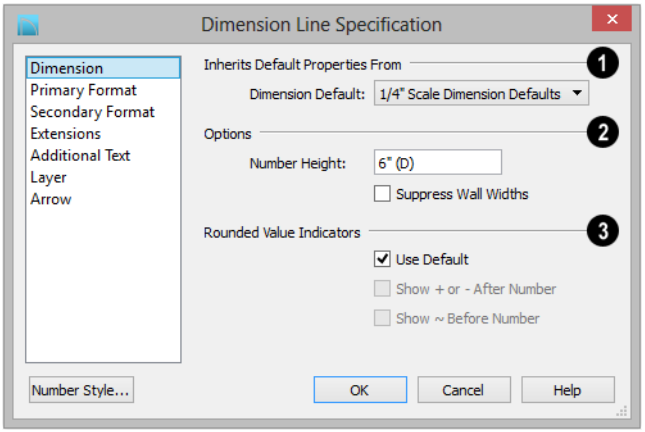
4. Enter a value in the **New Value** field.
5. Specify what you want to rotate:
   - Select **Rotate edge** to move the selected edge when you click OK, or
   - Select **Rotate entire polyline** to rotate the entire object about the corner formed by the edges that the Angular Dimension locates, maintaining the previous value of that angle.
6. Click **OK** to apply the change.

Dimension Line Specification Dialog

To open the **Dimension Line Specification** dialog, double-click a dimension line using the **Select Objects** or **Manual Dimension** tool, or select a dimension line or group of dimension lines and click the **Open Object** edit button.

The settings in this dialog are dynamic defaults associated with a particular Saved Manual Dimension Default. See “Dimension Defaults Dialog” on page 963.

Dimension Panel



1 **Inherits Default Properties From** - The name of the Saved **Dimension Default** that the selected dimension line gets its default attributes from displays here.

- If multiple dimension lines are selected, “No Change” may display here.
- You can select a different Saved Dimension Default from the drop down list.
- If a dimension line inherits attributes from a Saved Dimension Default, that default cannot be deleted. See “Saved Defaults Dialog” on page 76.

2 **Options** - Specify the size and display of wall widths attributes for the selected dimension line. The minimum on-screen size can be set in the **Preferences** dialog. See “Appearance Panel” on page 90.

- Specify the **Number Height** for the selected dimension. Type “d” in the box to reset the number size to the default.

Dimension Number Height is subject to scaling. For example, A Number Height of 6” prints a 1/8” tall number at 1/4” = 1’ scale. A Number Height of 125 mm prints a 3 mm tall number at 1 m = 50 m scale.

- Check **Suppress Wall Widths** to suppress those portions of the dimension line that measure between two surfaces of the same wall. Both sides of a wall may still be located, but its width will not display.

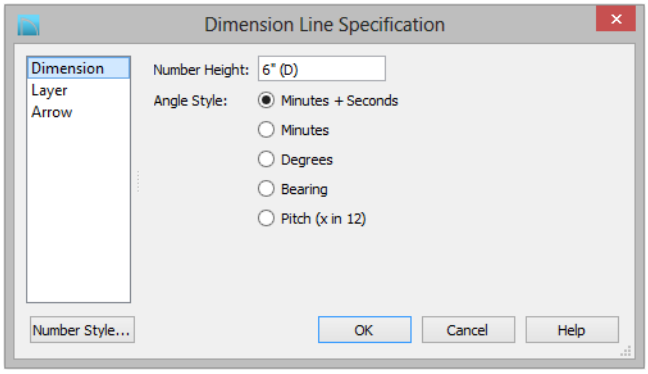
  This option is checked by default for most manually drawn dimensions, but is unchecked for Interior Dimensions.

3 Specify the use and appearance of **Rounded Value Indicators**, which can display when the degree of accuracy in use is not sufficient to describe a dimension’s true value.

- Check **Use Default** to use the default indicator(s). Uncheck this box to make the options that follow active.

- Check **+ or - After Number** to indicate that the actual dimension value is higher or lower than the value shown.
- Check **~ Before Number** to indicate dimension values that are not accurate with the ~ symbol.

Dimension Panel for Angular Dimensions



- Define a **Number Height** for the selected dimension. Type “D” in the box to reset the number size to the default.
- Select an **Angle Style** radio button to specify the how the selected Angular Dimension’s angle value displays. See “Dialog Number/Angle Style Dialog” on page 126.

Primary Format Panel

To enable the settings on the Primary Format panel of the **Dimension Line Specification** dialog, uncheck **Use Default Formatting**.

The settings that follow are the same as those on the same panel of the **Dimension Defaults** dialog, but apply only to the selected dimension line(s). See “Primary Format Panel” on page 965. Not available for Angular Dimensions.

Secondary Format Panel

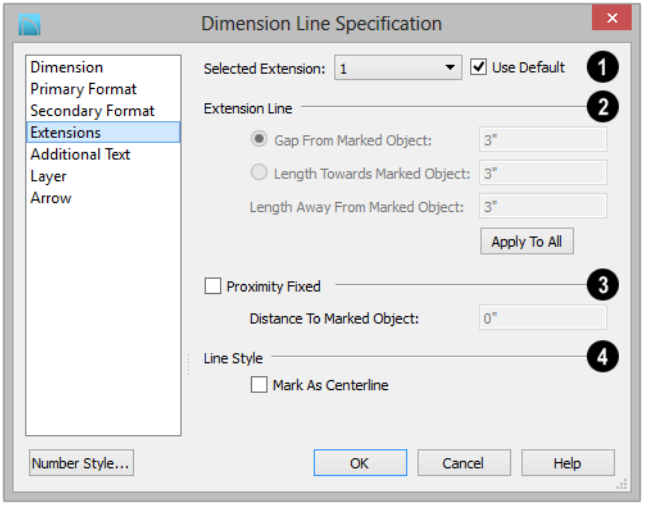
To enable the settings on the Secondary Format panel of the **Dimension Line Specification** dialog, uncheck **Use Default Formatting** and then check **Include Second Format**.

The settings that follow are the same as those on the same panel of the **Dimension Defaults** dialog, but apply only to the selected dimension line(s). See “Secondary Format Panel” on page 967. Not available for Angular Dimensions.

Extensions Panel

The Extensions panel is not available for dimensions selected as a group or for **Angular Dimensions** .

Opening this panel will turn off Version 8 Compatible Extensions if it is enabled in the Dimension Defaults dialog. See "Extensions Panel" on page 972.



1 **Selected Extension -** Choose an extension line associated with the currently selected dimension from the drop-down list. The Selected Extension can then be edited here.

When a dimension line is selected, each extension line's number displays beside it.

- **U**ncheck **Use Plan Default** to enable the three settings that follow. Check this box to restore the default settings to the Selected Extension line. See "Dimension Defaults Dialog" on page 963.

2 The **Extension Line** settings are the same as those on the Extensions panel of the **Dimension Defaults** dialog, but apply to the extension lines associated with the selected dimension line only. See "Extensions Panel" on page 972.

- Click **Apply to All** to apply the settings for the Selected Extension line to all extension lines associated with the selected dimension.

3 Check **Proximity Fixed** to specify a fixed distance between the marked object and the dimension line. You can only fix the proximity for a single extension line.

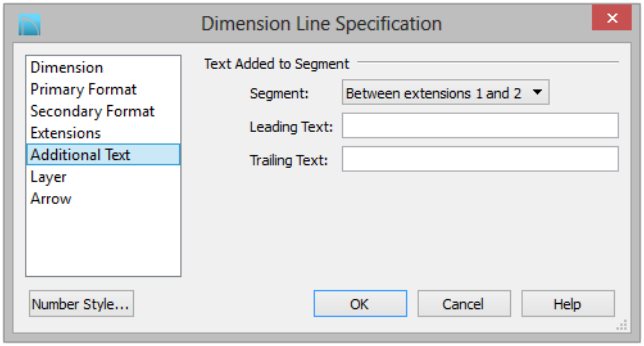
- **Distance to Marked Object** - When Proximity Fixed is checked, you can

specify the distance from the dimension line to the marked object using a positive value. See “Extensions Panel” on page 972.

4. Check **Mark as Centerline** to mark the selected extension line with a Centerline symbol . Not available in the **Dimension Defaults** dialog. See “Centerline Dimensions” on page 979.

Additional Text Panel

Additional Text can also be added to a dimension line using the **Add Additional Text** edit tool. See “Add Additional Text” on page 989.



- Select the **Segment** of the selected dimension line that you would like to add text to.
- Type the **Leading Text**, which appears before the dimension value in the label.
- Type the **Trailing Text**, which appears after the dimension value in the label.

Layer Panel

The Layer panel is found in the specification dialogs for many different objects. For more information, see “Layer Panel” on page 152.

Arrow Panel

For information about the settings on this panel, see “Arrow Panel” on page 1055.

Chapter 32:

Text, Callouts, and Markers

Text, callouts and markers are an ideal way to draw attention to special details of your drawings. Text can be added in floor plan view, in cross section/elevation views, in CAD Details, and to layout pages.

Text lines with arrow can be attached to text objects, allowing you to direct attention to specific plan details.

The display of text can be controlled by layer or set specifically for each text object.

Chapter Contents

Text Defaults and Preferences

Text Defaults can be accessed by selecting **Edit> Default Settings** in any view in which text can be created. Click the "+" next to **Text, Callouts and Markers** to display the sub-headings. See “Default Settings vs Preferences” on page 72.

The default settings for Rich Text, Text, Callouts, Markers, and Arrows determine what these objects look like when they are first created. Text Style Defaults determine the appearance of text associated with things like dimensions and object labels.

Rich Text, **Text**, **Callouts**, **Markers**, and **Arrows** can support multiple Saved Defaults. In order to open the defaults dialog for of these tools, you must first open its **Saved Defaults** dialog and choose an available saved defaults setup. See “Multiple Saved Defaults” on page 75.

- When you access a defaults dialog for any of the Text Tools via the **Default Settings** dialog, the **Saved Defaults** dialog will open first, allowing you to select which Saved Default you wish to edit. See “Multiple Saved Defaults” on page 75.
- When you access this dialog by double-clicking a **Text Tool** button, the defaults dialog for the currently active Saved Default is opened directly. If you would like the **Saved Defaults** dialog to open first in this situation, you can enable this option in the **Preferences** dialog. See “General Panel” on page 96.
- In either case, the name of the Saved Default being edited will display in the title bar at the top of the dialog box.

Changes made to default settings do not alter existing text objects, so it is a good idea to go over these settings before placing text.

Text Style Defaults

Select “Text Style” from the list in the **Default Settings** dialog and click the **Edit** button to open the **Saved Text Style Defaults** dialog. The **Text Style Defaults** button can be added to your toolbars. See “To add a button to a toolbar” on page 132.

The **Text Style Defaults** dialog allows you to specify the attributes of the various Text Styles in use in the current file. See “Text Styles” on page 1030.

Rich Text Defaults

Double-click the **Rich Text** or **Leader Line** tool to open the **Saved Rich Text Defaults** dialog and edit the currently active Saved Default.

The **Rich Text Defaults** dialog is similar to the **Rich Text Specification** dialog, but the name of the current Saved Default displays in the title bar. See “Rich Text Specification Dialog” on page 1004.

Leader Lines and **Text Lines with Arrows** use the same default layer as Rich Text, so by default they have the same color, line weight and line style. See “Layers” on page 143.

Text Defaults

Double-click the **Text** tool to open the **Saved Text Defaults** dialog and edit the currently active Saved Default.

The **Text Defaults** dialog looks almost the same as the **Text Specification** dialog, but the name of the current Saved Default displays in the title bar. See “Text Specification Dialog” on page 1011.

Callout Defaults

Double-click the **Callout** tool to open the **Saved Callout Defaults** dialog and edit the currently active Saved Default.

The **Callout Defaults** dialog looks almost the same as the **Callout Specification** dialog, but the name of the current Saved Default displays in the title bar. See “Callout Specification Dialog” on page 1025.

Marker Defaults

Double-click the **Marker** tool to open the **Saved Marker Defaults** dialog and edit the currently active Saved Default.

The **Marker Defaults** dialog looks almost the same as the **Marker Specification** dialog, but the name of the current Saved Default displays in the title bar. See “Marker Specification Dialog” on page 1028.

Arrow Defaults

Double-click the **Text Line with Arrow** tool to open the **Saved Arrow Defaults** and edit the currently active Saved Default.

The settings in the **Arrow Defaults** dialog determine the initial settings for arrows drawn using the **Leader Line**, **Text Line with Arrow** and **Line With Arrow** tools. These settings also determine the initial appearance of arrows when they are added to CAD lines, arcs, and polylines.

The **Arrow Defaults** dialog looks almost the same as the Arrow panel of the **Line Specification** dialog, but the name of the current Saved Default displays in the title bar. See “Arrow Panel” on page 1055.

Avoid typing any text in any text Defaults dialog unless you want it to be present in all text objects you create.

Annotation Sets

The Text Tools are among the items associated with Annotation Sets, which are groups of Saved Defaults that can be customized and activated for specific drawing tasks. See “Annotation Sets” on page 78.

Preferences

Specify the number of segments for new leader lines and whether pressing the Enter key creates a new line of text or closes the **Rich Text and Text Specification** dialogs in the **Preferences** dialog. See “Text Panel” on page 95.

Fonts and Alphabets

Chief Architect allows you to use any font found in your computer's Fonts directory.

For best printed results, using true-type or open-type fonts is recommended.

Blueprint Fonts

Three architectural fonts: Chief Blueprint, City Blueprint, and Country Blueprint are installed in the Windows Fonts directory when Chief Architect is installed.

On Mac systems, these fonts are embedded with the Chief Architect installation but not installed on the system. As such, they are available for use in Chief Architect but not in other programs.

International Alphabets

The **Rich Text** tool supports unicode alphabets and characters. In order to use a unicode alphabet or characters, the appropriate language support must be installed on your computer.

Special characters can be added to any **Rich Text** object by:

- Copying and pasting the character from another application;
- Copying and pasting the character from the Windows Character Map;
- Using the Mac Character Viewer;
- Typing the keystroke associated with the character.

See "Copying and Pasting Text" on page 1019.

Character Size

Text, callouts, markers as well as dimension numbers can be sized to 1/128" accuracy when Inches is used as the number style (0.078125 mm when Decimal mm is used). See "Dialog Number/Angle Style Dialog" on page 126.

Either of two font sizing methods may be used:

- The default method specifies text size as the measurement from the baseline to the topmost part of the capital letter A. This method is similar to that used in most CAD programs.
- Alternatively, you can use a font sizing method similar to most word processing applications, where size is based on information stored in the font. This information varies from font to font and is responsible for apparent differences in font height.

To size **Rich Text** based on the size of the capital letter A, use **CAD Style Font Sizing**. See "Appearance Panel" on page 1007.

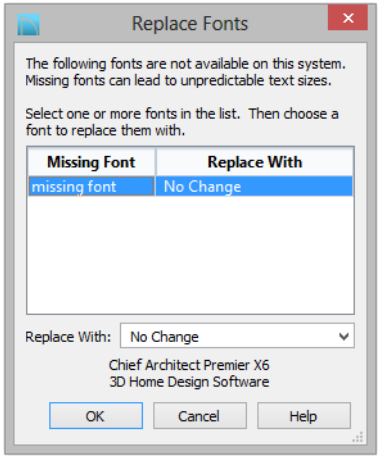
To size **Text**, **Callouts**, **Markers** and dimension numbers based on font information, use **Legacy Compatible Size**.

The sizing method used for text objects can be set as defaults and also specified per object in objects' specification dialogs. See "Text Defaults and Preferences" on page 998.

The sizing method used for dimensions can only be specified in the **Dimension Defaults** dialog. See "Dimension Defaults Dialog" on page 963.

Missing Fonts

If you open a plan or layout file that uses a font that is not installed on the current computer, the program will give you an opportunity to replace it in the **Replace Fonts** dialog.



The table lists all missing fonts and how they will be replaced.

- Click on a font name in the list to select it. Use the Shift or Ctrl key to select multiple fonts. See "Shift and Ctrl Select" on page 183.
- Select a replacement font from the **Replace With** drop-down list, or leave "No Change" as the selection to maintain the file's association with the missing fonts.
- A preview of the selected font displays below the **Replace Width** list.

If you do not plan to return the file to the computer where it was created, you may want to replace missing fonts with the fonts you normally use. On the other hand, if you do intend to return the file, you may prefer to not replace any missing fonts.

The Text Tools

Select **CAD> Text** to access the **Text Tools**. These tools are available in floor plan view, in cross section/elevation views, in CAD Details, and in layout files.

The **Rich Text** tool is used to create text objects.

The **Text** tool is used to create simple text objects with a single font and style format, or with Tab-delimited columns.

It is not as flexible as the **Rich Text** tool; however, it was the tool used to create text in Chief Architect X1 and prior. See “Creating Text, Callouts and Markers” on page 1002.

You can convert simple Text to a Rich Text object by clicking the Convert to Rich Text edit button. See “Convert to Rich Text” on page 1017.

The **Text Line with Arrow** tool is used to connect text and another object with an arrow. See “Text Arrows” on page 1021.

The **Leader Line** tool places either a Text or Rich Text object with an arrow attached. See “Leader Line” on page 1022.

The **Callout** tool is used to place callouts. See “Callouts” on page 1024.

The **Marker** tool is used to place markers for **Level Lines**, **Test Borings** and **Point Markers**. See “Markers” on page 1028.

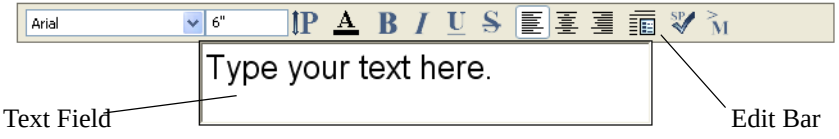
Creating Text, Callouts and Markers

Text, callouts and markers can be created in floor plan view, in cross section/elevation views, in CAD Details, and on layout pages.

Once created, text, callouts and markers can be selected and edited in a variety of ways. See “Editing Text” on page 1015.

To create Rich Text

1. Select **CAD> Text> Rich Text** .
2. Click and drag to draw a rectangle defining the area of the text object.
   - The rectangle that you drag must be at least as tall as the default line spacing for a single line of text. See “Paragraph Options Dialog” on page 1007.
   - When you release the mouse button, a blank text box is created with an active cursor, ready for you to type.



3. Type or paste the desired text into the Text Field. If the program identifies any spelling issues, they will be underlined in red.
4. Use the options on the Edit Bar, which displays above the Text Field, to change the font, style and size of any portion of the text. See “Editing Text” on page 1015.
5. When you are finished, simply click outside of the Text Field to close it and the Edit Bar. The **Rich Text** tool remains active, so you can click and

drag to create additional Text objects if you wish.

Note: If you do not type anything in the Text Field, a text object will not be created when you click outside of it.

To create Text

1. Select **CAD> Text> Text** .
2. Click where you want the upper left corner of the text to be located. The **Text Specification** dialog opens. See “Text Specification Dialog” on page 1011.
3. Enter text and click **OK**.

Up to 32,000 characters can be inserted in one **Text** object. It is usually better to use several smaller **Text** objects when a lot of text must be inserted.

Rich Text , **Callouts** and **Markers** can also be created in the same manner as **Text** .

You can also create lines with arrows connecting the text that you create to items in the drawing. See “Text Arrows” on page 1021.

Text and CAD Objects

Text can be used in combination with CAD objects to create legends, title blocks, and a wide variety of other details. See “CAD Objects” on page 1039 and “Layout” on page 1203.

A selection of legends and other CAD blocks that use both text and CAD can be found in the Library Browser. See “The Library” on page 797.

Displaying Text, Arrows, Callouts and Markers

As with other types of objects, the display of Text objects is controlled in the **Layer Display Options** dialog. By default, text objects are located on layers with “Text” at the beginning of the layer name, such as “Text, Callouts”. See “Layer Display Options Dialog” on page 148.

Text objects can only be displayed in views where text can be created.

The display attributes of each individual text object can be controlled independent of the layer it is placed on. See “Rich Text Specification Dialog” on page 1004.

Custom Text Layers

Text objects do not need to be shown at all times. For instance, electrical notes will be included with the electrical plan, but are not needed in the framing plan. You can create custom layers and layer sets to control the display of text and other objects. See “Layer Sets” on page 145 and “Layer Display Options Dialog” on page 148.

To move text to a different layer, select the text object or group of text objects, then click the **Open Object** edit button to open the **Text Specification** dialog. The selected text

object's layer can be changed on the Line Style panel. See "Line Style Panel" on page 1053.

Text Arrows

If a text arrow is attached to a **Text** object and they are on the same layer, changing the layer of the text will also change the layer of the attached text arrow. However, changing the layer of the text arrow will not change the layer of the text it is attached to. See "Displaying Objects" on page 144.

Rich Text Specification Dialog

The **Rich Text Specification** dialog opens if you select the **Rich Text** tool and then click once in the drawing area.

You can also open this dialog by selecting one or more **Rich Text** objects, then clicking the **Open Object** edit button.

When **Rich Text** objects are group-selected, the text content, zoom factor, and Paragraph Options cannot be changed, but everything else can be.

The **Rich Text Specification** dialog is similar to the **Rich Text Defaults** dialog but affects the selected text rather than all subsequently created text objects. Also, the name of the Saved Default being edited will display in the title bar of the defaults dialog. See "Text Defaults and Preferences" on page 998.

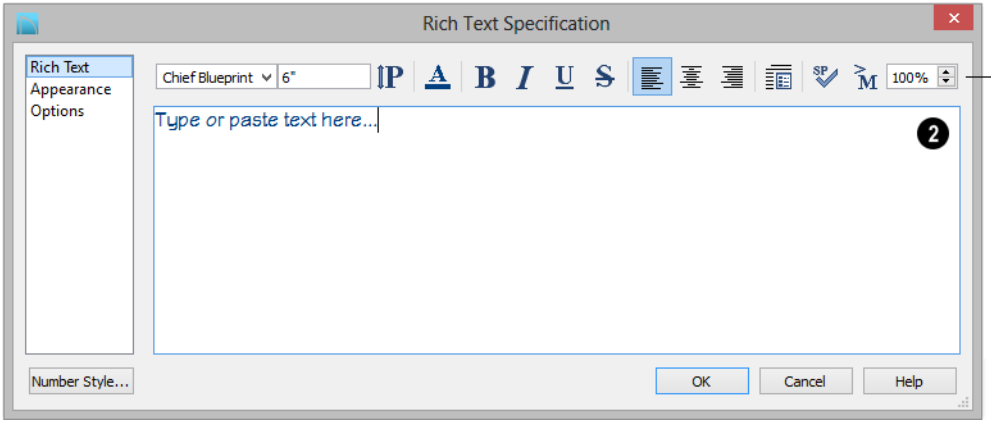
> Note: Text objects have a different specification dialog. See "Text Specification Dialog" on page 1011.

Text Panel

The settings on the Text panel allow you to type the selected Rich Text object's content and control many aspects of its appearance, including its font, size, color and style.

You can specify the appearance of the text before typing, and can also select and change the attributes of all or portions of the text content after it is typed. To change text that already exists, simply highlight it using the mouse and/or the Shift + arrow keys and then make any needed changes to its attributes.

> Note: If you do not type anything in the text field on this panel when creating a new object, no object will be created when you click OK. On the other hand, if you remove the text from an existing object and click OK, an empty text box will result.



1 Use the options on the Edit Bar, which displays above the Text Entry field, to change the font, style and size of the text.

The Edit bar also displays in the drawing area above the Text object when you click the **Edit Text in Place** edit button. See “Editing Text” on page 1015.

Select the desired options before typing to affect the text as it is typed, or select some or all of the text and then specify which options to apply to it.

- Select a **Font** from the drop-down list.
- Specify the **Text Size** in drawing units.
- Click the **Print Size** button to open the **Printed Size Input** dialog. See “Scaling Text” on page 1017.
- Click the **Color** button to specify the color of the selected or subsequently typed text. See “Color Chooser/Select Color Dialog” on page 853. If **Layer Color Text** is checked on the Appearance panel, any custom colors specified here are lost.
- Click the **Bold** button to specify text as bold.
- Click the **Italic** button to specify text as italic.
- Click the **Underline** button to specify text as underlined.
- Click the **Strikethrough** button to selected or specify text as stricken-through.
- Click the **Align Left**, **Align Center**, or **Align Right** button to specify the how text is aligned.
- Click the **Paragraph Options** button to specify the selected paragraph’s alignment, spacing and bullets or numbering in the **Paragraph Options** dialog.
- Click the **Spell Check** button to check the spelling in the selected text object. See “Spell Check” on page 1020.
- Click the **Insert Macro** button to place a Text Macro at the location of the

cursor. Not available when multiple text objects are selected. User Defined macros are only available when the selected Rich Text object points to an eligible object using a Leader Line or Text Line with Arrow. See “Text Macros” on page 1033.

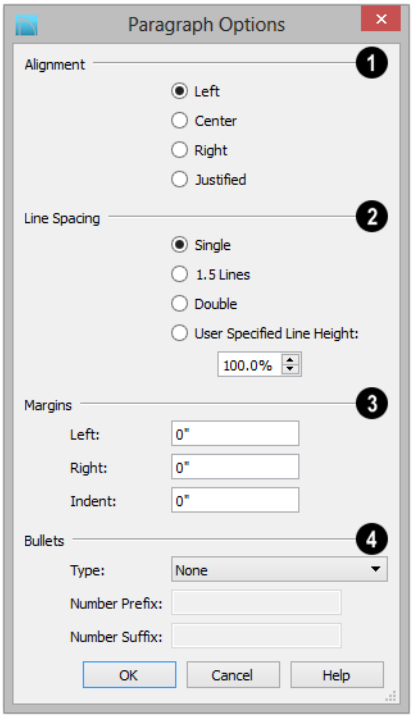
- Specify the **Zoom** factor of the selected text by typing a percentage value in the text field or clicking the up/down arrows. This setting only affects the text as it appears in this dialog.

Note: Some fonts cannot be drawn at certain zoom factors. When this is the case, the appearance of the text will not change.

❷ Type or paste text in the Text Entry field. See “Copy, Cut and Paste” on page 1018.

- Depending on the current **Preferences** settings, pressing the Enter key either forces a new line in the text box or closes the dialog. A carriage return can also be added by typing Shift + Enter or Ctrl + Enter. See “Text Panel” on page 95.
- Right-click in the Text Entry field to access a contextual menu from which you can select Undo, Redo, Cut, Copy, Paste, Spell Check and Select All. See “Contextual Menus” on page 36.
- To edit text in the entry field, click and drag to highlight any portion of it and then use the tools on the Edit Bar as needed.
- If the program identifies any spelling issues, they will be underlined in red.

Paragraph Options Dialog



1 Specify the **Alignment** of the selected paragraph(s). See “Aligning Text” on page 1018.

2 Specify the **Line Spacing** of the selected paragraph(s).

- Click the radio button beside **Single**, **1.5 Lines**, **Double** or **User Specified**.
- If you select **User Specified Line Height**, type the desired height for each line of text in the selected paragraph(s). For best results, this value should be at least as much as the largest character size used in the selected paragraph(s).

3 Specify the appearance of the side **Margins** of the selected paragraph(s), as measured in from edges of the text box. Only positive Margin values can be used.

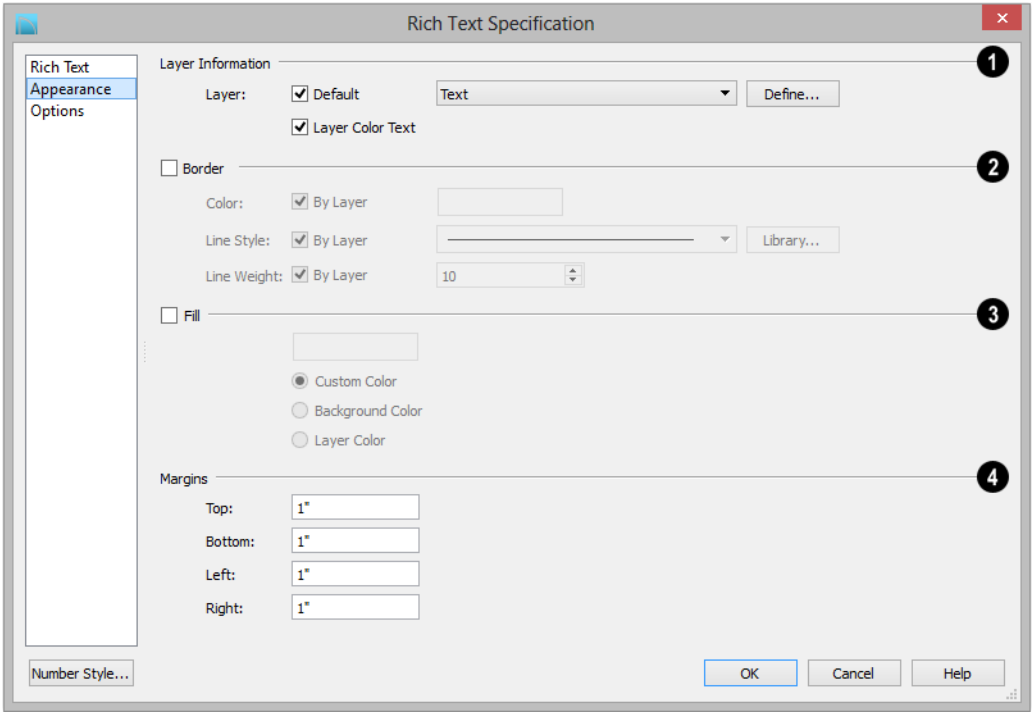
- Specify the **Indent**, which is measured from the left side margin. A negative value can be used if a left Margin has been specified.

4 Specify the appearance of **Bullets** and numbering in the selected paragraph(s).

- Select the desired bullet, numbered, or lettered **Type** from the drop-down list.
- Specify the **Number Prefix**, which are any characters that you would like to display before the selected paragraph’s number or letter. Does not affect paragraphs using circle or square bullets.
- Specify the **Number Suffix**, which are any characters that you would like to display after the selected paragraph’s number or letter and before its actual text. Does not affect paragraphs using circle or square bullets.

Appearance Panel

Leader Lines and **Text Lines with Arrows** use the same default layer as Rich Text, so they share the same default color, line weight and line style. See “Layers” on page 143.



1 **Layer Information -**

- Check **Default** to place the selected object on the default Text layer.
- Click the drop-down list to select from all layers available in the plan or layout file.
- Click **Define** to open the **Layer Display Options** dialog and select, modify, or add a new layer. See “Layer Display Options Dialog” on page 148.
- Check **Layer Color Text** to apply the color assigned to the selected Layer to to the text on the Text panel.

Note: If you change the color of some or all of the selected object’s text, Layer Color Text will become unchecked. If it is checked again, the custom color(s) will be removed.

2 Check **Border** to display a border around the selected text object and enable the settings that follow.

- Check **Layer Color** to use the line color assigned to the text object’s layer, or click the **Color** bar to select a different color. See “Color Chooser/Select Color Dialog” on page 853.
- Check **Use Layer Line Style** to use the line style assigned to the text object’s layer, or choose another style either from

the drop-down list or by clicking the **Library** button. See “Line Styles” on page 1076.

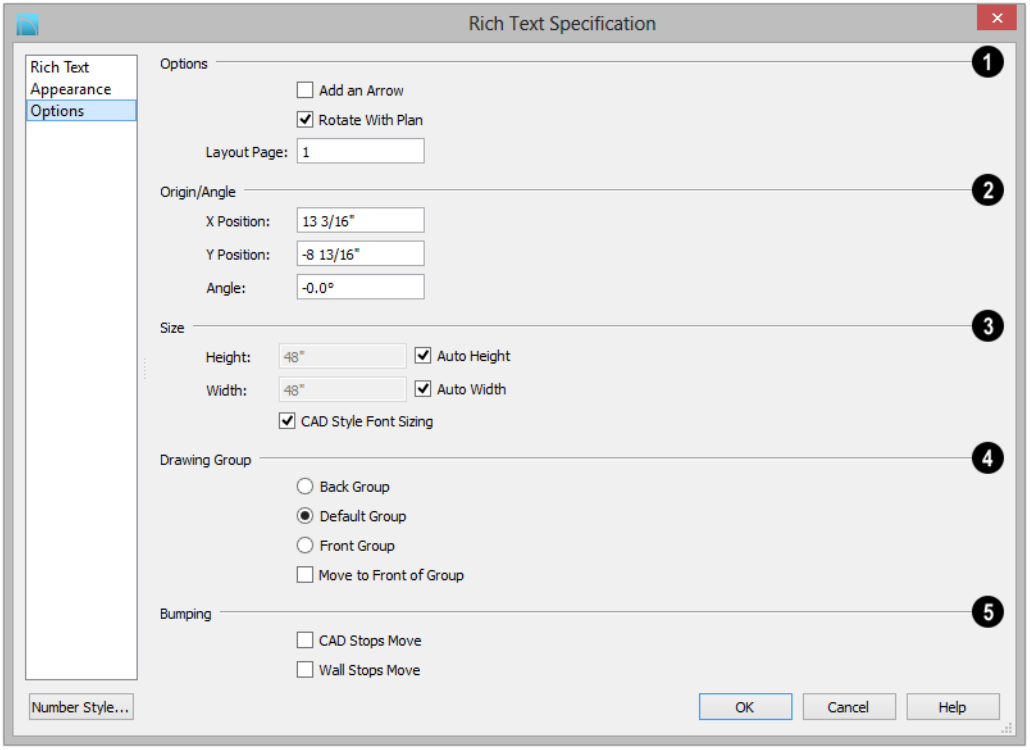
- Check **Use Layer Weight** to use the line weight assigned to the text object’s layer, or specify a different weight. See “Line Weights” on page 1191.

❸ Check **Fill** to display a fill color within selected text object(s) and enable the settings that follow.

- Select **Custom Color** then click the Color bar to use a fill color of your choosing. See “Color Chooser/Select Color Dialog” on page 853.
- Check **Use Background Color** to use program’s Background color as the text object’s fill color. See “Colors Panel” on page 92.
- Check **Use Layer Color** to use the color assigned to the text object’s layer as its fill color.

❹ Specify the **Top**, **Bottom**, **Left**, and **Right Margins**, which are the distance between the text and the border of the selected text object(s).

Options Panel



1 Options

- Check **Add an Arrow** to add a Text Arrow to the selected text object. See “Text Arrows” on page 1021.
- Check **Rotate with Plan** to rotate the selected text when **Rotate Plan View** is used. If unchecked, the selected text is unaffected when Rotate Plan View is used. See “Rotate Plan View” on page 233.

  Rotate with Plan also affects text in views sent to layout if the layout box is rotated. See “CAD and Text in Layout” on page 1206.
- Specify the **Layout Page** that the selected object(s) is located on. Only available in layout files, but not in the **Rich Text Defaults** dialog in layout. See “Layout” on page 1203.

2 Specify the **Origin/Angle** of the selected text object.

- Specify the **X Position** and **Y Position** of the selected object relative to the origin. See “3D Drafting” on page 29.
- Specify the **Angle** of the selected text object. The default value is 0°.

3 Specify the **Size** of the selected text object.

- Specify the **Height** of the selected text object(s) or check **Auto Height** to automatically adjust the text object’s height to match its contents.
- Specify the **Width** to of the selected text object(s) or check **Auto Width** to automatically adjust the text objects width to match its contents. When Auto Width is used, text extends in a single line rather than wrap.
- **CAD Style Font Sizing** measures text size based on the total height of the capital letter A, as most CAD programs do. Uncheck this to instead size text according to information stored with the font.

4 The **Drawing Group** options control how the selected object(s) display relative to other objects. See “Drawing Groups” on page 215.

- Specify the **Back Group** to display the selected object(s) behind objects in the other two drawing groups.
- Specify the **Default Group** to display the selected object(s) in front of those in the Back Group but behind those in the Front Group.
- Specify the **Front Group** to display the selected object(s) in front of objects in the other two drawing groups.
- Check **Move to Front of Group** to display the selected object(s) in front of other objects in the same drawing group. This is an action rather than a state and is not available in the **Rich Text Defaults** dialog.

5 Specify the desired **Bumping** behaviors for the selected object(s). See “Bumping/Pushing” on page 218.

- Check **CAD Stops Move** to bump the selected object into other CAD or CAD-based objects as it is moved.
- Check **Wall Stops Move** to stop the selected object when it bumps into a wall.

Text Specification Dialog

The **Text Specification** dialog opens if you select the **Text** tool and then click once in the drawing area. It will also open when you use the **Leader Line** tool if **Create Rich Text** is unchecked in the **Preferences** dialog. See “Text Panel” on page 95.

You can also open this dialog by selecting one or more **Text** objects, then clicking the **Open Object** edit button.

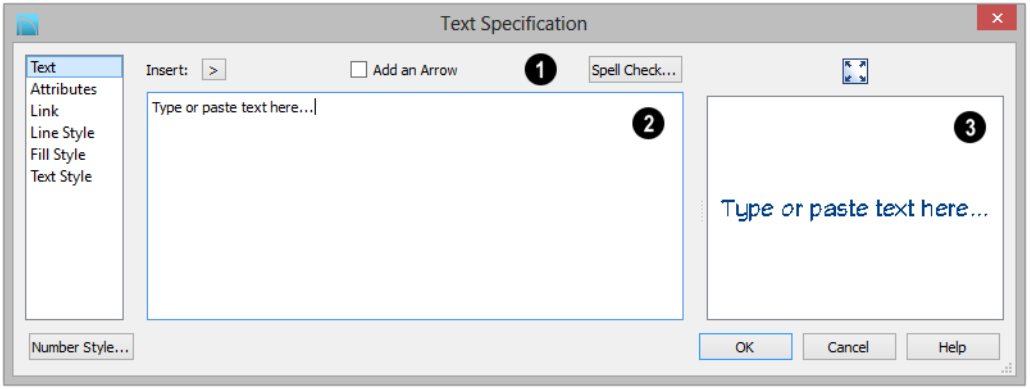
The **Text Specification** dialog is similar to the **Text Defaults** and **Room Label Specification** dialogs but affects the selected text object rather than all subsequently created text. Also, the name of the Saved Default being edited will display in the dialog box title bar. See “Text Defaults and Preferences” on page 998 and “Editing Room Labels” on page 332.

Note: Rich Text objects have a different specification dialog. See “Rich Text Specification Dialog” on page 1004.

Text Panel

The settings on the Text panel allow you to type the selected Text object’s content. Text cannot be added to a selected Room Label, however.

Note: If you do not type anything in the text field on this panel when creating a new object, no object will be created when you click OK. On the other hand, if you remove the text from an existing object and click OK, an empty text box will result.



❶ Click **Insert** to choose from a list of special characters and text macros. User Defined macros are only available when the selected Rich Text object points to an eligible object using a Leader Line or Text Line with Arrow. See “Text Macros” on page 1033. Not available when the selected object is a Room Label. See “Room Labels” on page 331.

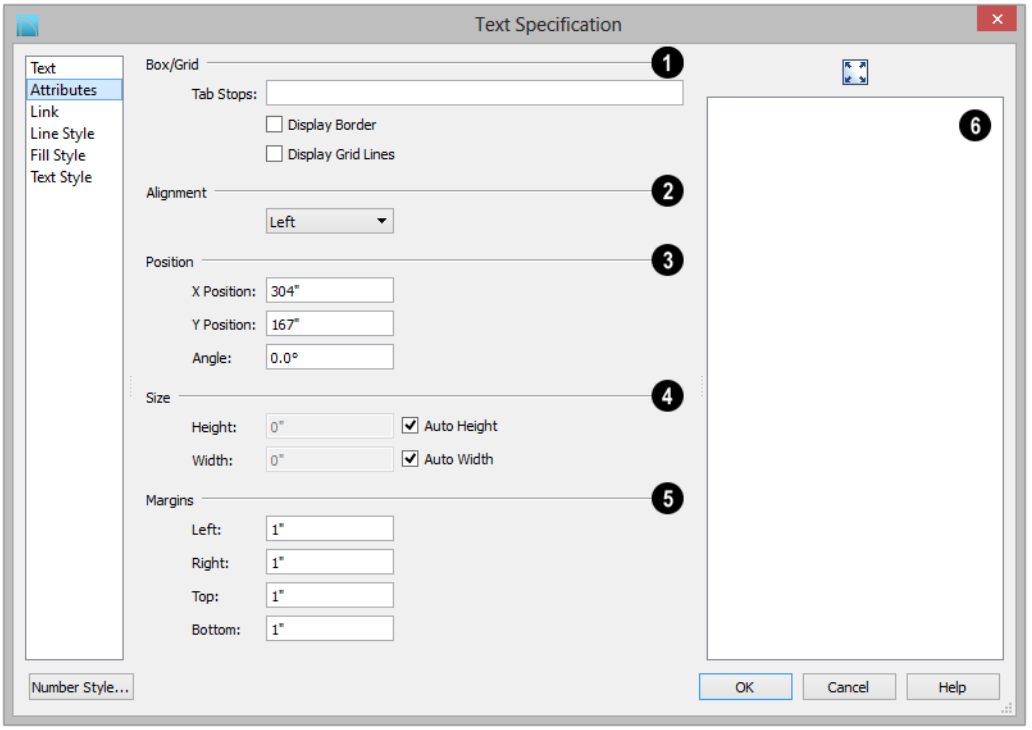
- Click **Insert** to choose from a list of special characters and text macros. User Defined macros are only available when the selected text object points to an eligible object using a Leader Line or Text Line with Arrow. See “Text Macros” on page 1033. Not available when the selected object is a Room Label. See “Room Labels” on page 331.
- Check **Add an Arrow** to add a Text Line with Arrow to the selected text object. See “Text Arrows” on page 1021.
- Click the **Spell Check** button to check the spelling of the text that displays in the **Text Entry** area. If Spell Check finds a word that may be spelled incorrectly, the **Check Spelling** dialog opens. See “Spell Check” on page 1020. Not available when multiple Text objects are selected.

❷ Enter text in the **Text Entry** field. This field is not available if the selected object is a Room Label. See “Room Labels” on page 331.

- Depending on the current **Preferences**  settings, pressing the Enter key either forces a new line in the text box or closes the dialog. A carriage return can also be added by typing Shift + Enter or Ctrl + Enter. See “Text Panel” on page 95.
- Text automatically wraps to a new line without requiring a hard return.
- Tabs can be added to the text by pressing the Tab key.
- If the program identifies any spelling issues, they will be underlined in red.

❸ A preview of the selected text object displays on the right. Not available for Room Labels. See “Dialog Preview Panes” on page 38.

Attributes Panel



1 **Tabs** - Check **Box/Grid** to have gridlines separate the rows and columns of tabbed text. When no tabs are present, a simple box is drawn around the text.

- In the text field, specify the number of spaces from the left edge of the text box where each new column begins. The first column always starts at 0 and is not listed.
- Check **Display Border** to turn on the display of a border polyline around the selected object.
- Check **Display Grid Lines** to turn on the display of the grid formed by the specified rows and columns.

2 Select an **Alignment** option from the drop-down list to apply to the text.

3 Specify the **Origin/Angle** of the selected text object.

- Specify the **X Position** and **Y Position** of the selected object relative to the origin. See “3D Drafting” on page 29.
- Specify the **Angle** of the selected text object. The default value is 0°.

4 Specify the **Size** of the selected text object(s).

- Specify the **Height** of the selected text object(s) or check **Auto Height** to auto-

matically adjust its height to match its contents.

- Specify the **Width** to of the selected text object(s) or check **Auto Width** to automatically adjust its width to match its contents. When Auto Width is used, text extends in a single line rather than wrap.

Specifying a Height and/or Width of 0 sizes the text box as small as the text within it allows without turning on the Automatic behavior.

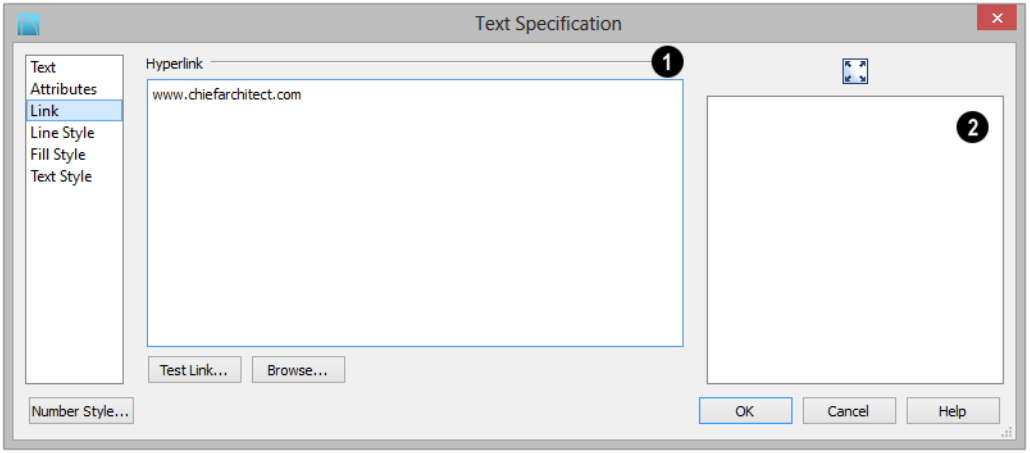
❺ Specify the **Margins** to be used with the text. This is the distance between the text and the edge of the text box.

A default **Left** and **Right** margin is applied. **Top** and **Bottom** margins are measured relative to the line height and may not extend to the text box completely when given a value of 0.

❻ A preview of the selected text object displays on the right. Not available for Room Labels.

Link Panel

Hyperlinks can be associated with web pages or files saved on your computer. If a selected Text object has a hyperlink specified, you can click the **Follow Hyperlink** edit button to open the linked web page or file.



❶ Specify a Hyperlink for the selected Text object. Note that if no text is entered on the Text panel, a text object will not be created.

- Type a web page address or the pathname of a file on your computer in the text field.
- Click the **Browse** button to select a file on your computer and add its pathname to the text field above.
- Click the **Text Link** button to confirm that the address or pathname in the text field is associated with a web page or available file.

Chief Architect automatically adds the http:// prefix for links that begin with "www" when Test Link is clicked.

❷ A preview of the text entered on the Text panel displays on the right. Not available for Room Labels.

To use a hyperlink

1. Select the text object.
2. Click the **Follow Hyperlink** edit button to activate the link.

Line Style Panel

The Line Style panel is found in the specification dialogs for many different objects. For more information, see “Line Style Panel” on page 1053.

Fill Style Panel

For information about the Fill Style panel, see “Fill Style Panel” on page 1067.

Dimension Format Panel

The Dimension Format panel is available in the Room Label Defaults dialog and allows you to control the format of the portion of the room label that describes the room’s size. For information about these settings, see “Displayed Line Length Dialog” on page 1042.

Text Style Panel

The Text Style panel is available for a variety of objects in the program and control the appearance of the selected object’s text. See “Text Style Panel” on page 1031.

Editing Text

Once created, **Rich Text** objects can be selected individually or as a group and edited using the edit handles, the edit toolbar buttons, and the **Rich Text Specification** dialog. See “Rich Text Specification Dialog” on page 1004.

Text objects can be selected and edited much the way Rich Text objects can; however, there are a few differences which are described here.

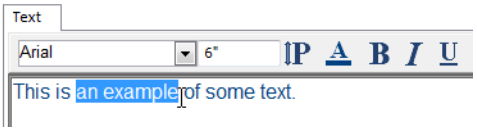
Editing Text Attributes

Most text attributes, including the font, size, style, and the content itself, are edited in the **Rich Text** and **Text Specification** dialogs.

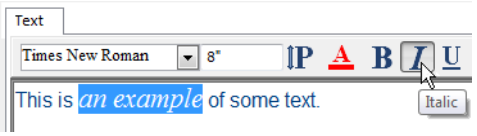
In order to edit the attributes of an existing **Rich Text** object, you must select some or all of the text before making changes. See “Text Panel” on page 1004.

To edit Rich Text attributes

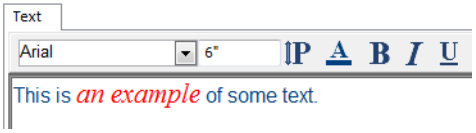
1. Select a **Rich Text** object and click the **Open Object** edit button.
2. On the Text panel of the **Rich Text Specification** dialog, click and drag to select some or all of the text typed into the Text field.



3. With some or all of the text selected, change any of the attributes available along the top of the panel, including the font, size, color, and style.



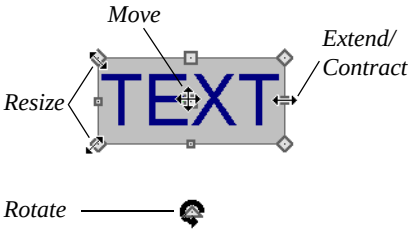
4. As changes are made, the selected text updates. Only the selected text is modified.



Text objects do not support multiple fonts or other attributes in the same text object. When you choose an attribute, it is applied to all characters in the text object.

Using the Mouse

A selected **Rich Text** or **Text** object has the same edit handles as other box-based objects. See “Editing Box-Based Objects” on page 203.



As a text box’s width is made narrower or wider using an edit handle, its height may increase or decrease so that none of the text becomes hidden. The opposite is not true, however: a text box’s height cannot be resized smaller than the height of the rows of text it currently contains, plus its margins.

Depending on the active **Edit Behavior**, the text box and the characters within it may or may not resize together when a corner edit handle is dragged. See “Edit Behaviors” on page 176.

- If **Resize** editing is enabled, both the text object and the font resizes when a corner edit handle is dragged.
- If **Default** or **Concentric** editing is enabled, the text box resizes, but not the font size.
- If **Fillet** editing is selecting, the corners become rounded and the font size does not change. See “Behaviors Panel” on page 111.

When text is resized using the edit handles, there is a “sticky point” at the natural size of the text box. Hold down the Ctrl key while resizing to override this behavior.

Edit Text in Place

The contents and appearance of text objects created with the **Rich Text** tool can be edited directly in the drawing area using the **Edit Text in Place** edit tool.

To use Edit Text in Place

1. Select a **Rich Text** object and click the **Edit Text in Place** edit button.
   - The text appears as it did when it was first created: inside a text field with the Edit Bar above. See "To create Rich Text" on page 1002.
2. Click inside the Text Field to type or select any of the existing text.
3. Use the tools on the Edit Bar to edit any or all of the text as needed. The tools on the Edit bar are the same as those on the Text panel of the **Text Specification** dialog. See "Text Panel" on page 1004.
4. When you are finished, click outside of the text field to close it and the Edit Bar.

Convert to Rich Text

Text objects cannot be edited to the same degree that Rich Text can. You can, however, convert a selected simple **Text** object to **Rich Text** by clicking the **Convert to Rich Text** edit button. Most attributes of the selected simple **Text** object are retained; however, columns created using the Tab key are not. See "Tab Spacing" on page 1019.

Using the Edit Tools

A selected **Rich Text** or **Text** object can be edited in a variety of ways using the buttons on the edit toolbar. See "The Edit Toolbar" on page 35.

Resizing Text

Both the border of a text object and the characters it contains can be resized.

The border of a text object can be resized using its edit handles or by specifying the Height and Width in its specification dialog.

The default character height of **Rich Text** and **Text** objects can be specified as can the character height for individual objects, in their specification dialogs. See "Text Defaults and Preferences" on page 998.

Character height can be measured in either of two ways. See "Character Size" on page 1000.

Scaling Text

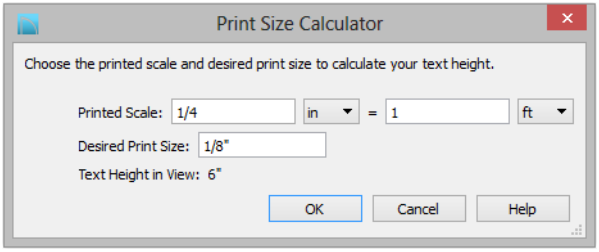
As with the size of other objects, text size is subject to the current drawing scale specified in the **Page Setup** dialog. See "Drawing Sheet Setup Dialog" on page 1184.

To determine the **Height** in drawing units that is needed to produce text of a specific size when printed, use the **Print Size Calculator** dialog.

To use the Print Size Calculator dialog

1. Select the text object or Text Style that you wish to scale and click:

- The **Print Size** button on the Text panel of the **Rich Text Specification** dialog. See “Text Panel” on page 1004.
- The **Scale** button on the Text panel of a variety of specification dialogs. See “Text Style Panel” on page 1031.
- The **Scale** button in the **Text Style Defaults** dialog.



2. In the **Print Size Calculator** dialog:
   - Confirm the desired **Printed Scale**.
   - Enter the **Desired Print Size** of the text.
   - The **Text Height in View** required to produce the Desired Print Size displays here for reference.
3. Click OK to return to the previous dialog. The **Character Height** value now equals that of the Text Height in View.

Generally, the **Printed Scale** does not need to be changed in the **Print Size Calculator** dialog unless you intend to send the current view to layout at a different drawing scale. See “Sending Views to Layout” on page 1208.

Aligning Text

Text can be aligned in a number of ways.

- The text content of a text object can be aligned to the left, right, center or justified in the **Rich Text Specification** dialog. See “Text Panel” on page 1004.
- The text content of a text object can be also be aligned by clicking the **Align Left**, **Align Right**, **Center**, or **Justify** edit button.
- The center points of text objects can be aligned with one another by assigning them the same **X** and/or **Y Position**. See “Attributes Panel” on page 1026.
- Text objects can be aligned by bumped them against a CAD line or CAD based object such as a roof plane. See “Bumping/Pushing” on page 218.

A variety of other alignment methods are also available. See “Aligning Objects” on page 220.

Copy, Cut and Paste

Copy, Cut and Paste of text into and out of the text specification dialogs can be accomplished using keyboard hotkeys:

- Press Ctrl + X to Cut the selected text and save it to the system clipboard.
- Press Ctrl + C to Copy the selected text and copy it to the system clipboard.
- Press Ctrl + V to paste your last cut or copied selection in a new text object.

For more, see “Copying and Pasting Objects” on page 168.

Copy, Cut and Paste use the system clipboard, making it possible to to transfer text between text objects, between Chief Architect files, from a plan or layout into another application, or vice versa.

Tab Spacing

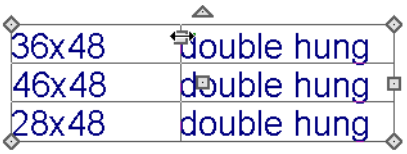
The Tab key functions differently in **Rich Text** and **Text** objects.

In **Rich Text**, the Tab key creates a space. CAD Style Font Sizing affects the size of the space created. See “Options Panel” on page 1009.

Tab spacing in **Text** objects produces columns with widths that can be edited using edit handles.

To insert tab-spaced text

1. Highlight a block of text objects containing tabs from another program or text from the Materials List and press Ctrl + C to copy them to the system clipboard.
2. Return to the floor plan view, select the **Text** tool, and click to place a text object.
3. Press Ctrl + V to paste the copied materials into the text box, then click **OK**. The text object displays on-screen.
4. Select the text object and note the additional lines with handles separating each column.



Columns automatically resize to fit the contained text. When a text object is selected you can use the edit handles that display at each column to adjust spacing.

Copying and Pasting Text

The Copy, Cut and Paste commands use the system clipboard, making it possible to transfer text between text objects, between Chief Architect files, from a plan or layout into another application such as a text editor or spreadsheet program, or vice versa. See “Copying and Pasting Objects” on page 168.

All or selected portions of the Materials List can also be copied and pasted into a text object, as well as into a word processing or spreadsheet program. See “Materials Lists” on page 1247.

Cut, Copy, and Paste can also be accessed from the Edit menu of many applications, including Chief Architect. These menu commands are not available when the text specification dialogs are open, but you can use the associated hotkeys.

To Copy, Cut and Paste text

1. On the Text panel of either text specification dialog or in another program altogether, highlight the text you wish to cut, copy or paste.

2. Press Ctrl + X to **Cut** the selected text out of its original location and save it to the system clipboard.
3. Press Ctrl + C to **Copy** the selected text to the system clipboard without removing it from its original location.
4. Open the text object or a file in another application and click to place your cursor in the Text field, writing area, or spreadsheet cell.
5. Press Ctrl + V to **Paste** the copied text at the location of your cursor.

Bear in mind that when text is copied and pasted, its formatting is not always retained. The results depend on the program or type of text object in which the content was created as well as the type of text object into which it is pasted.

Pasting into Text

Text pasted into a simple **Text** object from another source will not retain its formatting. Instead, the settings for that **Text** object are always used. See "Text Specification Dialog" on page 1011.

This is the case even if the text is copied from another **Text** object unless that object happens to use the same formatting.

Text pasted into a simple **Text** object from a spreadsheet program will retain basic column and row information. Each row can only have a single line of text; however, the width of each column can be adjusted. See "Tab Spacing" on page 1019.

Pasting into Rich Text

Text pasted into a **Rich Text** object from another source, on the other hand, will retain most - but not necessarily all - of its custom formatting.

Text pasted into a **Rich Text** object from a spreadsheet program retains basic column and row information. Column width cannot be adjusted as it can in simple **Text**; however, as you add or remove text froma cell, row height will increase or decrease to accomodate your changes.

The background colors of two or more cells copied from a spreadsheet application will be retained if pasted in to **Rich Text**; however, once pasted background color cannot be edited.

If you want to retain the color of the actual text being pasted into a **Rich Text** object, be sure to uncheck **Layer Color Text** in the **Rich Text Specification** dialog. See "Appearance Panel" on page 1007.

Spell Check

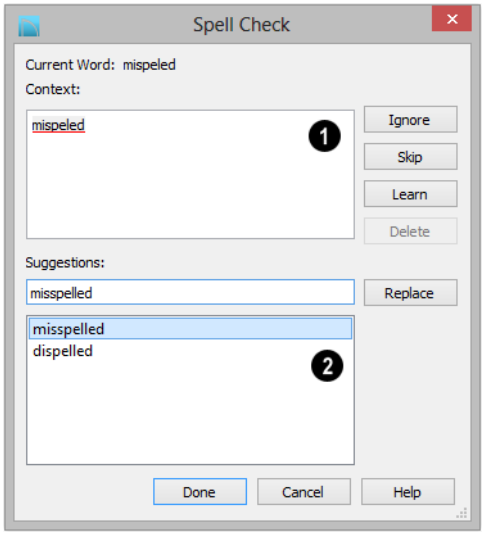
Select **Tools**> **Checks**> **Spell Check** to open the **Spell Check** dialog. The **Spell Check** feature checks each text object in the current current **.plan** or **.layout** file consecutively for spelling errors.

Spell Check can also be accessed by clicking the **Spell Check** button in the **Rich Text** or **Text Specification** dialog or by clicking the **Spell Check** edit button. When accessed

in this manner, only the selected text object is checked for spelling errors. See “Editing Text” on page 1015.

Note: Spell Check does not look for duplicate or repeated words.

Spell Check Dialog



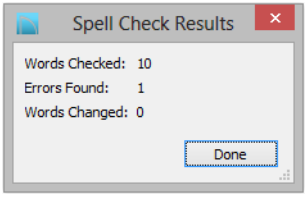
1 Spell Check looks in for each word in all open dictionaries. When a word that is not recognized is found, it displays here.

- Click **Ignore** to ignore the word in question in all Spell Checks during the current program session. The word will not be ignored the next time Chief Architect is launched.
- Click **Skip** to ignore the current instance of the word, but find other instances that may be present.
- Click **Learn** to add the word in question to the User Dictionary. See “Chief Architect Data” on page 51.
- Click **Delete** to remove the selected word from the text.
- Click **Replace** to replace the word in question with the suggested word, below.

2 Spell check displays **Suggestions** for corrections here. There are two ways to replace a misspelled word:

- Type a correction in the field and click the **Replace** button.
- Click on a suggestion to select it, then click **Replace** to accept it.

When Spell Check is finished checking the text object or file for errors, the Spell Check results window displays.



Text Arrows

Text arrows, which are simply CAD lines with arrows drawn on the “Text” layer, can be used to connect text objects to details of interest in your drawing. See “Line Tools” on page 1048.

Text arrows can be snapped together to form open or closed polylines. If two lines with arrows meet within the bounding box of a text object, however, they will not join. This allows you to attach multiple, separate text

arrows to a single text object. See “Editing Line Based Objects” on page 184.

Lines with arrows can be independent or attached to other objects. Arrows attach to closed polyline-based objects along their edges, but can attach to an architectural object anywhere within its 2D symbol in floor plan view. If an arrow is attached to text or another object, deleting either the text or the object will also delete the arrow.

Leader Line

The **Leader Line** tool places either a Text or Rich Text object with an arrow already attached. This arrow can be selected and moved like any other line with arrow.

Note: Leader lines create Rich Text and have two leader line segments by default. You can change this in the Preferences dialog. See “Text Panel” on page 95.

To create text with a leader line

1. Select **CAD> Text> Leader Line** .
2. Starting at the point where you want the arrow to point, drag to where you want a bend in the leader line and release the mouse button.
3. Click at the point where you want the center of the first line of text to display. The **Rich Text Specification** dialog opens. See “Rich Text Specification Dialog” on page 1004.
4. Enter text and click **OK**.

Click in the same location to create a Rich Text object without a leader.

If multiple leader lines are specified, click in the same location to stop adding leader segments.

The initial alignment of text created with the **Leader Line** tool depends on the direction that the leader line was drawn:

- Leader Lines drawn from left to right produce text that is right-aligned.
- Leader Lines drawn from right to left produce text that is left-aligned.
- Leader Lines drawn from vertically produce text that is center-aligned.

Text Line with Arrow

Text Lines with Arrow can be attached to text, CAD and architectural objects by selecting **CAD> Text> Text Line with Arrow** and then clicking and dragging to draw a line. There is no limit to the number of text lines with arrows that can be attached to an object.

The endpoints of **Text Lines with Arrows** can be joined to form polylines with corners that can be adjusted using the edit handles. See “Polylines” on page 1065.

A **Text Line with Arrow** behaves like a **Line With Arrow** with one exception: Text Lines with Arrow are initially placed on the default Text layer, not the Current CAD Layer. See “Layers” on page 143.

Auto Positioning Arrows

If either or both ends of a line with arrow are attached to a text object, **Auto Position Tail** and **Auto Position Head** are in the **Line**

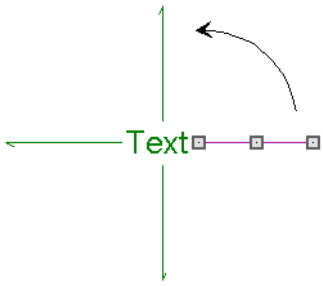
Specification dialog. See “Arrow Panel” on page 1055.

Check either or both if you want the text line with arrow to update its position on the text object if the text object or text line with arrow is moved.

- The first segment of a polyline arrow attached to text maintains its angle when Auto Position is off and text is moved.
- Auto Position is turned off automatically when an arrow is not attached to one of the auto position locations.
- Arcs and splines with arrows can also be attached to text objects.

There are four auto position locations on a text object: one at the midpoint of each side.

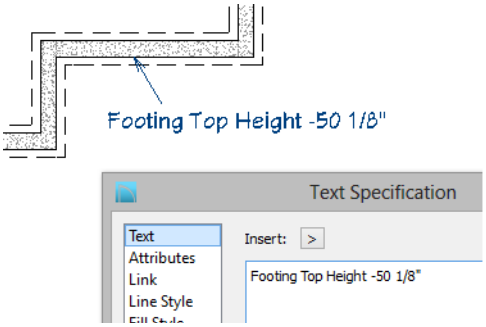
The following image illustrates the behavior of auto positioning. The arrow has the **Auto Position Tail** option checked. When the head of the line with arrow is moved, the tail of the arrow snaps to different auto position locations on the text object, maintaining its connection.



If a selected Text Line with Arrow is moved away from an auto position location and you check **Auto Position Tail**, the tail will snap to the nearest auto position location.

Special Use Arrows

A **Text Line with Arrow** attached to a **Rich Text** or **Text** object and designated as a **Special Use Arrow** offers functionality that may be useful when annotating the height of various objects. A Special Use Arrow replaces the first number in the attached Text object with the height of the architectural object it is attached to on the other end. The height is relative to 0’-0” on Floor 1.



To create a Special Use Arrow

1. In floor plan view, create a **Rich Text** or **Text** object that has a **Text Line with Arrow** or **Leader Line** attached.
1. Make sure the text includes a dash.
2. Connect the Line with Arrow to a slab, foundation wall, slab footing, stair landing, or custom countertop.
3. Select the Line with Arrow click the **Open Object** edit button.
4. On the Arrow panel of the **Arrow Specification** dialog, check **Special Use** and click OK.

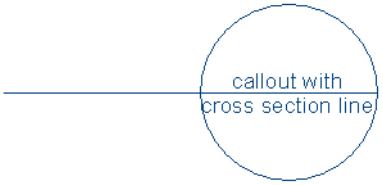
5. The height of the connected object will be added after the dasy, using the format specified in the **Dialog Number/Angle Style** dialog. See “Dialog Number/ Angle Style Dialog” on page 126.

Callouts

Select **CAD> Text> Callout**, then click at the location where you want a callout to be placed in floor plan view, a cross section/elevation view, a CAD Detail or on a layout page. The **Callout Specification** dialog displays. Make any needed changes and click **OK** to place a callout. See “Callout Specification Dialog” on page 1025.

Cross Section Lines

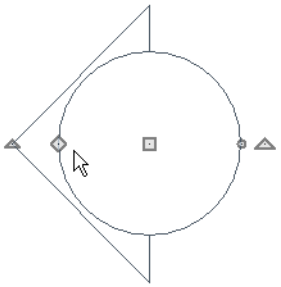
Check the **Cross Section Line** box in the **Callout Specification** dialog to add a cross section line perpendicular to the nearest wall. See “Callout Panel” on page 1025.



Cross section lines can be added to any callout shape. Resize or rotate the cross section line by dragging the triangular edit handle near the end of the cross section line.

Pointers and Arrows

To add an arrow or “hat” to a callout, select the callout and drag the diamond-shaped handle away from the center of the callout. An arrow is created, pointing in the direction you dragged.



- Change the arrow’s direction by selecting the callout and dragging the edit handle appearing just beyond the arrow.
- Remove an arrow by clicking and dragging the edit handle at the point of the arrow towards the center of the callout.

You can also add as many lines with arrows as you like to callouts. To add an arrow to a callout, select **CAD> Text> Text Line with Arrow**, then click and drag to create a line with arrow, which can be moved or resized as needed.

Double Callouts

Any callout can be specified as a **Double Callout** in the **Callout Specification** dialog. See “Attributes Panel” on page 1026.

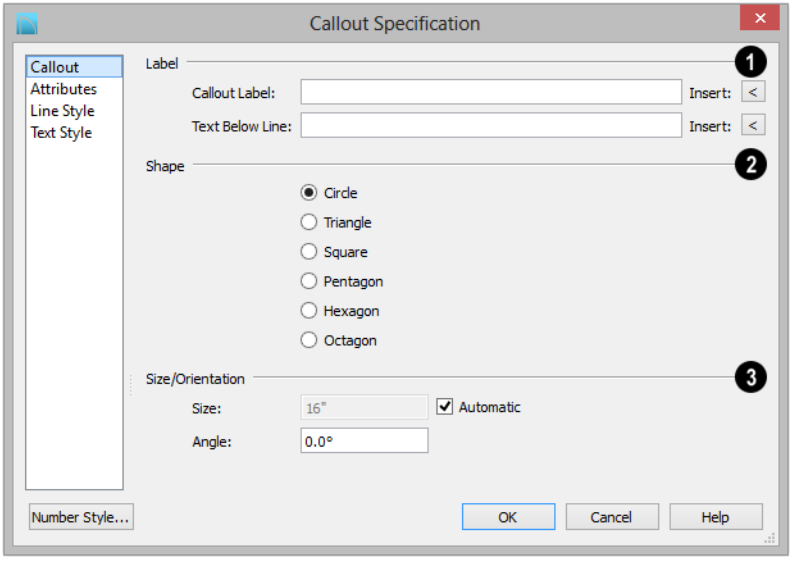
To resize the line between the two callout shapes, select the callout and then click and drag the edit handle at the center of either callout shape. The arrows on a double callout are always the same on both callouts.

Callout Specification Dialog

To open the **Callout Specification** dialog, select a callout and click the **Open Object** edit button. This dialog also displays when a new callout is created using the **Callout** tool.

The **Callout Specification** dialog is similar to the **Callout Defaults** dialog but affects the selected callouts rather than all subsequently created callouts. Also, the name of the Saved Default being edited will display in the title bar of the defaults dialog. See “Text Defaults and Preferences” on page 998.

Callout Panel



1 Specify the text of the selected callout’s **Label** by typing in the text fields here.

- Type a **Callout Label**, which displays inside the callout shape. If no Text Below Line is specified, the Callout Label is centered in the callout shape.
- Type the **Text Below Line** for the bottom row, if desired. If Text Below Line is added, a line will separate this text from the Callout Label in the callout shape.
- Click the **Insert** button to the right of either option to choose from a list of spe-

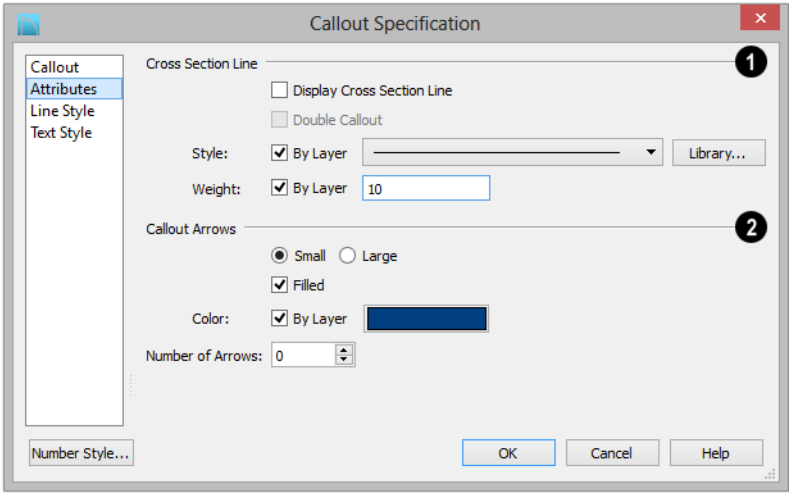
cial characters and text macros. See “Text Macros” on page 1033.

❷ Specify the **Callout Shape** by clicking the radio button beside one of the options here.

❸ Additional **Specifications** can be set here.

- Uncheck **Automatic** to enable the **Size** field and specify a new value. When checked, the callout is sized so that it encompasses the text of its label.
- Specify the **Angle** of the selected callout.

Attributes Panel



❶ Specify the attributes of the selected callout’s **Cross Section Line**.

- Check **Display** to apply a cross section line to the selected callout. When unchecked, no cross section line is used.
- Check **Double Callout** to specify two identical callouts connected by the cross section line. Only available when Display is checked.
- Select the cross section line’s line **Style** from the drop-down list or by clicking the **Library** button. When **By Layer** is checked, the line style specified in the **Layer Display Options** dialog is used. See “Line Styles” on page 1076.
- Specify the **Weight** of the cross section line or check **By Layer** to use the line weight specified in the **Layer Display Options** dialog.

❷ Specify the attributes of the **Callout Arrows**.

- Check **By Layer** to use the color specified in the **Layer Display Options** dialog or click the **Color** bar to choose an arrow color. See “Color Chooser/Select Color Dialog” on page 853.

- Check **Filled** to specify arrows with a solid fill. When unchecked, arrows are unfilled.
- Specify the **Number of arrows** and whether they are **Small** or **Large**.

Line Style Panel

The Line Style panel is found in the specification dialogs for many different objects. For more information, see “Line Style Panel” on page 1053.

Additional attributes for the cross section line and arrows can be specified on the Attributes panel.

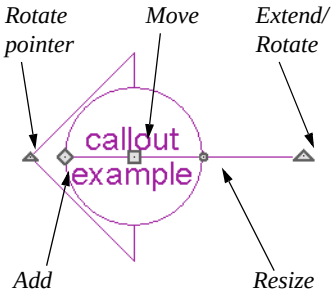
Text Style Panel

The settings on this panel control the appearance of the selected object’s text. For more information, see “Text Style Panel” on page 1031.

Editing Callouts

Callouts can be edited using the edit handles, the edit toolbar buttons and the **Callout Specification** dialog. See “Callout Specification Dialog” on page 1025.

When a callout is selected, it has at least four edit handles. An additional rotate handle displays for each pointer added to the callout.



- The **Move** handle is located at the center of the callout and is used to move it.
- The triangular **Extend/Rotate** handle is used to extend and/or rotate the callout’s cross section line, if one exists. See “Cross Section Lines” on page 1024.
- The small, square **Resize** handle is located on the edge of the callout and is used to resize it and its associated text.
- The **Add pointer** handle is used to add pointers by dragging away from the callout.
- The small triangular **Rotate pointer** handle located at the end of a pointer, if one has been added, is used to rotate that pointer.

Resizing Callouts

Callout shapes can be resized either in the **Callout Specification** dialog or using the edit handles. See “Callout Panel” on page 1025.

Callout text can be resized in the **Callout Specification** dialog. See “Attributes Panel” on page 1026.

As long as **Specify Callout Size** box is checked, a callout’s shape and text resize independent of one another. When this box is unchecked, the two are dynamically linked:

if you resize the shape, the text adjusts accordingly or vice versa.

Markers

Markers for **Level Lines**, **Test Borings** and **Point Markers** can be placed in floor plan view, cross section views, or CAD Details. **Framing Reference Markers** should only be placed in floor plan views.

To create a marker, select **CAD> Text> Marker**  and click at the location where you want it to be placed. The **Marker Specification** dialog opens.

You can also place a framing reference marker using **Build> Framing> Framing Reference**  . See “Framing Reference Markers” on page 583.

Point Markers and Dimensions

When the **Point to Point Dimension**  tool is used to draw a dimension line and an object is not available to snap to at either the start or end point, a Point Marker will be automatically created and the dimension line will locate it. See “Point to Point Dimensions” on page 978.

In addition, any dimensions drawn in a cross section/elevation view may locate Cross Section Lines that represent objects rather than the objects themselves. When this occurs, Point Markers will also be placed and the dimension lines will locate them. See “Cross Section Lines” on page 899.

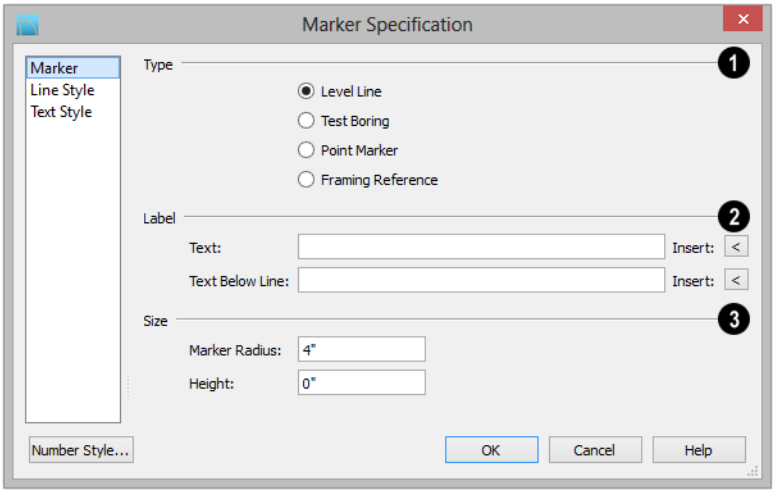
Marker Specification Dialog

To open the **Marker Specification** dialog, select a marker and click the **Open Object** edit button.

This dialog also displays when a new marker is created by clicking in floor plan view using the **Marker**  tool.

The **Marker Specification** dialog is similar to the **Marker Defaults** dialog but affects the selected markers rather than all subsequently created markers. The name of the Saved Default being edited will display in the title bar of the defaults dialog. See “Text Defaults and Preferences” on page 998.

Marker Panel



1 Choose a marker **Type**. Note that Framing Reference Markers affect the model, while the other marker types are for annotation only.

Level Line

Test Boring

Point Marker

Framing Reference Marker

2 Specify the text of the selected marker's **Label**.

- Type the **Text** which displays above the marker's line.
- Type the **Text Below Line** that displays below the marker's line, if desired. Only available for Level Lines.
- Click the **Insert** button to the right of either option to choose from a list of special characters and text macros. See "Text Macros" on page 1033.

3 Specify the **Size** of the selected marker.

- Specify the **Marker Radius**, which is the distance from the marker's center to the edge of its filled shape.
- Enter a number in the **Height** field. This value will display in the Label when a pound sign (#) is entered in either Label text field.

Line Style Panel

The Line Style panel is found in the specification dialogs for many different objects. For more information, see "Line Style Panel" on page 1053.

Additional attributes for the cross section line and arrows can be specified on the Attributes panel.

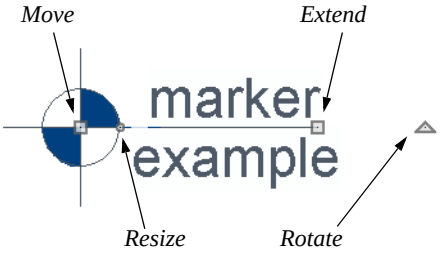
Text Style Panel

The settings on this panel control the appearance of the selected object's text. For more information, see "Text Style Panel" on page 1031.

Editing Markers

Markers can be edited using the edit handles, edit toolbar and **Marker Specification** dialog. See "Marker Specification Dialog" on page 1028.

When a marker is selected, it has four edit handles.



- The **Move** handle is located at the center of the marker and is used to move it.
- The **Resize** handle is located on the edge of the marker and is used to resize the marker and associated text.
- The triangular **Rotate** handle is used to rotate the marker and associated text.
- The **Extend** handle is used to adjust the distance between the marker and its associated text.

Text Styles

In Chief Architect, a Text Style is a saved set of attributes that can be assigned to any object that displays text, such as Text, Callouts, Markers, Dimensions, Schedules, CAD objects, and object labels. A given Text Style can be assigned to objects:

- In the **Layer Display Options** dialog;
- On the Text Style panel of various objects' defaults dialogs;
- On the Text Style panel some individual objects' specification dialog.

This makes it easy to ensure that various objects display text with a consistent appearance.

> Note: Because of its ability to use multiple attributes in the same object, Rich Text does not use Text Styles. See "Rich Text Specification Dialog" on page 1004.

You can create your own or edit existing Text Styles to suit your needs in the **Text Style Defaults** dialog

Text Style Defaults

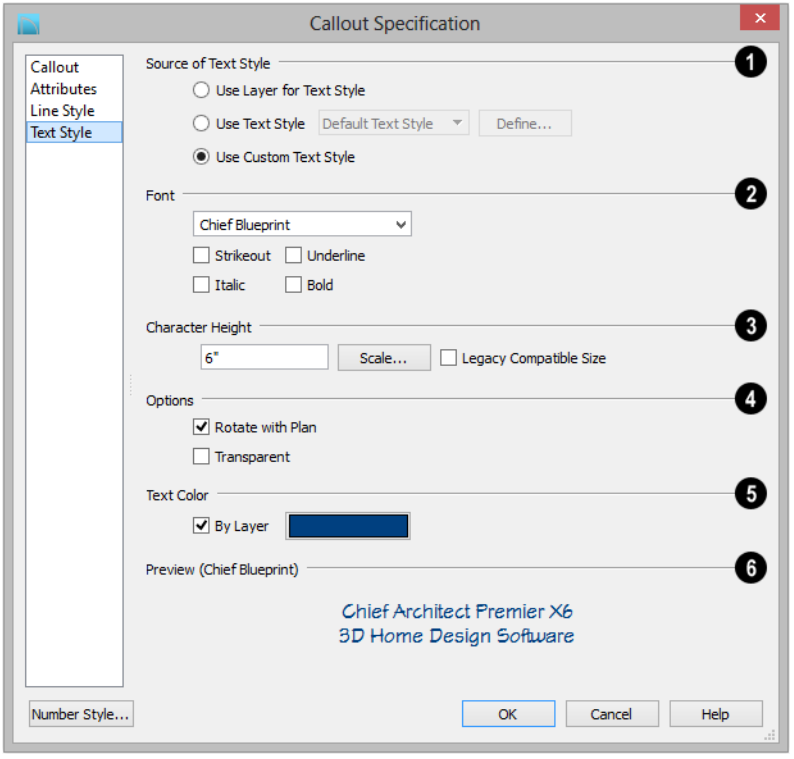
Select **Edit> Default Settings**, expand the Text, Callouts and Markers category, click on “Text Styles” and click **Edit** to open the **Text Style Defaults** dialog. The **Saved Defaults** dialog will open, allowing you to select which Saved Text Style Defaults you would like to edit. See “Multiple Saved Defaults” on page 75.

The **Text Style Defaults** dialog can also be accessed:

- From the **Layer Display Options** dialog. See “Layer Display Options Dialog” on page 148.
- By clicking the **Text Style Defaults** button, which can be added to your toolbars. See “To add a button to a toolbar” on page 132.
- By clicking the **Define** button on the Text Style panel of various objects specification dialogs.

The settings in the **Text Style Defaults** dialog are similar to those on the Text Style panel of object specification dialogs throughout the program but affect all objects using that style rather than an individual selected object.

Text Style Panel



❶ Specify where the selected object should draw its Text Style from. These options are not available in the **Text Style Defaults** dialog.

- Select **Use Layer for Text Style** to use the Text Style assigned to the layer tht the selected text is located on.
- Select **Use Text Style**, then choose a style from the drop-down list to apply that style to the selected object, regardless of what layer it is on. When this is not selected, the name of the selected object's Text Style displays here for reference.
- Select **Use Custom Text Style** to enable the settings below and customize the selected objects Text Style attributes.

Check **Use Default Text Style** to use the default style for the selected object type, or uncheck this box to enable the settings below and define a custom style.

The settings that follow are only editable when **Use Custom Text Style** is selected. When it is not selected, information about the Text Style that is assigned to the selected object displays for reference.

❷ Specify the attributes of the selected Text Style's **Font**.

- Select a font from the drop-down list.
- The text styles **Bold**, **Underline**, **Italic**, and **Strikeout** are available. Check any of the boxes to apply that style.

❸ Specify the **Character Height** of text using the selected Text Style.

- Enter the **Character Height** in drawing units. This height is subject to the current drawing scale.
- Click the **Scale** button to open the **Printed Size Input** dialog. See "Scaling Text" on page 1017.
- In Version 9, text size was driven by dimension information associated with the font. Check **Legacy Compatible Size** to use this information for text sizing. See "Character Size" on page 1000.

❹ **Options** -

- Check **Rotate with Plan** to rotate text using the selected Text Style when **Rotate View** is used. If unchecked, the text is unaffected when **Rotate View** is used. See "Rotate Plan View" on page 233.

  Rotate with Plan also affects text in a view sent to layout if the layout box is rotated. See "CAD and Text in Layout" on page 1206.
- Check **Transparent** to make text boxes using the selected Text Style transparent. When unchecked, text boxes have a solid fill the same color as your background color. Not available for objects that have Fill Style panels in their specification dialogs. See "Colors Panel" on page 92.

❺ Specify the selected Text Style's **Text Color**. When Use Custom Text Style is not selected above, a Text Color does not display here for reference.

- When **By Layer** is checked, text uses the line color assigned to the layer that the object it is assigned to is located on. See "Displaying Objects" on page 144.
- Uncheck **By Layer**, then click the **Color** bar to select a different color. See "Color

Chooser/Select Color Dialog” on page 853.

❻ A preview of the Text Style currently assigned to the selected object displays here.

Text Macros

Text macros insert dynamic information relevant to the current plan or layout file, or a selected object. Macros are particularly useful in layouts: page numbers, drawing scale, and information to identify drawings can be inserted to improve organization and clarity.

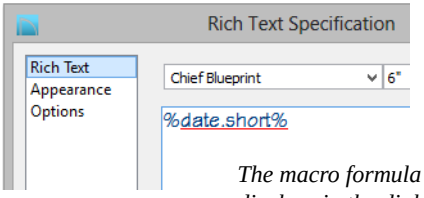
Text macros can also be used to create customized object labels. See “Creating User Defined Text Macros” on page 1034.

There are three categories of text macro:

- Global macros have information about the project, the plan or layout file, a room, and the date and time. They can be used to insert special characters.
- Object Specific macros have information specific to a selected object type and can be included in object labels. See “Label Panel” on page 1243.
- User Defined macros can include a wide range of values, including global and object specific information and text. They can also be written to perform calculations. See “Creating User Defined Text Macros” on page 1034.

To insert a text macro

1. Click the **Insert Macro** button on:
   - The Text Panel of the **Rich Text** or **Text Specification** dialog.
   - The Callout Panel of the **Callout Specification** dialog.
   - The Marker Panel of the **Marker Specification** dialog.
2. A menu of macros displays. Move your cursor over a menu item to view its submenu.
3. Select from the list of available text macros. In this example **Time Date> Short Date (%date.short)** is selected.



The macro formula displays in the dialog’s Text Entry field

4. Click OK to close the specification dialog.

5. The text object displays the date rather than the macro formula.

Object Specific

The macros available for a given object depend on its type. Additional, user defined macros can also be created.

Object Specific macros can be used in either of two ways:

- In an object's label. See "Object Labels" on page 1241.
- In a text object with an arrow pointing to the object. See "Text Arrows" on page 1021.

Creating User Defined Text Macros

In addition to the text macros installed with the program, you can create your own custom text macros for a variety of purposes.

- Shortcuts for names or other written information.
- Custom object labels See "Object Labels" on page 1241.
- Custom object labels inserted into text objects, callouts, and markers in floor plan view.

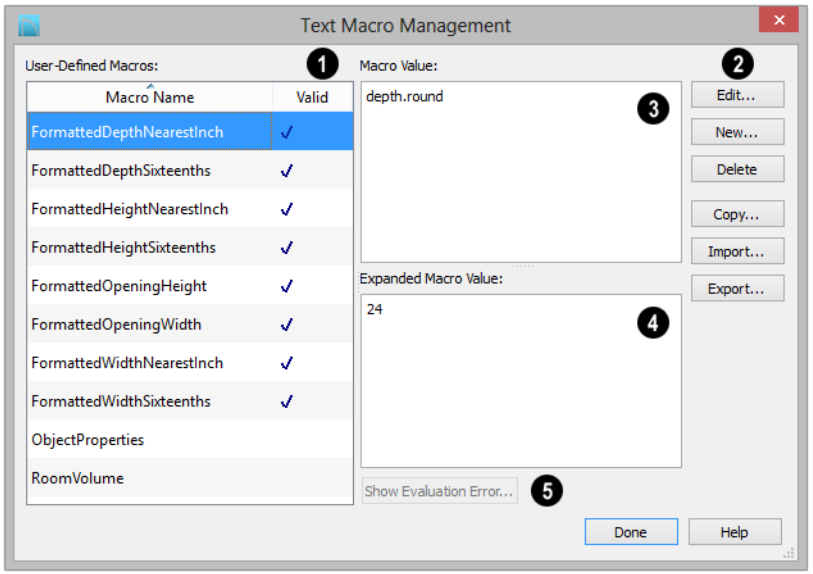
Text Macro Management

A list of all user-defined text macros present in the current plan or layout file can be accessed by selecting **CAD> Text> Text Macro Management**.

- If you wish to create a user defined macro for an object, or find out whether an existing macro is valid for an object, open this dialog while the object is selected.
- To create a user-defined macro to be inserted into a text object that describes another object, or to find out whether such a macro is valid, select a text object with an arrow pointing to the object in question and then open this dialog. See "Named Values and Context" on page 1272.

An object-specific version of this dialog is also available for objects saved in an unlocked library. Right-click on a single object of a type able to display labels and select **Text Macro Management** from the contextual menu. See "Using the Contextual Menus" on page 800.

- Any Owner Object macros assigned to the object's label when it is added to the library are listed here. Note that objects in some manufacturer catalogs may include macros. See "Manufacturer Catalogs" on page 803.
- Custom macros can be imported to and exported from a library object, and additional macros can be added to the object, but you cannot specify them as part of a label while it is in the library.
- When the object is added to a plan, any macros associated with it are added to the plan, as well.



1 An alphabetical list of all **User-Defined Macros** present in the current file displays here.

- Click on the **Name** of a macro to select it.
- If a macro is **Valid** in the current context, a checkmark will display to the right of its Name. See “Named Values and Context” on page 1272.
- Information about a selected macro displays in the Macro Value and Expanded Macro Value fields to the right of the list.The Macro Value field shows the defined Value of the selected macro. The Expanded Macro Value shows the output of the macro in the current context.

2 Edit or delete the text macro selected in the list on the left, create a new one, or import or export macros to and from other files.

- Click the **Edit** button to make changes to the selected macro in the **Edit Text Macro** dialog. Only available when an existing macro is selected.
- Click the **New** button to open the **Edit Text Macro** dialog and create a new macro.
- Click the **Copy** button to create a copy of the currently selected macro and open the **Edit Text Macro** dialog. Only available when an existing macro is selected.
- Click the **Delete** button to remove the selected macro from the list. Only available when an existing macro is selected.
- Click the **Import** button to open the **Import Text Macros** dialog and import macros exported from another file into the current file. See “Importing Files” on page 61.
- Click the **Export** button to open the **Export Text Macros** dialog and make the user-defined macros in this file available

to be imported into another file. See “Exporting Files” on page 56.

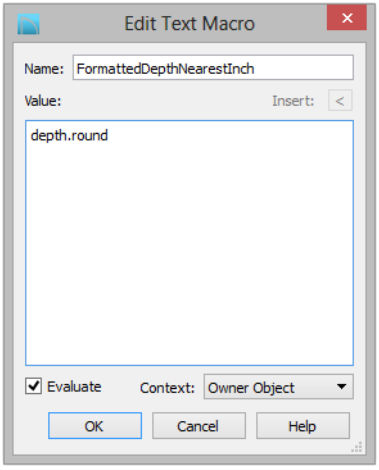
❸ The **Macro Value** field displays the content, or text used to define the selected macro.

❹ The **Expanded Macro Value** field displays the information that the macro reports. If the selected macro is not Valid in the current context, “#Evaluation Error#” will display here,

❺ Click the **Show Evaluation Error** button to open an **Information** box with a description of why the selected macro is not Valid. Only available when the selected macro is not Valid.

Edit Text Macro Dialog

The **Edit Text Macro** dialog can be accessed by clicking the **Edit**, **New**, or **Copy** button in the **Text Macro Management** dialog.



❶ Type a short, descriptive **Name** for the new object label macro. Macro names must be unique within a given file, or library object.

❷ Type a named value, reference to a Ruby **.rb** file, and/or insert an existing macro in the **Value** field.

- You can also copy a Named Value out of the Ruby Console or a definition from an **.rb** file and paste it here. See “To Copy, Cut and Paste text” on page 1019.
- Click the **Insert** button above the Value field to insert an already existing macro into the selected macro. See “Text Macros” on page 1033.

❸ Check the **Evaluate** box, then select a **Context** from the drop-down list.

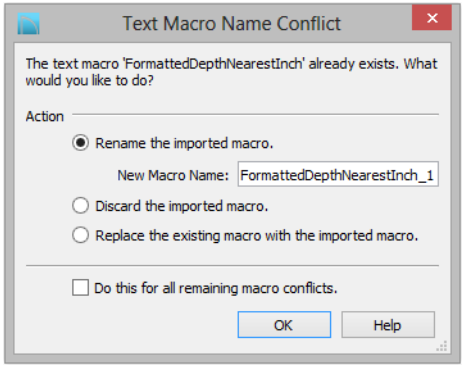
- Choose **None** if the macro performs a function but doesn’t refer to an object or if the macro’s context - or contexts - are stated in its Value.
- Choose **Owner Object** to create a macro for use in an object label.
- Choose **Referenced Object** to create a macro for use in a Text object with an arrow that points at an object that the macro describes.

Click OK to return to the **Text Macro Management** dialog.

Importing and Exporting Macros

User-defined text macros can be exported out of one plan file, layout file, or library object and imported into another file or object using the **Text Macro Management** dialog.

If the program encounters macros with duplicate names when importing into a plan or layout file, the **Text Macro Name Conflict** dialog will display, allowing you to choose how to handle the name conflict.



- Select **Rename the imported macro**, then type a short, descriptive, unique **New Macro Name** to keep both the existing macro and the one being imported. By default, the new name is simply the original name appended by a number.
- Select **Discard the imported macro** to use the existing macro already present in the destination file or library object rather than import the new one.
- Select **Replace the existing macro with the imported macro** to delete the existing macro and replace it with the one being imported.
- Check **Do this for all remaining macro conflicts** to apply the same choice for any other macros with conflicting names in the current import operation.

If the program encounters a macro name conflict when importing into a library object or when placing a library object in a plan, a **Question** message box will ask if you wish to replace the existing macros. Click **Yes** to replace any existing macros with imported macros of the same name or click **No** to keep the existing macros and not import those of the same name.

Chapter 33:

CAD Objects

With the 2D Computer Aided Design (CAD) tools included in Chief Architect, you can add details to views of your 3D model to create complete working drawings. Custom details can be created, saved, and used in other plans.

The CAD Tools are used to add information to 2D views of your model. CAD objects do not affect 3D objects or display in camera views or overviews, but they can be used to add details to layout pages, floor plan view and cross section/elevation views.

CAD polylines can be converted to 3D objects such as countertops and terrain data, and shown in 3D views. See “Convert Polyline” on page 235.

CAD objects are edited much like other objects in Chief Architect. See “Editing Objects” on page 175.

Chapter Contents

CAD Defaults and Preferences

CAD Defaults can be accessed by selecting **Edit> Default Settings** from the menu and expanding the CAD category.

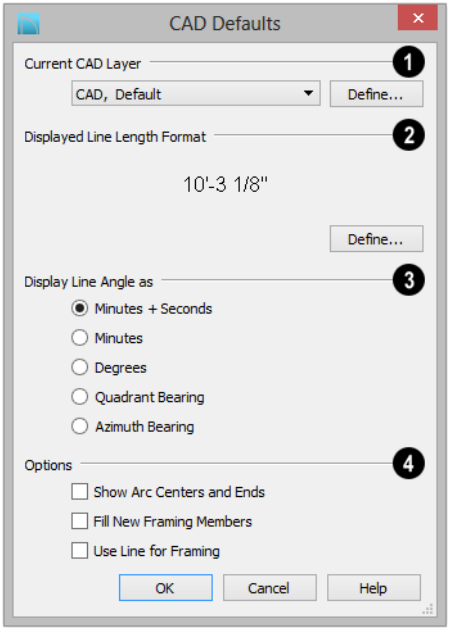
The behavior and appearance of CAD objects are also affected by settings on the CAD, Line Properties, Sun Angle, Behaviors, and Snap Properties Panels of the **Preferences** dialog. Unlike default settings, preference settings are global, affecting all plan and layout files. See “Preferences Dialog” on page 88.

CAD Defaults Dialog

The settings in the **CAD Defaults** dialog control the basic appearance of CAD objects. This dialog can also be opened by clicking the **CAD Defaults** button, which can be added to a toolbar See “To add a button to a toolbar” on page 132.

Each plan file has multiple **CAD Defaults** dialogs: one affecting floor plan view, one for every cross section/elevation view, and one for every CAD Detail and Wall Detail. Each layout file has its own CAD Defaults, as well. Each set of CAD Defaults can be accessed by opening the **CAD Defaults** dialog from within that view.

Note: Although there are multiple CAD Defaults dialogs in each plan file, only one layer can be specified as the Current CAD Layer at any given time. When a new Current CAD Layer is selected, the change affects all views and view types.



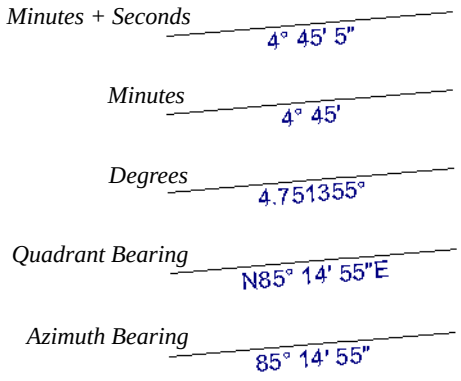
1 Select the **Current CAD Layer** from the drop-down list. See “Current CAD Layer” on page 1075.

- Click the **Define** button to open the **Layer Display Options** dialog. See “Layer Display Options Dialog” on page 148.

❷ Specify the **Displayed Line Length Format**, which controls the appearance of line length indicators. These only display when **Show Length** is checked in an object's specification dialog. See "Line Style Panel" on page 1053.

- A preview of the current line length format displays here.
- Click the **Define** button to open the **Displayed Number Style** dialog and edit the displayed line length format.

❸ **Display Line Angles as** - Specify the format to use when **Show Angle** is checked in an object's specification dialog. See "Line Style Panel" on page 1053.



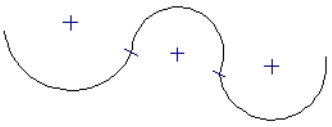
Line angles can be displayed using three basic methods:

- **Degrees/Minutes/Bearings** - Measured counterclockwise from a line drawn horizontally to the right of the angle's vertex. Useful for most drawing tasks. Select the level of accuracy that you require.
- **Quadrant Bearings** - Measured from a vertical line representing North/ South, Quadrant Bearings use directional bearings in their measurements. Useful for site drawings.
- **Azimuth Bearings** - Measured from a line drawn straight up from the angle's vertex (ie, North on a site plan). Useful for site drawings, Azimuth Bearings use degrees, minutes, and seconds in their measurements.

Line length and angle indicators use the Text Style of the layer that their object is on. See "Text Styles" on page 1030.

❹ Select any combination of the available **Options**.

- Check **Show Arc Centers and Ends** to show arc centers and ends. Ends display as small lines where arcs connect to one another. Centers also acts as snap points. See "Arc Centers and Ends" on page 192.



Show Arc Centers andEnds

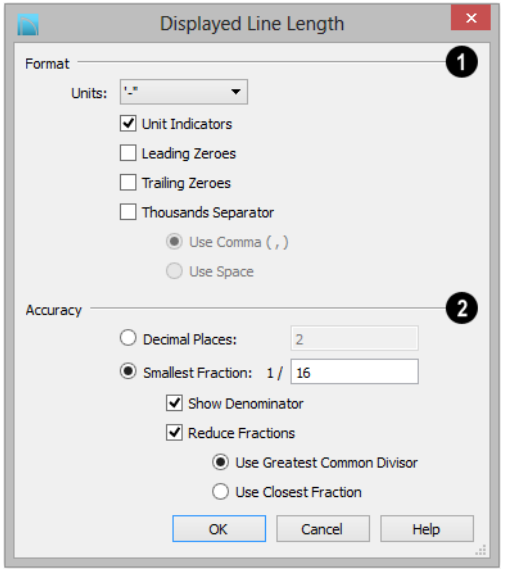
- Check **Fill New Framing Members** to draw all new framing members with a solid white fill. This settings is not view specific - it affects all new framing members, regardless of the floor they are drawn on.
- Check **Use Line for Framing** to show all framing members as single lines rather than as closed polylines in floor plan view. See "Displaying Framing" on page 588.

Displayed Line Length Dialog

The settings in the **Displayed Line Length** dialog control the appearance of CAD line length indicators, when set to display. See “Show Length and Angle” on page 1075.

To access this dialog, click the **Define** button under the **Displayed Line Length Format** heading in the **CAD Defaults** dialog.

The settings here are similar to those found on the Dimension Format panel of the **Room Label Defaults** dialog and the Format panels of the **Dimension Defaults** dialog. See “Primary Format Panel” on page 965.



1 Specify the numbering **Format** for CAD line length indicators.

- Select the **Units** of measurement to be used by line length indicators from the drop-down list.
- Check **Unit Indicators** to display the unit of measurement along with the dimension number.
- Check **Leading Zeros** to display the zero before a decimal less than 1 or to display 0’ or 0” when the ft-in or ’-” unit formats are used.
- Check **Trailing Zeros** to display trailing zeros at the end of decimal values.
- Check **Thousands Separator** to use a thousands separator for values greater than 999.
- Select the **Use Comma** or **Use Dot** radio button to use a comma or a dot as the thousands separator. See “Region and Language Settings” on page 73,
- Select the **Use Space** radio button to use a space as the thousands separator.

2 Specify the degree of **Accuracy** used by dimension numbers.

- Select the **Decimal Places** radio button for length indicators in decimal format. In the text field, specify the number of decimal places to use, from 0 to 20. If 0 is used, no decimal places are used.
- Select the **Smallest Fraction** radio button for length indicators using whole numbers and fractions. In the text field, specify the largest denominator to use, from 1 to 128. If 1 is entered, whole numbers are used.
- Uncheck **Show Denominator** to turn off the display of fraction denominators used by line length indicators. Denominators are typically only turned off when eighths are desired.

- Uncheck **Reduce Fractions** to always use the denominator specified above. When checked, the lowest possible denominator will be used.

❸ **Reduce Fractions Using** - Specify how fractions are reduced. These settings are only available when Smallest Fraction is selected above.

- Select the **Greatest Common Divisor** radio button to reduce fractions using the largest value that divides equally into the numerator and the denominator specified above. This option is best for fractional inches.
- Select the **Closest Fraction** radio button to reduce fractions without referring to the denominator specified above. Not recommended when fractional inches are used.

A value of 0.33333 is represented by the fraction 5/16 when Greatest Common Divisor is used and the Smallest Fraction denominator is 16. When Closest Fraction is selected, this value is represented by 1/3.

Revision Cloud Defaults

Settings in the **Revision Cloud Defaults** dialog determine the initial appearance of Revision Clouds. The settings in this dialog are similar to those in the **Revision Cloud Specification** dialog. See “Revision Cloud Specification Dialog” on page 1072.

The CAD Drawing Tools

The CAD Tools are available in the CAD menu and on the toolbars.

Point Tools

Select **CAD> Points** to access the Point Tools.

The **Place Point**, **Input Point**, **Point Marker**, and **Delete Temporary Points** tools can be used to create or remove snap points for a variety of purposes. See “Point Tools” on page 1044.

Line Tools

Select **CAD> Line** to access the Line Tools.

The **Draw Line**, **Input Line**, **Line With Arrow**, **Sun Angle**, and the **North Pointer** allow you to create various types of lines. See “Line Tools” on page 1048.

Arc Tools

Select **CAD > Arcs** to access the Arc Tools.

The **Draw Arc**, **Input Arc**, and the **Arc With Arrow** tools allow you to create arcs. See “Arc Tools” on page 1058.

Box Tools

Choose **CAD > Boxes** to access the Box Tools.

The **Rectangular Polyline**, **Regular Polygon**, **Box**, **Cross Box**, and **Insulation** tools allow you to create a variety of polyline and box objects. See “Box Tools” on page 1069.

Circle Tools

Select **CAD> Circles** to access the Circle Tools.

The **Circle**, **Circle About Center**, **Oval**, and the **Ellipse** tools are discussed in detail later in this chapter. See “Circle Tools” on page 1063.

Revision Cloud

Select **CAD> Revision Cloud**, then click and drag to draw a rectangular shape with edges that display a series of arcs. See “Revision Clouds” on page 1071.

Splines

A Spline is a curve that passes smoothly through a set of points. Select **CAD> Draw Spline** to draw connected line segments that form a spline. See “Splines” on page 1073.

Once created, a spline can be selected and edited. See “Editing Spline Based Objects” on page 206 and “Polyline Specification Dialog” on page 1066.

Dimension Tools

Select **CAD> Dimensions** or **CAD> Automatic Dimensions** to access the manually drawn and Automatic Dimension Tools. The **Dimension Tools** can be used with CAD and architectural objects and are discussed in their own chapter. See “Dimensions” on page 961.

Text Tools

Select **CAD> Text** to access the Text Tools. The Text Tools are discussed in their own chapter. See “Text, Callouts, and Markers” on page 997.

Current CAD Layer

Select **CAD> Current CAD Layer** to change the current default CAD layer. See “Select Layer Dialog” on page 151.

Point Tools

Select **CAD> Points** to access the Point Tools.

Temporary points created using the **Place Point** and **Input Point** tools and permanent **Point Markers** can be used with **Object Snaps** to accurately position a variety of objects. See “Object Snaps” on page 160.

The size of temporary points is specified in the **Preferences** dialog. See “Snap Properties Panel” on page 113.

Place Point

Select **CAD> Points> Place Point**, then and click in the drawing area to place a temporary CAD point at that location.

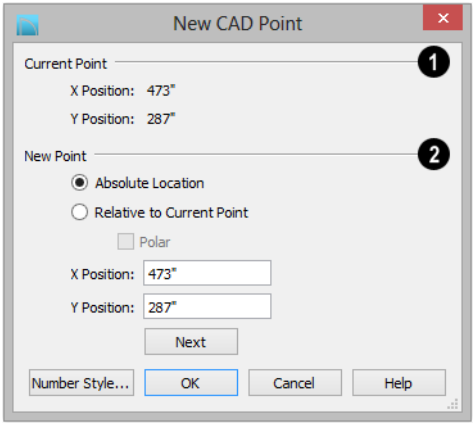
Input Point

Temporary CAD points can be placed with precision by entering coordinates. See “3D Drafting” on page 29.

To use the Input Point tool

1. Select **CAD> Points> Input Point**  to open the **New CAD Point** dialog.
2. Select a **Location** option, and enter the desired location of the point.
3. Click **OK** to close the dialog and create the new point. The new point becomes the Current Point and is highlighted. See “The Current Point” on page 1046.
4. Alternatively, click **Next** to create the new point but remain in the **New CAD Point** dialog and create additional points. As each is created, it becomes the Current Point.

New CAD Point Dialog



1. The location of the **Current Point** displays here. If no CAD points are present, the origin (0, 0) displays. See “The Current Point” on page 1046.

2. Specify the location of the **New Point**.

- **Absolute Location** - Define the point in **X Position** (horizontal) and **Y Position** (vertical) coordinates, relative to the origin at (0,0).
- **Relative to Current Point** - Define the new point in **X** and **Y** coordinates that are relative to the Current Point, as though that point was at (0,0). Only available when a Current Point exists.
- Check **Polar** to define the new point by its **Distance** and **Angle** from the Current Point rather than in X and Y coordinates. This is helpful when creating a plot plan. See “Plot Plans and Plan Footprints” on page 711.

The position of the New Point is defined here. The options available depend on the method chosen to define it, above.

- **X Position** and **Y Position** coordinates relative to (0,0) are entered if the Absolute Location method is specified.
- **X Position** and **Y Position** coordinates relative to the Current Point are entered if the Relative to Current Point method is specified.
- **Distance** and **Angle** from the Current Point are entered if the Relative to Current Point: Polar method is specified.
- Click **Next** to create the new point without exiting the dialog so you can input data for the next point. The newly created point becomes the Current Point.

Click the Number Style button to change the units used in dialogs. See “Dialog Number/Angle Style Dialog” on page 126.

Point Markers

Use a permanent **Point Marker** as a snap point for dimension lines and other CAD objects. Select **CAD> Points> Point Marker** and click in the view to place a permanent point marker. Point markers display as a simple cross, with or without a text label. They can be opened for specification and modified to include a label or alter their attributes.

You can also place Point Markers using the **Marker** tool, which lets you specify the marker label and type. See “Markers” on page 1028.

Point Markers are also created when the **Point to Point Dimension** tool is used.or when a dimension line is copied and pasted independent of the objects it locates. See “Point to Point Dimensions” on page 978.

Delete Temporary Points

All temporary points can be deleted at once using **CAD> Points> Delete Temporary Points**.

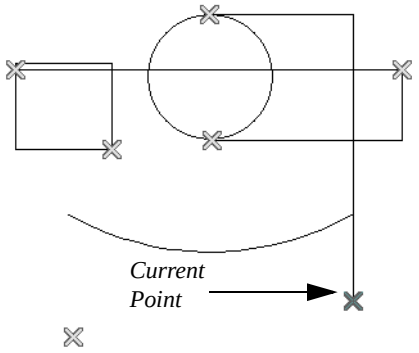
You can also press the **Delete** key when nothing is selected to delete the points one by one; however, **Delete Temporary Points** can save time when there are many points.

The Current Point

In any plan view, there may be multiple temporary CAD points created by the user and/or the program. The Current Point is either the most recently created or the most recently accessed temporary CAD point and is used for a variety of functions, such as:

- As an anchor for snapping objects to a precise location.
- As the starting point for objects as they are drawn by entering data. See “Entering Coordinates” on page 166.
- As the point about which objects are rotated. See “Rotating Objects” on page 231.
- To indicate the points at which roof planes can join. See “To find roof plane intersection points” on page 482.

When multiple temporary points are on-screen, the current CAD point is highlighted so it can be easily identified.



There can only be one Current Point

To delete the Current Point

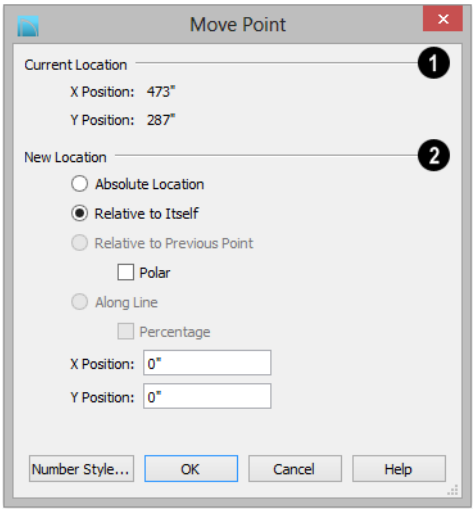
1. Make sure no other objects are selected by clicking the **Select Objects** button. You can also press the Esc key to deselect any selected objects.
2. Press the Delete key on the keyboard to delete the Current Point. The temporary point created prior to this one becomes the new Current Point.
3. If you continue pressing the Delete key, temporary points will be deleted in the reverse order that they were created.

Move Point Dialog

A CAD Point can be repositioned relative to itself, another point, or a CAD object such as a line using the **Move Point** dialog. When a Point is moved, it becomes the Current Point.

For example, you can locate the point exactly one-quarter the distance along a given line, or exactly 6 inches from one end. This new location can then be used for the start point of a new line or other purpose.

To reposition a CAD Point, double-click on it using the **Select Objects** tool. That point becomes the Current Point, and the Move Point dialog opens.



1 The **Current Location** of the selected point displays at the top of the dialog for reference.

2 Specify the **New Location** of the point.

- **Absolute Location** - Define the new location in **X** (horizontal) and **Y** (vertical) **Position** coordinates, relative to the origin at (0,0).
- **Relative to Itself** - Define the new location in **X** and **Y Position** coordinates relative to the current location, as though that point were the origin.
- **Relative to Previous Point** - Define the new location relative to the point that was the Current Point prior to this one, as though that point was the origin. Only available if the selected point is located on a CAD object.
- Check **Polar** to define the new location's **Distance** and **Angle** from the previous point instead of using X and Y coordi-

nates. Only availalbe if Relative to Itself or to Previous Point is selected above.

- **Along Line** - Define the new location relative to the edge of a nearby CAD object. This option is enabled only when the point is located near a CAD object and refers to the end nearest to the point's original location.
- Check **Percentage (%)** to specify the Along Line value as a percentage of the total line or arc length rather than as a distance. 0% moves the point to the closest end of the nearest edge, 50% to the midpoint, and 100% to the other end. Negative numbers and percentages greater than 100 are allowed.
- Specify the new position of the point here. The options here depend on the method chosen to define the New Location.
- **X Position** and **Y Position** coordinates are entered if the Absolute Location method is specified or if either Relative method is used with Polar unchecked.
- **Distance** and **Angle** are entered if either Relative method is specified when Polar is checked.
- **From Edge** - When the Along Line method is used, specify the distance of the point's New Location to the end of the CAD object's edge that it was originally closest to. When **Percentage (%)** is checked, enter this value as a percentage instead.

If the point is near an arc, **Along Line** is measured along the curve.

If the point is near a box or polyline, **Along Line** is measured along the nearest side just as it does with an individual line or arc.

If the point is near an oval or circle, **Along Line** is measured along an (invisible) axis line that the item was originally drawn along.

Click the Number Style button to change the units used in dialogs. See "Dialog Number/Angle Style Dialog" on page 126.

Line Tools

Select **CAD> Draw Lines** to display the Line Tools.

If **Object Snaps**  is enabled and **Edit Object Parts**  is disabled, you can connect the ends of two lines and/or arcs to form a single entity called a polyline. See "Polylines" on page 1065.

Draw Line

There are two methods that you can use to draw lines with the **Draw Line** tool. The standard method is to select **CAD> Lines> Draw Line**, then click and drag from beginning to end.

An alternative method that allows you to drawing multiple lines is also available. See "Alternate" on page 177.

To draw continuous lines

1. Select **CAD> Lines> Draw Line** .
2. Press the Alt key on your keyboard (or use the right mouse button) and click and drag to draw a line. You can also toggle to alternative mode.
3. Move your cursor to a new location in the drawing area and click once. A new line is drawn that is connected to the end of the previous line.
4. To stop, press Esc on your keyboard or press two mouse buttons at the same time.

By default, this continuous drawing behavior will turn off when a closed shape is created. You can specify that this behavior remain on in the **Preferences** dialog. See “Behaviors Panel” on page 111.

If you double-click the Draw Line tool, the Input Line dialog will open.

Input Line

CAD lines can also be created using absolute values entered with the keyboard by selecting **CAD> Lines> Input Line**. This method is slower but more precise than using the mouse and is ideal when the desired length and angle of each line is known, such as with property lines.

Before any line is drawn using this method, a starting point must be defined. If a starting point has not been defined, Chief Architect assumes a starting point of 0,0.

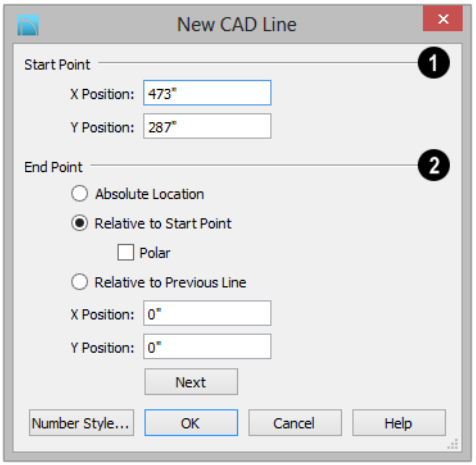
To use the Input Line tool

1. Select **CAD> Points> Place Point** , then click the screen to place a CAD point. This is the Current Point, and is the start point for the new line. See “The Current Point” on page 1046.
2. Select **CAD> Lines> Input Line** to open the **New CAD Line** dialog.

   The **New CAD Line** dialog can also be opened by double-clicking the **Line Tools** parent button.
3. If necessary, specify the start point.
4. Specify the method used to define the location of the End Point, then define the End Point.
5. Click **OK** to close the dialog and draw the line, or click **Next** to draw the line but remain in the **New CAD Line** dialog and draw additional lines.

Note: If you accidentally click OK instead of Next and need to continue drawing a polyline using the New CAD Line dialog, select the Input Line tool again and continue.

New CAD Line Dialog



1 The **X Position** (horizontal) and **Y Position** (vertical) coordinates of the start point for the new line display here. They can also be changed, if you wish.

2 The new line's **End Point** is defined here. Begin by specifying how you want to define the line **End Point Location**.

- **Absolute Location** - Define the end point of the new line in **X Position** (horizontal) and **Y Position** (vertical) coordinates, relative to (0,0).
- **Relative to Start Point** - Define the end point of the new line in **X** and **Y** coordinates that are relative to the line's Start Point, as though it were at (0,0).
- Check **Polar** to define the End Point of the new line by its **Distance** and **Angle** from the Start Point rather than in X and Y coordinates. This is helpful when creating a plot plan. See "Plot Plans and Plan Footprints" on page 711.
- **Relative to Previous Line** - Define the End Point of the new line by its **Distance** and **Angle** relative to the end of the last line drawn, as though that line's angle were at 0° and its End Point, at (0,0).
- **X Position** (horizontal) and **Y Position** (vertical) coordinates relative to (0,0) are entered if the Absolute Location method is specified.
- **X Position** (horizontal) and **Y Position** (vertical) coordinates relative to the start point are entered if the Relative to Start Point method is specified.
- **Distance** and **Angle** from the start point are entered if the Relative to Start Point: Polar method is specified.
- **Distance** and **Angle** from the start point are entered if the Relative to Previous Line method is specified.
- Click **Next** to create the line without exiting the dialog so you can input data for the next line. The start point of the next line is the end point of this line.

Click the Number Style button to change the units used in dialogs. See "Dialog Number/Angle Style Dialog" on page 126.

To enter an angle in bearings

1. While not required, you may want to select **Quadrant** or **Azimuth Bearings** in the **Dialog Number/Angle Style** dialog.
2. For Quadrant Bearings, begin by typing ***N*** or ***S*** (for North or South).
3. Next, type the number of degrees followed by either a letter d or a space.
4. Type the number of minutes followed by either a ' or a space.

5. Type the number of seconds followed by either a " or a space.
6. Finally, for Quadrant Bearings, type either ***E*** or ***W*** (for East or West).

Following are some examples of Quadrant Bearings. It is not necessary to capitalize the letters. Spaces after each value are optional.

- N 20d 30' E
- S 45' W
- N 89d 48' 30" W
- N 90' E

Enter Coordinates

Similar to **Input Line**, lines can also be specified by pressing the Tab key on the keyboard when a line is in the process of being drawn. This opens the **Enter Coordinates** dialog. See "Entering Coordinates" on page 166.

Line With Arrow

Create a line or polyline with an arrow on one or both ends by selecting **CAD> Lines> Line With Arrow**, then clicking and dragging on screen. The initial attributes of the line's arrow are set in the **Arrow Defaults** dialog. See "Arrow Defaults" on page 999.

As with lines, lines with arrows can connected to form polylines and can be edited after they are created. See "Editing Line Based Objects" on page 184 and "Line Specification Dialog" on page 1052.

You can also create arcs with arrowheads. See "Arc with Arrow" on page 1059.

If a line or arc with arrow is snapped to another object such as text and that object is deleted, the line or arc with arrow will be deleted, as well.

North Pointer

The **North Pointer** tool is used to define the direction of true north in a plan. The direction of north does not affect the orientation of the Snap and Reference grids, but it does determine the direction of bearing information as well as how shadows and conditioned area totals are calculated. See "North Pointer" on page 921.

If a **North Pointer**  is not used, north is assumed to be straight up on screen in floor plan view.

Sun Angle

Sun Angles let you specify the date, time, latitude, and longitude that the program uses when calculating the angle of the Default Sun Light as well as the direction and length of sun shadows. See "Sun Angles and Shadows" on page 921.

Create Line Style

The **Line Style Specification** dialog allows you to create new line styles for use in Chief Architect. Select **CAD> Lines> Create Line Style** to access this dialog. See "Creating Line Styles" on page 1076.

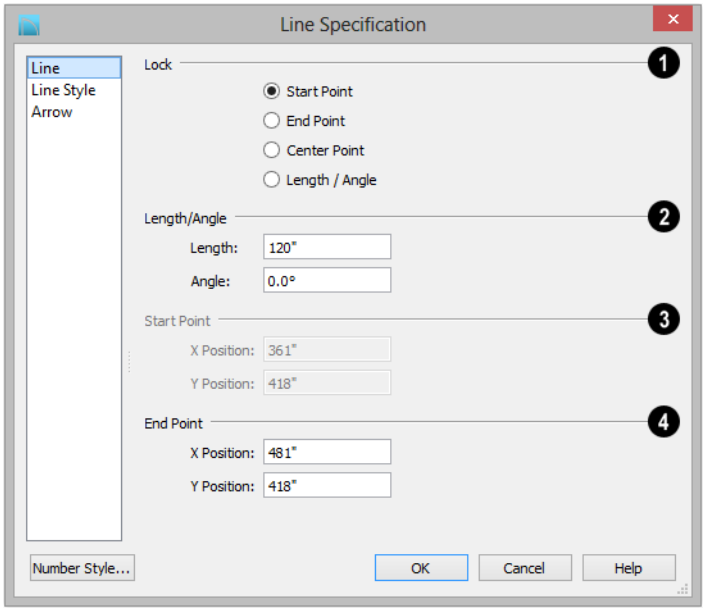
Line Specification Dialog

Select a CAD Line, Line With Arrow, or Text Line With Arrow and click the **Open Object** edit button to open the **Line Specification** dialog.

The settings on the panels in this dialog are found in the specification and defaults dialogs for a variety of different objects in the program.

Line Panel

The information on the Line panel of the **Line Specification** dialog is similar to that found on the Selected Line panels of various specification dialogs in the program.



1 **Lock** - These lock options control how changing properties on this dialog affect the line.

Start - Select this option to keep the start of the line fixed when changing the length, angle, and end.

End- Select this option to keep the end of the line fixed when changing the length, angle, and start.

Center- Select this option to keep the center of the line fixed. Changing the length of the line moves the start and end of the line equally. Changing the angle rotates the line around the center.

Select **Length/Angle** to keep the length and angle of the line segment fixed. Moving the start or end moves the other end so the length and angle of the line do not change.

2 Specify the **Length** and **Angle** of the selected line.

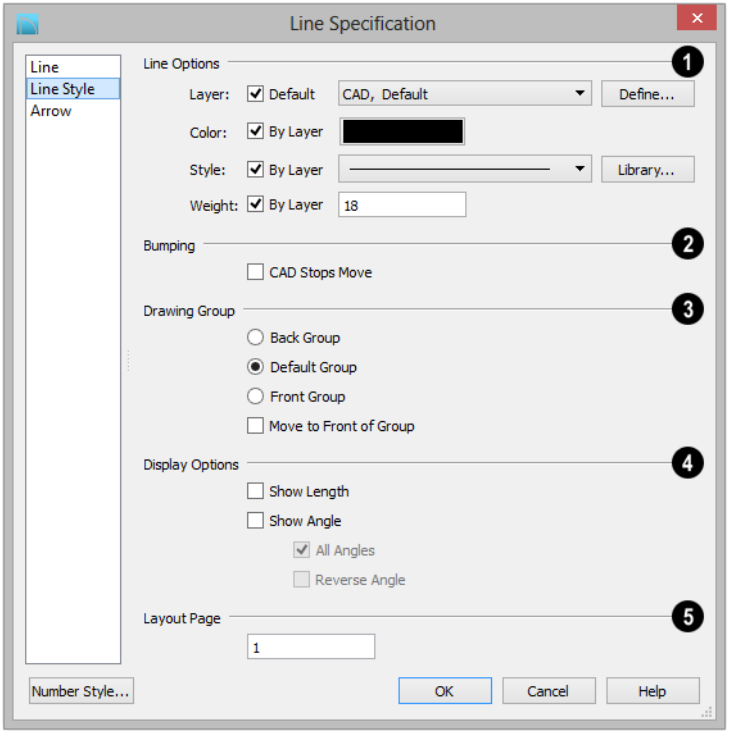
3 Specify the X and Y coordinates of the line's **Start Point**. Not available when the Start or Center Point is locked.

4 Specify the X and Y coordinates of the line's **End Point**. Not available when the Center or End Point is locked.

The format used here can be changed by clicking the **Num Style** button. See "Dialog Number/Angle Style Dialog" on page 126.

Line Style Panel

The Line Style panel is found in the specification dialogs for many different objects. The settings here control the appearance of the lines and/or arcs that make up an object. Depending on the type of object selected, some settings may not be available.



1 **Line Options** -

- Check **Show Border** to display a border around the selected Picture file. Not available for other object types. See "Pictures" on page 1109.
- Specify the **Layer** that the selected object should be located on. Check **Default** to use the default layer for the selected

object's type or choose a layer from the drop-down list. If the selected object is an automatically generated dimension line, freize molding, or shadow board that has been edited, Default will be unchecked.

- Click the **Define** button to open the **Layer Display Options** dialog. See "Layer Display Options Dialog" on page 148.
- Specify the line **Color** used to represent the selected object. Check **By Layer** to use the color assigned to the object's layer or click the Color bar to select a different color. See "Color Chooser/ Select Color Dialog" on page 853.
- Specify the line **Style** used to represent the selected object. Check **By Layer** to use the line style assigned to the object's layer or click the drop-down list or **Library** button to select a different style.
- Define the **Line Weight** (in pixels) or check **By Layer** to use the **Line Weight** assigned to the object's layer.


Setting the line weight to zero (0) makes the line weight print as thin as possible.

❷ Specify the desired **Bumping** behaviors for the selected object(s). These options are not available for Primitive objects or Wall Material Regions and only function when **Bumping/Pushing** is enabled. See "Bumping/Pushing" on page 218.

- Check **CAD Stops Move** to bump the selected object into other CAD or CAD-based objects as it is moved, and/or to push the other object(s).
- Check **Wall Stops Move** to stop the selected object when it bumps into a wall. Walls cannot be pushed by other objects. Not available in layout files.

❸ The **Drawing Group** options control how the selected object(s) display relative to other objects. Not available for Walkthrough Paths. See "Drawing Groups" on page 215.

- Select **Back Group** to display the selected object(s) behind objects in the other two drawing groups.
- Select **Default Group** to display the selected object(s) in front of those in the Back Group but behind those in the Front Group.
- Select **Front Group** to display the selected object(s) in front of objects in the other two groups.
- Check **Move to Front of Group** to display the selected object(s) in front of other objects in the same drawing group. Not available in defaults dialogs.

  You can also move a selected object to the front of its drawing group by clicking the **Move to Front of Group** edit button. See "Move to Front of Group" on page 216.

Note: "Move to Front of Group" is an action, not an attribute. The box is not checked the next time the specification dialog is opened, and is not available in defaults dialogs at all..

❹ Select the desired **Display Options**. These options not available for CAD Box- or CAD Circle-based objects, or for Material Regions, North Pointers, or Sun Angles.

- Check **Show Length** to show the length of each line centered above the line.
- Check **Show Angle** to show the angle of each line centered below the line. If the object is an arc, it's radius will also display.

  The **Length** and **Angle** formats are specified in the **CAD Defaults** dialog. See "CAD Defaults Dialog" on page 1040.
- Uncheck **All Angles** to show only those angles that are neither horizontal nor vertical. This is automatically checked when **Show Angle** is checked.
- Check **Reverse Angle** to reverse the angle by 180°. This may be helpful when showing a line's bearing, since the direction a line is drawn from start point to end point defines its bearing.

An additional **Display Options** setting is available In the **Picture File**, **Metafile**, and **PDF File Box Specification** dialogs. See "Pictures, Images, and Walkthroughs" on page 1101.

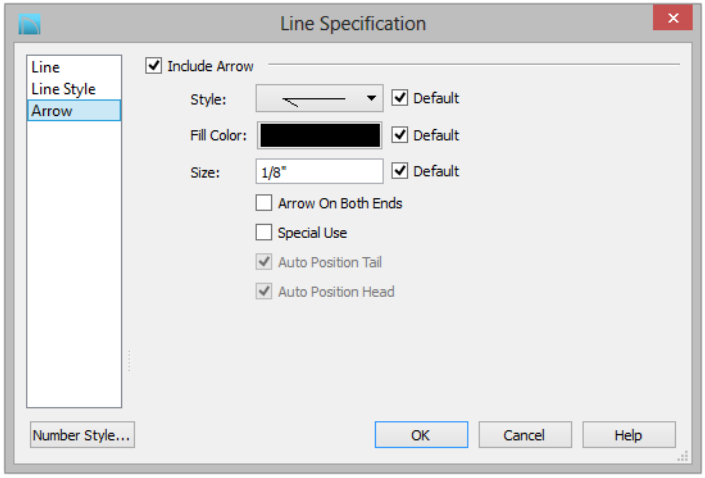
- Check **Show Outline** to display the selected object's border polyline.

❺ Specify the **Layout Page** that the selected object(s) is located on. Only available in layout files, but not in defaults dialogs for objects such as callouts and markers. See "Layout" on page 1203.

Arrow Panel

The Arrow panel is available for any line, arc, open polyline, or spline that can have an arrow. The defaults for arrows are set in the **Arrow Defaults** dialog. See "CAD Defaults and Preferences" on page 1040.

Closed polylines, Sprinkler Lines and Electrical connections are examples of objects that cannot have arrows.



- Check **Include Arrow** to turn the arrow on.

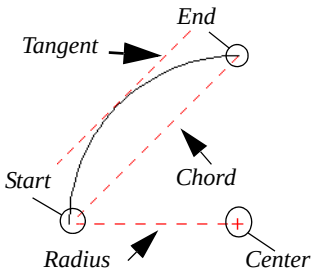
- Select an arrowhead **Style** from the drop-down list or check **Default** to use the default arrowhead.
- Select the **Fill Color** used to fill the arrowhead or check **Default** to use the default fill color.
- Specify a **Size** for the arrow or check **Default** to use the default size. The Default Size value also affects the size of the start circle for **Running Dimensions**  . See “Running Dimensions” on page 979.
- Check **Arrow on Both Ends** to place a head on both ends of the selected object.
- Check **Special Use Arrow** to create an arrow that can be used in layouts and floor plan views to show platform elevations. See “Special Use Arrows” on page 1023.
- **Auto Position Tail** and **Auto Position Head** are available when either end of the line is attached to a text object. Check either or both options if you want this text line with arrow to update its position on the text object if the text object or text line with arrow is moved. See “Auto Positioning Arrows” on page 1022.

Drawing Arcs - Arc Creation Modes

There are five Arc Creation Modes that control how arcs and arc-based objects are drawn. Each mode allows you to specify a different aspect of the arc, such as its radius or tangent. Select **Edit> Arc Creation Modes** to select a mode.

The program remembers the last creation mode used between sessions. Once drawn, all arcs are edited similarly. See “Editing Arc Based Objects” on page 188.

Before deciding which Arc Tool or Arc Creation Mode is best for the project at hand, it is helpful to be familiar with the different components that make up an arc.



- The **center** of an arc is the point the arc is drawn about.
- The **radius** is the distance from the center to the arc.
- The **start** is where the arc begins.
- The **end** is where the arc stops.
- The **chord** is the straight line between the start and end point.
- A straight line that intersects an arc and is perpendicular to the radius of the arc at that point is **tangent** to the arc.

Free Form Arc

Free Form Arc mode allows you to define an arc by clicking and dragging along the desired path. There are two methods for using this mode.

To draw a Free Form arc

1. Select **CAD> Arcs> Draw Arc** , then click at the arc's start point.
2. Move the pointer along the desired curve while dragging to curve the arc.
3. Release the mouse button at the end point to complete the arc.

To draw continuous Free Form arcs

This mode is useful for making custom revision clouds.

1. Select **CAD> Arcs> Draw Arc** .
2. Press the Alt key on your keyboard and click and drag to draw an arc.
3. Move your cursor to a new location and click. A new arc is drawn that is connected to the end point of the previous arc.

By default, this continuous drawing behavior will turn off when a closed shape is created. You can specify that this behavior remain on in the **Preferences** dialog. See "Behaviors Panel" on page 111.

Center/Radius/End Arc

Center/Radius/End Arc mode allows you to define the center and radius of an arc, and then its length.

To draw a Center/Radius/End arc

1. Select **CAD> Arcs> Draw Arc** , then click at the center of the arc and drag to define the radius.
2. Release the mouse button, then move the mouse to the end of the arc and click again.

Start/End/On Arc

Start/End/On Arc mode allows you to define the start and end points of an arc, then adjust the curvature.

To draw a Start/End/On arc

1. Select **CAD> Arcs> Draw Arc** , then click at the start point of the arc and drag to the end point.
2. Release the mouse button at the end point.
3. Move the mouse to adjust the curvature of the arc, then click to release the mouse and create the arc.

Start/Tangent/End Arc

Start/Tangent/End Arc mode allows you to define the start and end points of an arc, its tangent and its curvature.

To draw a Start/Tangent/End arc

1. Select **CAD> Arcs> Draw Arc** , then click at the start of the arc and drag a line to define the arc's tangent at the start point.
2. Release the mouse button.

3. Move the mouse to adjust the length and curvature of the arc, then click to release the mouse and create the arc.

Arc About Center

Arc About Center mode allows you to draw an arc by defining the center and then the start and end points.

To draw an Arc About Center

1. Select **CAD> Arcs> Draw Arc**  , then click once to define the center point.
2. Click and drag from the start point of the arc to its end point.
3. Or, click and drag an arc. The Current Point is used as the center. See “The Current Point” on page 1046.

Arc Tools

Select **CAD> Arcs** to display the submenu of Arc Tools.

Draw Arc

The method used to draw an arc using **Draw Arc** depends on which Arc Creation Mode is currently active. Once drawn, an arc can be edited. See “Editing Arc Based Objects” on page 188.

Input Arc

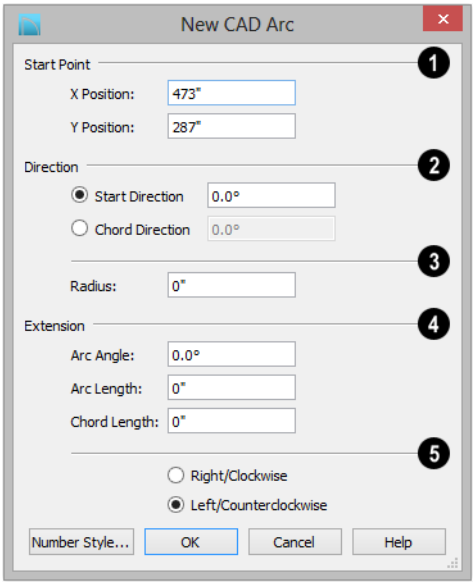
An arc can be drawn to exact specifications using the **New CAD Arc** dialog.

To use the Input Arc tool

1. Select **CAD> Points> Place Point**  , then click the screen to place a CAD point. This is the Current Point, and will be the start point for the new arc. See “The Current Point” on page 1046.
2. Select **CAD> Lines> Input Arc**  to open the **New CAD Arc** dialog.

   The **New CAD Arc** dialog can also be opened by double-clicking the **Arc Tools**  parent button.
3. If necessary, specify the Start Point.
4. Specify the method used to define the arc’s Direction, then define its angle.
5. Specify the method used to define the arc’s Extension, or length, then define it.
6. Click **OK** to close the dialog and draw the arc.

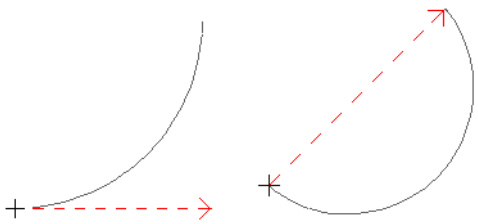
New CAD Arc Dialog



1 The **X Position** (horizontal) and **Y Position** (vertical) coordinates of the **Start Point** for the new arc display here. They can also be changed, if you wish.

2 Specify how you want to define the arc's **Direction**., then specify its angle.

- The **Start Direction** defines the angle of the tangent from the arc's start point.
- The **Chord Direction** defines the angle of the arc's chord from the start point.

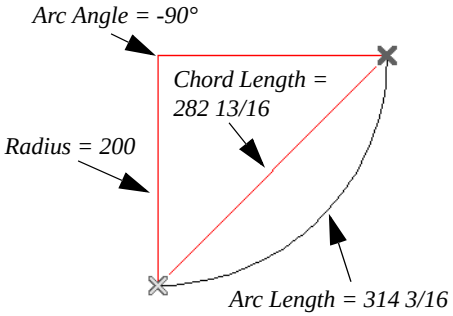


Start Direction = 0° *Chord Direction = 45°*

3 Define the **Radius** of the arc.

4 The **Extension** settings control the length of the arc. Define only one:

- The **Arc Angle** is defined by imaginary lines drawn from the arc centerpoint to its two endpoints.
- The **Arc Length** is the length of the arc along its curve from one endpoint to the other.
- The **Chord Length** is the length of an imaginary straight line drawn from one arc endpoint to the other.



5 Select the direction that the arc curves: either to the **Right/Clockwise** or to the **Left/Counterclockwise**.

Click the Number Style button to change the units used in dialogs. See "Dialog Number/Angle Style Dialog" on page 126.

Arc with Arrow

You can create an arc with an arrow on one or both ends, using the **Arc With Arrow** tool.

Draw an **Arc With Arrow** like a regular arc. When you release the mouse button, the arc has an arrowhead at the end. The default attributes of the arrow are determined by the settings in the **Arrow Defaults** dialog. See "Arrow Defaults" on page 999.

As with regular arcs, arcs with arrows can be edited after they are created. See "Editing Arc Based Objects" on page 188 and "Arc Specification Dialog" on page 1060.

Continue to draw connected lines and arcs to form a polyline with an arrowhead at the end. The arrowheads display only at the free ends, not where the lines connect. See "Polylines" on page 1065.

Lines with arrowheads can also be created. See "Line With Arrow" on page 1051.

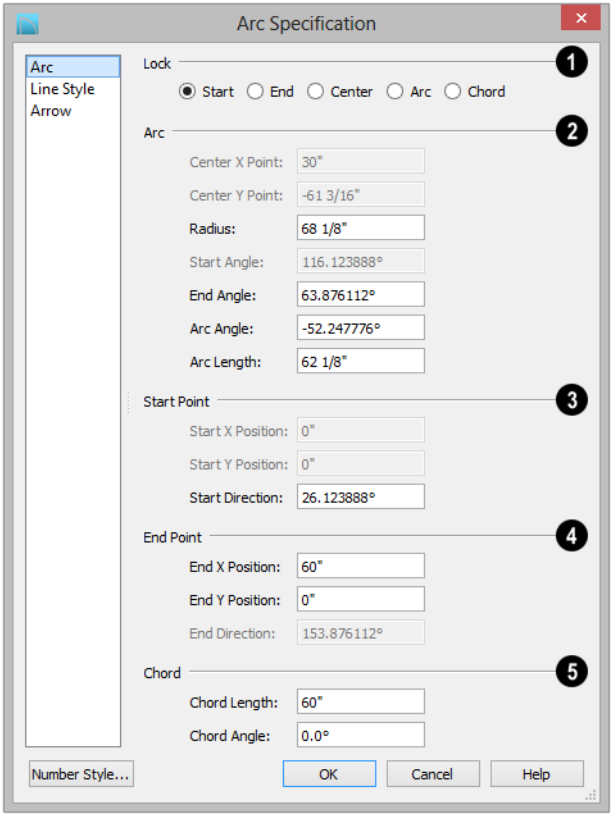
A line can be converted to an arc or vice versa by selecting the line, pressing and holding down the Alt key, then using the edit handle at either end to bend the line.

Arc Specification Dialog

Select an arc and click the **Open Object** edit button to open the **Arc Specification** dialog.

Arc Panel

The settings on the Arc panel are also found on the Selected Arc panels for many objects.

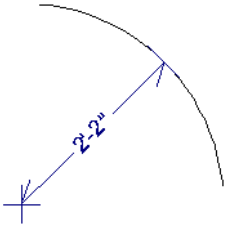


1 The **Lock** options control how changing properties on this dialog affects the arc.

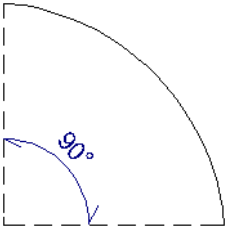
- **Start** - Select this option to keep the start fixed when changing the arc, chord, or end.
- **End** - Select this option to keep the end fixed when changing the arc, chord, or start.
- **Center** - Select this option to keep the center of the arc fixed when changing the arc.
- **Arc** - Select this option to keep the arc fixed when changing the arc location.
- **Chord** - Select this option to keep the arc chord fixed when changing the arc radius.

❷ **Arc -** These parameters define the arc. Various controls are disabled depending on what lock option is used.

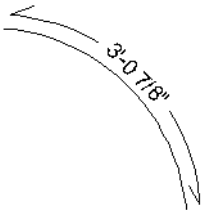
- **Center X Point** - Specify the X coordinate for the center of the arc.
- **Center Y Point** - Specify the Y coordinate for the center of the arc.
- **Radius** - The distance between the center of the arc and the arc surface.



- **Start Angle** - Specify the angle that a line drawn from the arc center to the arc start makes with a horizontal line to the right.
- **End Angle** - Specify the angle that a line drawn from the arc center to the arc end makes with a horizontal line to the right.
- **Arc Angle** - The angle between the center of the arc and each end.



- **Arc Length** - The length of the arc along the curve.



- Uncheck **Automatic Facet Angle** to specify the **Facet Angle**, which is the angle at which the surfaces of a curved 3D object are broken in 3D views. The default value is 7.5°; a smaller value produces a smoother curve while a larger value may generate more quickly in 3D views. These settings are only available on the Selected Arc panel for some CAD-based architectural objects such as Slabs. See “Architectural vs CAD Objects” on page 158.

❸ **Start Point** - These values define the start point of the arc. The Position settings are disabled when the Start is locked.

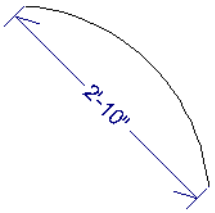
- **Start X Position** - Specify the X coordinate for the beginning of the arc.
- **Start Y Position** - Specify the Y coordinate for the beginning of the arc.
- **Start Direction** - Specify the angle of a tangent line at the start of the arc.

❹ **End -** These values define the end point of the arc. The Position settings are disabled when the End is locked.

- **End X Position** - Specify the X coordinate for the end of the arc.
- **End Y Position** - Specify the Y coordinate for the end of the arc.
- **End Direction** - Specify the angle of a tangent line at the end of the arc.

5 **Chord** - These values define the chord of the arc.

- **Chord Length** - The straight line distance between the two ends of the arc.



- **Chord Angle** - Specify the angle of the chord (the imaginary straight line going from the start of the arc to the end of the arc).

Line Style Panel

For information about the Line Style panel, see “Line Style Panel” on page 1053.

Arrow Panel

For information about the Arrow panel, see “Arrow Panel” on page 1055.

Circle Tools

Select **CAD> Circles** to access the Circle Tools.

Circles

Draw a **Circle** by dragging across the diameter. If a small circle is needed, draw a larger circle and then resize it.

Use the **Circle Specification** dialog to accurately define size, position and other attributes. See “CAD Circle/Oval/Ellipse Specification Dialog” on page 1064.

Draw Circle About Center

Select **CAD> Circles**> **Circle About Center** to create a circle by dragging the radius out from the center point.

To draw a Circle About Center

1. Click the **Circle About Center** tool.
2. Click the screen to define the center.
3. Drag the radial distance and release the mouse button. If you are using **Object Snaps**, both the center point and the radius snap to any appropriate nearby CAD object, intersection or point.

Ovals

An **Oval** is a four-arc approximation of an ellipse. To draw an oval, select **CAD> Circles> Oval**, then click and drag.

Use the **CAD Oval Specification** dialog to accurately set the length and width of the oval and other attributes.

Ellipses

An **Ellipse** is a set of points with a constant combined distance from two points called foci. An ellipse looks like a stretched circle, or a circular surface viewed at an angle.

To draw an ellipse, select **CAD> Circles> Ellipse** and drag at an angle to define its maximum height and width.

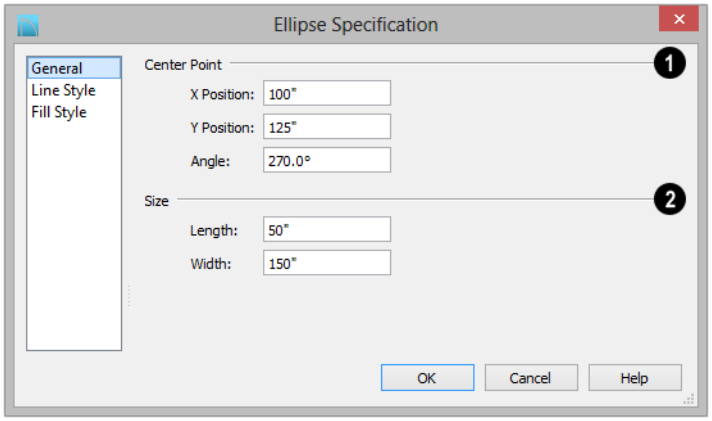
Use the **CAD Ellipse Specification** dialog to accurately set the length and width of the ellipse and other attributes.

CAD Circle/Oval/Ellipse Specification Dialog

Select a circle, oval or ellipse and click the **Open Object** edit button to open the **CAD Circle**, **Oval** or **Ellipse Specification** dialog.

The **CAD Circle**, **Oval** and **Ellipse Specification** dialogs are almost exactly the same. The **Oval** and **Ellipse Specification** dialogs have an additional setting for **Angle** on the General panel.

General Panel



1. Specify the position of the circle, oval or ellipse's **Center Point**.
   - Specify the **X Position** and **Y Position** of the center of the circle, oval or ellipse.
   - Specify an oval or ellipse's **Angle**. Not available for circles.
2. **Size** - Specify the **Length** and **Width** of an oval or ellipse, or the **Diameter** and **Radius** of a circle.

Line Style Panel

For information about the Line Style panel, see "Line Style Panel" on page 1053.

Fill Style Panel

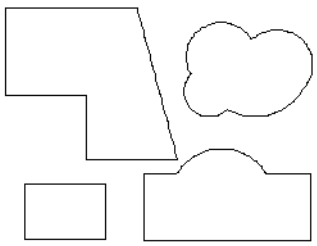
For information about the Fill Style panel, see "Fill Style Panel" on page 1067.

Polylines

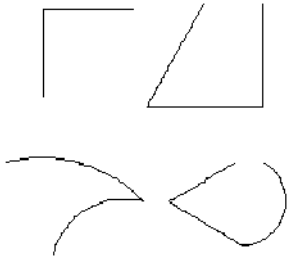
A polyline consists of two or more line and/or arc segments that are attached at their endpoints. Select **CAD> Boxes> Rectangular Polyline**, then click and drag from corner to corner to create a rectangular-shaped, closed polyline. A closed polyline measuring 2'x 2' (600 mm x 600 mm) can also be created by clicking once while the **Rectangular Polyline** tool is active.

When **Object Snaps** is enabled and **Edit Object Parts** is disabled, you can also create a polyline by drawing lines and/or arcs end-to-end, allowing the end of each new object to snap to the end of the previous one. Line- and arc-based objects will only snap together to form a polyline if they are on the same layer and share identical attributes such as color, line style, and arrow specifications.

If one end of the polyline is connected to the other, it becomes a closed polyline. Closed polylines can be assigned a fill pattern and/or turned into special 3D objects such as slabs or countertops that display in 3D views.

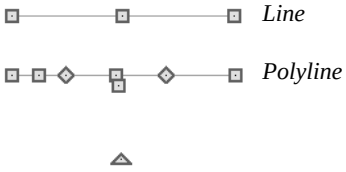


Closed Polylines



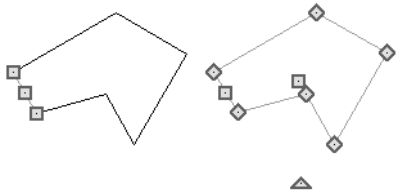
Open Polylines

Lines and polylines can be distinguished by the edit handles that display when you select each. A line displays an edit handle at each end and one in the middle. If more than three edit handles display, the object is a polyline.



Lines that appear connected to a polyline may prove to be unconnected when selected.

For example, the two polylines in the following image appear identical until their left edges are selected. The polyline on the left reveals that its left edge is not attached. In contrast, the left edge of the polyline on the right is part of the larger polyline unit.



Unconnected *Connected*

The **Close Polyline** edit tool can be used to connect the edges of an open polyline. This tool adds a segment between the two open ends, closing the gap between them. See “Using Close Polyline” on page 198.

Polylines can be copied, moved, reshaped, or resized as a single unit. Additionally, the individual segments can be edited. See “Edit Object Parts” on page 182.

Once created, polylines can be edited in a variety of ways. See “Editing Open Polyline Based Objects” on page 193 and “Editing Closed-Polyline Based Objects” on page 198.

Polyline Holes

Closed CAD Polylines and a variety of closed polyline-based architectural objects can contain one or more holes. See “Polyline Holes” on page 203.

Polyline Specification Dialog

Select an open polyline, closed polyline, spline, Sprinker polyline, or Electrical connection and click the **Open Object** edit button to open the **Polyline Specification** dialog.

Polyline Panel

The Polyline panel indicates the **Length/ Perimeter,** enclosed **Area**, and **Volume** of a selected polyline and is found in the specification dialogs for open- and closed-polyline-based objects throughout the program.

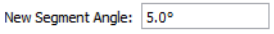
If the polyline is not closed, the Area and Volume are described as “Not closed”. The Volume of a 2D polyline will always be 0, even if it is closed.

If the selected object is a closed polyline and has any Holes in it, they will be subtracted from the **Area** value and, if applicable, from its **Volume**. See “Polyline Holes” on page 203.

If multiple objects of the same type are selected, their total Length/Perimeter, Area, and Volume are stated.

Spline Panel

The Spline panel has a single option and is only available when the selected object is a spline. See “Splines” on page 1073.



New Segment Angle - Specify the angle between line segments that are used to draw the spline. Specifying a smaller angle makes the spline smoother. Specify a larger angle to draw the spline faster.

Selected Line Panel

The Selected Line panel is available when the selected edge of the polyline is a line as opposed to an arc. See “Editing Line Based Objects” on page 184.

Moving the Start of a line segment moves the end of the previous connected line, if there is

one. Similarly, moving the End of a line segment moves the start of the next connected line, if there is one.

This panel is similar to the Line panel of the **Line Specification** dialog. See “Line Panel” on page 1052.

Selected Arc Panel

The Selected Arc panel is available when the selected segment of the polyline is an arc as opposed to a line.

This panel is similar to the Arc panel of the **Arc Specification** dialog. See “Arc Panel” on page 1061.

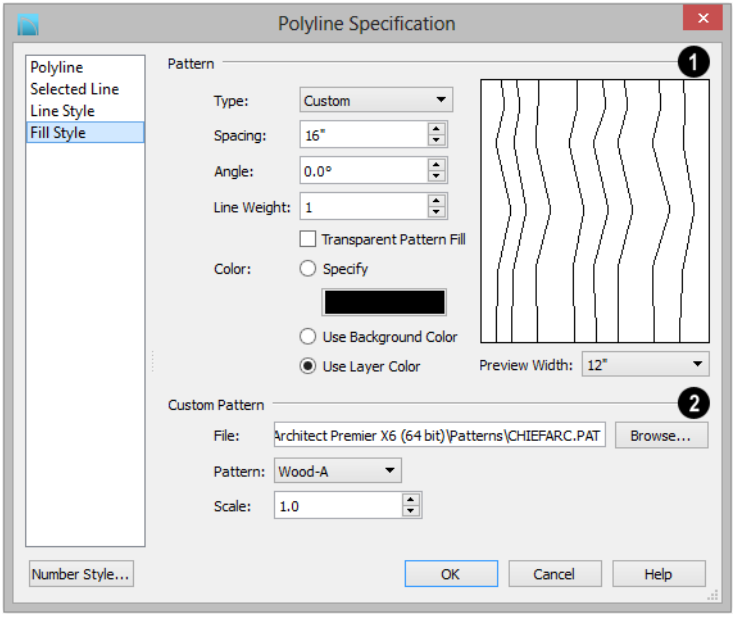
Line Style Panel

This panel is similar to the Line Style panel in the **Line Specification** dialog. See “Line Style Panel” on page 1053.

Fill Style Panel

The information on the Fill Style panel for closed polylines is similar to that for many other objects in the program, including closed CAD shapes and a variety of architectural objects.

The Fill Style panel is not available for Sprinkler Lines or Electrical Connections as these tools cannot be used to form closed shapes.



❶ Specify the characteristics of the selected object's fill **Pattern**. When "None" is the selected pattern Type, the rest of these settings are disabled.

- Choose a pattern **Type** from the drop-down list. If "Custom" is selected, the Custom Pattern options become available below.
- Specify the **Spacing** of the selected fill pattern. Not available for "Solid" fill.
- Specify the **Angle** of the selected fill pattern. Not available for "Solid" fill.
- Set the **Line Weight** for the selected fill pattern. Not available for "Solid" fill.
- Check **Transparent Fill** to make the spaces between fill pattern lines transparent, allowing any objects behind the fill pattern to be visible through it. Not available for "Solid" fill.
- **Specify** the **Color** of the lines that make up the fill pattern, or the fill color of "Solid" fill, by clicking the color bar. The layer color is used by default. See "Color Chooser/Select Color Dialog" on page 853.

Select **Use Background Color** to use the background color for solid fills or patterns.

Check **Use Layer Color** to have the fill pattern use the layer color for the pattern lines. If it is a solid fill, the fill color is the same as the layer's color.

A preview of the selected pattern displays to the right. As changes are made to the settings on this panel, the preview will update.

- Choose a **Preview Width** from the drop-down list. This value controls how large an area the preview represents. The selected value indicates the length of each side of the preview in actual plan inches (mm).

❷ The **Custom Pattern** section is only enabled when "Custom" is selected from the **Fill Pattern** list.

- Click the **Browse** button to open the **Custom Pattern File** dialog and select a pattern (**.pat**) file from the Chief Architect Patterns directory or a custom **.pat** file elsewhere on your computer. The selected **.pat** file's path name displays and can be edited in the text field.
- Select a **Pattern** from the drop-down list. This list includes all custom patterns available in the selected file.
- Specify a **Scale** for the selected Custom pattern. This setting affects all instances of the pattern in the current plan or layout file - not just in the selected object(s).

Arrow Panel

The Arrow panel is available for most open polylines and splines and is similar to the Arrow panel of the **Line Specification** dialog. See "Arrow Panel" on page 1055.

The Arrow panel is not available for closed polylines, Sprinkler Lines or Electrical Connections.

Box Tools

Select **CAD> Boxes** to access the Box Tools.

Rectangular Polyline

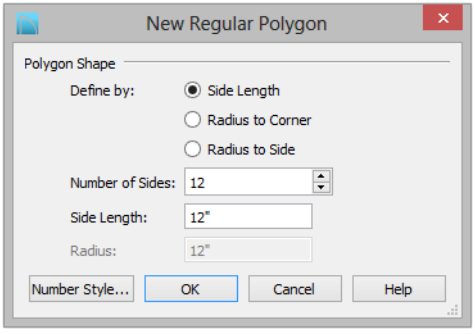
A **Rectangular Polyline** can be drawn in either of two ways:

- Click in the drawing area to place a 24” x 24” square polyline at that location.
- Click and drag from corner to corner to draw a rectangle of any size.

Once created, a rectangular polyline can be edited into any shape or converted to a 3D object. See “Editing Closed-Polyline Based Objects” on page 198.

Regular Polygon

You can draw a regular polygon based on the length of a side, or the length of the radius to a vertex or a side. Select your options in the **New Regular Polygon** dialog and click OK. Click in your plan to place the polygon.



The settings in this dialog are similar to those in the **Polygon Shaped Rooms** dialog. See “Polygon Shaped Rooms and Decks” on page 268.

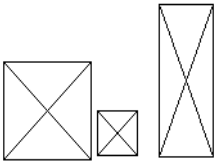
Box

Draw a 2D box from the midpoint of one side to the midpoint of the opposite side. The sides of a box can be resized, but a box always has four 90° corners.

Boxes have some unique editing behaviors. See “Editing Box-Based Objects” on page 203.

Cross Box

Use the **Cross Box** tool to create a 2D box with an X-shaped cross in the interior to represent framing in a cross section detail.

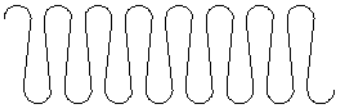


In cross section/elevation views, Cross Boxes are used to represent joists and rafters members that are perpendicular to and cut by the camera’s clip plane. See “Cross Section/ Elevation Views” on page 881.

Insulation

Use the **Insulation** tool to draw insulation in cross section details. Insulation Boxes are like 2D boxes and Cross Boxes; however, unlike these other types of

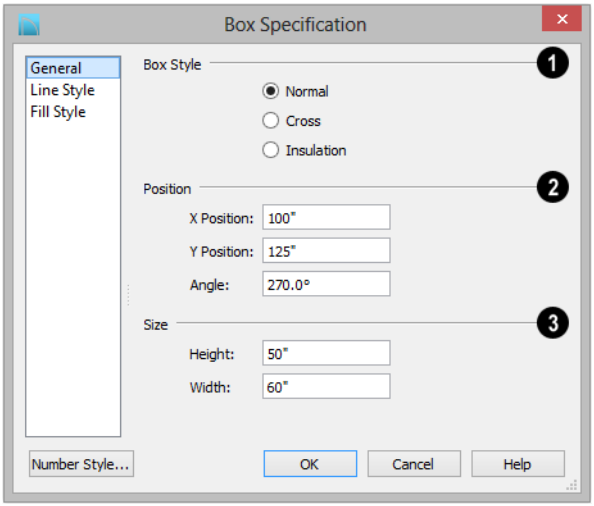
boxes, Insulation Boxes do not have perimeter lines: only the curves of the insulation pattern.



Box Specification Dialog

Select a CAD box, a framing box, a wall bridging box, a cross box, or insulation and click the **Open Object** edit button to open the **Box Specification** dialog. See “Box Tools” on page 1069.

General Panel



1 Specify a **Box Style**. Select **Normal** to specify a normal box, **Cross** to specify a cross box, or **Insulation** to specify an insulation box. If multiple CAD boxes are selected, “No Change” may display.

2 Define the **Position** of the box.

- Specify the **X Position** and **Y Position** of the center of the box.
- Specify the **Angle** of the box.

3 Define the **Size** of the box by specifying its **Height** and **Width**.

To find out which direction is the height and which is the width of a square box, select it. The triangular rotate handle is nearest the side you originally dragged from when creating the box. Changing the height changes the length of this side.

Line Style Panel

For information about the Line Style panel, see “Line Panel” on page 1052.

Fill Style Panel

For information about the Fill Style panel, see “Fill Style Panel” on page 1067.

Revision Clouds

The **Revision Cloud** tool allows you to draw a closed polyline with a series of arcs or bulges displaying along each edge. Select **CAD> Revision Cloud**, then click and drag to draw a rectangular shape with edges that display a series of arcs.

There are several additional ways to create a Revision Cloud:

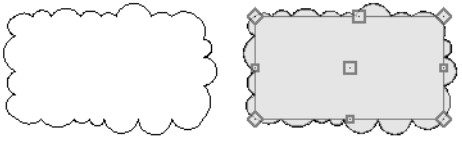
- Click and drag using the **Alternate** Alt edit mode to draw the first edge, then click to define the end points of subsequent edges. Click on the start point of the first edge to finish drawing the cloud.

  The **Revision Cloud** tool is still active until you select a different tool. See “Alternate” on page 177.
- Create Revision Clouds around one or more selected objects in floor plan view by clicking the **Revision Cloud(s) Around Objects** edit button. A separate revision cloud will be drawn around each selected object. This edit tool is also available for CAD objects, text, and dimensions in cross section/elevation views, but not for architectural objects.
- Convert a closed CAD polyline into a Revision Cloud. See “Convert Polyline Dialog” on page 236.

Revision Clouds are drawn based on the settings in the **Revision Cloud Defaults** dialog and are initially placed on the layer specified there. Unlike other CAD objects, they are not placed on the Current CAD Layer. See “Displaying CAD Objects” on page 1074.

Once created, Revision Clouds can be selected and edited much like other closed-polyline based objects. See “Editing Closed-Polyline Based Objects” on page 198.

Unlike other closed polylines, however, the edges of a Revision Cloud can only be seen when it is selected. When it is not selected, only the arcs along its perimeter are visible.



Not Selected
Only arcs are visible

Selected
Edges are also visible

The arcs along a Revision Cloud are not its actual edges and cannot be individually selected, although you can control their size and frequency.

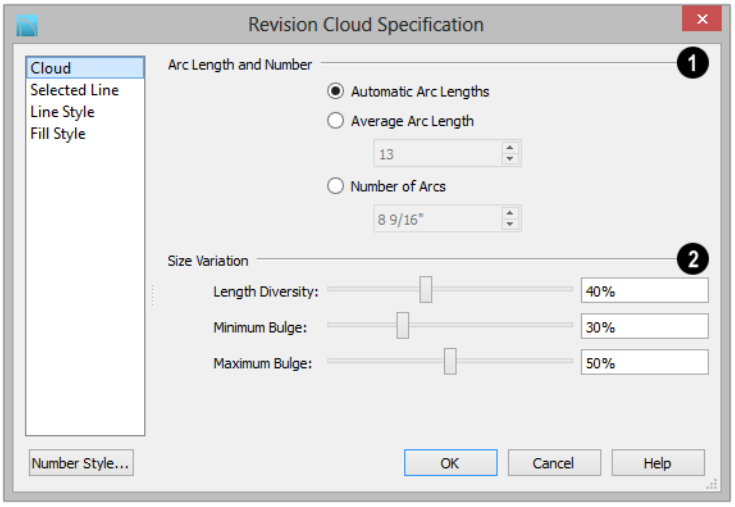
If you wish to individually edit the arcs, convert it to a plain polyline. See “Convert to Plain Polyline” on page 238.

Revision Cloud Specification Dialog

Select one or more Revision Clouds and click the **Open Object** edit button to open the **Revision Cloud Specification** dialog.

The settings in the **Revision Cloud Defaults** dialog are similar to those in the **Revision Cloud Specification** dialog, but determine the initial settings of revision clouds as they are drawn. See “CAD Defaults and Preferences” on page 1040.

Cloud Panel



1 Specify how the arcs on the selected revision cloud(s) are sized.

- Select **Automatic Arc Lengths** to have the program automatically size the selected cloud’s arcs.
- Select **Average Arc Length** to specify the selected cloud’s average arc length, which is measured along its chord.
- Select **Number of Arcs**, then specify the number of arcs on the selected cloud.

2 Use the slider bars or text fields to specify the **Size Variation** of the selected cloud’s arcs.

- Specify the **Length Diversity**, which is the maximum amount that a given arc’s length can deviate from the Average Arc Length, specified above.
- Specify the **Minimum Bulge**, which is the smallest amount that a given arc can extend out from its center. 0% allows arcs with a radius of 0, essentially flat lines; 50% allows 180° arcs, or half-circles; 100% only allows arcs of about 300°.

- Specify the **Maximum Bulge**, which is the largest amount that a given arc can extend out from its center. 100% allows arcs of about 300°;50% allows 180° arcs; 0% only allows arcs with a radius of 0.

Selected Line Panel

The Selected Line panel is available when the selected cloud edge is a line as opposed to an arc. See “Selected Edge” on page 181.

Moving the Start of a line segment moves the end of the previous connected line, if there is one. Similarly, moving the End of a line segment moves move the start of the next connected line, if there is one.

This panel is similar to the Line panel of the **Line Specification** dialog. See “Line Panel” on page 1052.

Selected Arc Panel

The Selected Arc panel is available when the selected segment of the cloud edge is an arc as opposed to a line.

This panel is similar to the Arc panel of the **Arc Specification** dialog. See “Arc Panel” on page 1061.

Line Style Panel

This panel is similar to the Line Style panel in the **Line Specification** dialog. See “Line Style Panel” on page 1053.

Fill Style Panel

This panel is similar to the Fill Style panel in the **Polyline Specification** dialog. See “Fill Style Panel” on page 1067.

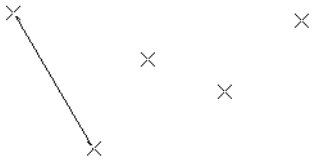
Splines

A Spline is a curve that passes smoothly through a set of points. Splines are typically used in situations where there is an irregular curve. A contour line is a typical example. Splines are useful wherever a free-flowing curve is needed.

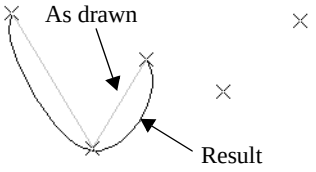
Once created, splines can be selected and edited. See “Editing Spline Based Objects” on page 206 and “Polyline Specification Dialog” on page 1066.

To use the Spline tool

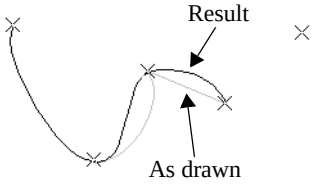
1. Select **CAD> Spline**  .
2. Draw the first spline segment just as you would a line. A single spline segment looks identical to a line. You may need to turn off **Angle Snaps**  to draw freely.



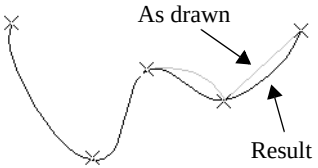
3. Draw the second segment from the end of the first at a different angle. **Object Snaps**  should be on to assure that new segments attach correctly to the ends of previous segments.



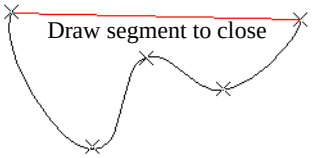
4. As soon as two straight spline segments connect end-to-end, the straight segments become a curve that passes through the endpoints defined by the original segments. Each point is called a vertex.
5. Draw a few more segments, connecting each to the free end of a previously drawn segment.



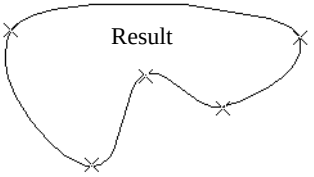
6. Notice as additional segments are drawn that the spline changes the curvature of the previous segment to create a continuous curve between the last three points.



7. Form a closed spline by drawing a segment between its two free ends.



8. The result is an irregular curve that flows smoothly through each vertex.



Spline-based objects will only snap together to form a single spline if they are on the same layer and share identical attributes such as color, line style, and arrow specifications.

You can also convert an open or closed polyline into a spline using the **Convert to Spline** edit tool. See “Convert to Spline” on page 231.

Displaying CAD Objects

As with architectural objects, the display of CAD objects is controlled in the **Layer Display Options** dialog. See “Layer Display Options Dialog” on page 148.

CAD objects can be drawn in floor plan view, CAD Details, layout, and cross section/elevation views. They are 2D objects only, though, so they cannot be seen in any view

other than the one they are drawn in and are never visible in camera views or overviews. See “Architectural vs CAD Objects” on page 158.

Current CAD Layer

When drawn, most CAD objects are automatically placed on the **Current CAD Layer**. In floor plan and cross section/elevation views, the name of this layer displays on the right side of the Status Bar at the bottom of the screen. See “The Status Bar” on page 39.

Initially, the “CAD, Default” layer is set as the Current CAD Layer, but this can be changed at any time in any of several ways:

- In the **CAD Defaults** dialog. See “CAD Defaults Dialog” on page 1040.
- By selecting **CAD> Current CAD Layer**  from the menu. See “Select Layer Dialog” on page 151.
- Activate a different Annotation Set. See “Annotation Sets” on page 78.

Revision Clouds are placed on the layer specified in the Revision Cloud Defaults dialog - not on the Current CAD Layer. See “Revision Clouds” on page 1071.

Changing the Current CAD Layer affects subsequently-drawn objects, but existing CAD objects are unaffected by the change. As a result, you can efficiently produce CAD drawings on multiple layers

Annotation Sets

The Current CAD Layer is among the items associated with Annotation Sets, which are groups of Saved Defaults that can be customized and activated for specific drawing tasks. See “Annotation Sets” on page 78.

Show Length and Angle

You can specify that line segment length and angle display along a CAD line, CAD arc, or along each segment of a CAD polyline. If the segment is an arc, its radius also displays. See “Line Style Panel” on page 1053.

The format of the length and angle can be specified in the **CAD Defaults** dialog. See “CAD Defaults Dialog” on page 1040.

Line length and angle indicators use the Text Style assigned to the layer that their CAD object is on. See “Text Styles” on page 1030.

Endcaps

Dashed lines often display endcaps, which are dashes of a particular length. You can specify the Printed Length of endcaps in the **Preferences** dialog. See “Line Properties Panel” on page 109.

Line Styles

A selection of line styles is available in the Library Browser which you can apply to both CAD and architectural objects. See “The Library” on page 797.

If you do not see a line style that meets your needs, you can create your own custom line styles.

Line Styles

The Line Styles library contains line styles that be applied to objects individually in their specification dialogs, by default in their defaults dialogs, or by layer in the **Layer Display Options** dialog. See “Line Style Panel” on page 1053 and “Layer Display Options Dialog” on page 148.

If an object has a line style that includes text, that text will use the font and transparency setting of the Text Style assigned to the layer that the object is on. See “Text Styles” on page 1030.

The **MEP Toolbar Configuration** includes a selection of toolbar buttons that access line styles from the library.

You can draw a line with a selected style directly from the library. See “Line Tools” on page 1048.

To draw with a line style from the library

1. Select a line style in the selection pane of the Library Browser. See “The Library Browser” on page 798.
2. Click and drag in a 2D view to produce a CAD line with the selected style.

You can also apply line styles to the **Place Library Object** button. See “Place Library Object Button” on page 818.

Additional line styles can be imported into the library.

To import line styles

1. Locate a line style and copy its file to a convenient location on your hard drive. These files have the extension **.lin**. Previous versions of Chief Architect used the **.dat** format, which also works.
2. Select **File> Import> Line Style Definitions**.
3. Browse to the location where you saved the **.lin** file.
4. Click **Open** to add the line style to the library.

In addition, you can create custom line styles for use in Chief Architect. See “Creating Line Styles” on page 1076.

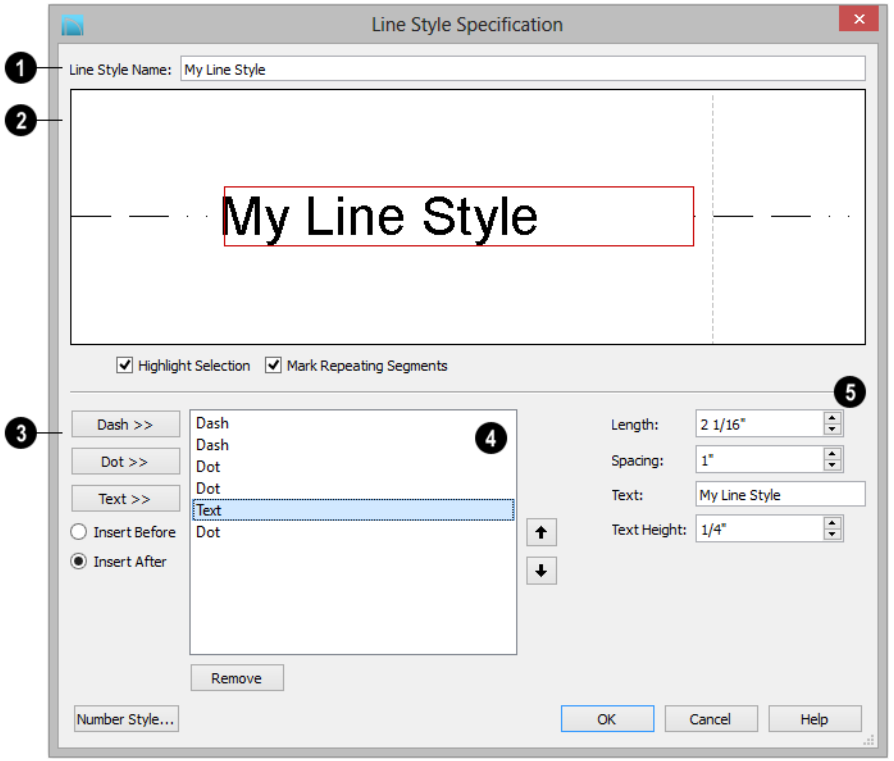
Creating Line Styles

The **Line Style Specification** dialog allows you to create new line styles for use in Chief Architect. To open this dialog, select **CAD> Lines> Create Line Style** or right-click on an unlocked library folder and select **New> Line Style**. See “Adding Library Content” on page 807.

You can also edit an existing line style by copying it to a User library, then right-clicking on it and selecting **Open** from the contextual menu. See “Using the Contextual Menus” on page 800.

Note: Line styles created using the Line Style Specification dialog are not retained in views exported to .dxf/.dwg. See “Exporting 2D DXF/DWG Files” on page 1144.

Line Style Specification Dialog



1 **Line Style Name** - Type the name of your custom line style in the text field. This is the name that will be listed in the Library Browser.

2 A preview diagram of the line style displays here.

- Click on a line style component in the preview to select it and edit it below.
- Check **Highlight Selection** to display a red rectangle around the currently selected line style component.
- Check **Mark Repeating Segments** to display vertical dashed lines indicating the division between the last component of one segment and the first component of the next in the preview diagram.

3 These options allow you to add new components to your line style.

- Click the **Dash** button to add a line segment to the line style.
- Click the **Dot** button to add a single point to the line style.
- Click the **Text** button to add a section of text to the line style.
- Select the **Insert Before** radio button to add the new component before the component that is currently selected.

- Select the **Insert After** radio button to add the new component after the currently selected component.

❹ A list of the line style's individual components displays here.

- Click on the name of a component in the list to select it. When **Highlight Selection** is checked, above, a red rectangle displays around this component in the preview diagram.
- Click the **Up** arrow to move the selected component up one position in the list and one position to the left in the preview diagram.
- Click the **Down** arrow to move the selected component down one position in the list and one position to the right in the preview diagram.
- Click the **Remove** button to remove the selected component from the line style.

❺ Control the appearance of the selected component.

- Specify the **Length** of a selected Dash or Text component. If the Length exceeds that required by a Text component, empty space is added on each side of the text.
- Specify the **Spacing** of the selected component by defining the length of an empty space to the component's right.
- Type the **Text** of a selected Text component.
- Specify the **Text Height** of a selected Text component. Each text component can have its own height.

Text inserted into a line style uses the font and transparency setting of the Text Style of the layer that it is on when assigned to an object. See "Text Styles" on page 1030.

CAD Blocks

A CAD block is a group of 2D CAD objects, text objects, and/or dimensions that have been grouped together so that they behave as a single object. A CAD block can also contain other CAD blocks: these are referred to as "nested".

CAD blocks can be imported into the program and can also be added to the library. See "Importing and Exporting" on page 1133.

Dimension lines can only be included in a CAD block if they reference objects that are also included in the block. They will continue to inherit their attributes from the saved Dimension Defaults that they were associated with before the CAD block was created. See "Dimension Defaults Dialog" on page 963.

With the exception of a few CAD-based objects such as slabs, custom countertops and framing, CAD blocks cannot contain architectural objects. Such objects can instead be blocked as architectural blocks. See "Architectural Blocks" on page 789.

CAD blocks can be selected, moved, rotated and resized much like CAD boxes. They can also be exploded into their individual parts. See "Editing Box-Based Objects" on page 203.

A list of the CAD blocks present in the current file is available in the **CAD Block Management** dialog. See “CAD Block Management” on page 1081.

Make CAD Block

To create a CAD block, group select two or more eligible objects, and then click the **Make CAD Block** edit button. See “Marquee Select” on page 183.

Eligible CAD block component objects include:

- CAD objects
- Text objects
- Dimension lines
- CAD blocks
- CAD-based objects such as Slabs, Framing, and Custom Countertops.

If the **Make CAD Block** edit button is not available, then the selection set may contain an object that is not an eligible CAD block component.

Explode CAD Block

When a block is selected, click the **Explode CAD Block** edit button to separate it into its individual components.

If a CAD block includes nested blocks, these nested blocks are not exploded.

When a selected CAD block is exploded, its definition is not affected: only the instance. See “CAD Block Management” on page 1081.

If a block has been resized so that its original aspect ratio is altered, it cannot be exploded. See “CAD Block Specification Dialog” on page 1082.

Select Insertion Point

By default, a CAD block has one insertion point located at its center. When placing the CAD block in a drawing or moving it to a new location, you can snap its insertion point to some other snap point for accuracy. See “Object Snaps” on page 160.

In some cases, it may be helpful to position a CAD block using an insertion point other than its center. For example, a CAD block representing a bolt or other fastener may be better positioned using the bottom center of its head or washer rather than its center. You can use the **Select Insertion Point**  edit button to replace the insertion point at the center with a different point.

To select an insertion point

1. Make sure that **Object Snaps**  are enabled, then select the CAD block.
2. Click the **Select Insertion Point**  edit button.
3. Click at the location where you would like the insertion point.

The available snap points on a CAD block are located around the perimeter of its bounding box. If you need a different point, place a temporary **CAD Point**  at that location, and then snap to it when creating the insertion point.

To access the snap points associated with a CAD block's subobjects, explode the block, place a CAD Point at the desired location, then block it again. The CAD Point can be snapped to, but will not be included in the block.

A CAD block's Move edit handle displays at the location of its insertion point. If you place an insertion point at the midpoint of one of the bounding box edges, the Move edit handle may display instead of the Resize handle. CAD blocks also rotate about their insertion point.

A CAD block's insertion point can also be specified relative to the blocks' center point in the **CAD Block Specification** dialog. See "General Panel" on page 1083.

Add to Library

Like a variety of other objects, CAD blocks can be added to the library for future use in other files. See "Adding Library Content" on page 807.

Many manufacturers provide CAD details in DXF/DWG format. These drawings can be imported, blocked and added to the library. See "Importing 2D Drawings" on page 1134.

If a CAD block contains an object on a custom layer or one that inherits properties from a Saved Dimension Default or Saved Text Style and that CAD block is placed from the library into a plan or layout file:

- That Saved Default, Text Style, or layer will be created in the destination file if it does not already exist.
- If a Saved Default, Text Style, or layer with the same name does exist in the destination file, the object will inherit its attributes from the existing settings.

See "Multiple Saved Defaults" on page 75 and "Layers" on page 143.

Custom 2D Symbols

In floor plan view, 3D symbols and images are represented by 2D CAD blocks.

You can specify the CAD block used by a symbol in its **Symbol Specification** dialog. See "2D Block Panel" on page 1162.

The CAD block used by images and plant images is specified in the **Image Specification** dialog. See "Image Panel" on page 1106.

Contemporary Desk with Computer

If you do not see an existing CAD block that suits your needs, you can create your own. For best results, follow these guidelines:

- The CAD block should have the same X and Y dimensions as the 3D symbol. An incorrect CAD block size will result in inconsistent placement of your symbol.
- It is usually best to build your CAD block with solid filled properties. This keeps background patterns and other objects from showing through. See "Fill Style Panel" on page 1067.
- So that your custom CAD block can be easily identified, it is best to give it a name in the **CAD Block Specification**

dialog. See “General Panel” on page 1083.

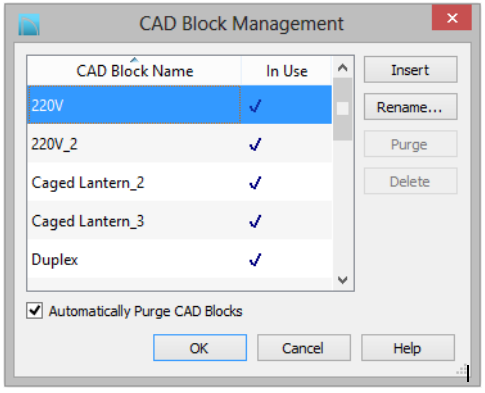
CAD blocks that have nested blocks within them cannot be assigned to 3D objects or to images.

CAD Block Management

A list of all CAD blocks present in the current plan or layout file can be accessed by selecting **CAD> CAD Block Management**.

CAD Block Management Dialog

An alphabetical list of all CAD block definitions saved in the current file displays here. CAD blocks definitions that currently have no instance anywhere in the file may also be included.



- Click on a **CAD Block Name** in the list to select it. The selected item is highlighted in blue.
- CAD Block definitions with at least one instance in the current file have a checkmark in the **In Use** column.
- Unused CAD block definitions with no instances in the current file have no check mark after their names.
- Select a block in the list, click the **Insert** button, then click in the current view to place an instance of the block into that view. Not available for blocks marked for deletion.
- Select a block from the list, then click **Rename** to specify a new name for it. Not available for blocks marked for deletion.
- Press the **Purge** button to delete any unused block definitions from the list.
- Select an unused block from the list and click the **Delete** button to remove it from the list.
- Check **Automatically Purge CAD Blocks** to remove unused CAD block definitions fromthe current file. When this is unchecked and all instances of a CAD block are removed from the current file, its definition will continue to be saved in the file and will be listed here.

Note: The CAD blocks associated with default electrical symbols cannot be deleted, even if no objects are present in the plan.

CAD Block Definition

There are two aspects to each CAD block:

- The block definition, which holds information about the block's component objects.
- The block instance, which holds information about its position, orientation, size, aspect ratio and other settings specific to an individual block placed in a file.

All instances of a given CAD block can have unique positions and sizes; however, the block definition that they share is the same regardless of the floor, view, or layout page that they display in.

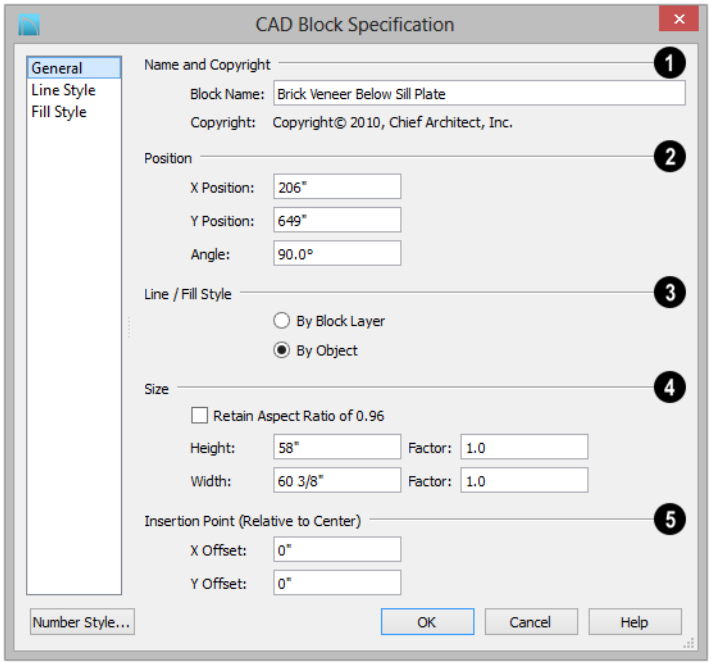
Copying a block instance to a completely different file also copies the block definition to that file.

If all instances of a CAD block are deleted from a file, its definition will remain saved with the file. To control file size, it is a good idea to regularly purge files of unused CAD blocks or have the program do it for you automatically. Both options are available in the **CAD Block Management** dialog.

CAD Block Specification Dialog

Select one or more CAD blocks and click the **Open Object** edit button to open the **CAD Block Specification** dialog.

General Panel



1 **Name and Copyright** - Specify the CAD Block's name. Not available when multiple CAD blocks are selected. If the CAD block has a copyright, information about it displays here.

This name is included in the **CAD Block Management** dialog and is used when you export the block via DXF/DWG, and is also imported with DXF/DWG block definitions.

Unlike other settings in this dialog, which affect only the selected instance of the block, changing the name modifies the actual block definition. See "CAD Block Management" on page 1081.

> ⚠ If you assign a name that is used by another CAD block in the current file, the definition of the other block is overwritten.

2 Specify the **Position** and angle of the selected CAD block instance.

- Specify the **X** and **Y Positions**, which are the coordinates of the CAD block's insertion point.
- Specify the **Angle** at which the CAD block instance is placed.

3 Specify the **Size** of the selected CAD block instance.

- Check **Retain Aspect Ratio of x** to retain the original ratio between the CAD block's Height and Width. This only

affects changes made in the dialog: it does not affect editing using the edit handles. If a block is resized so that its aspect ratio is changed, it cannot be exploded. See “Explode CAD Block” on page 1079.

- Specify the **Height** of the selected CAD block instance.
- Specify the **Height Factor**, which is the ratio of the current height of the CAD block instance to its original height.
- Specify the **Width** of the selected CAD block instance.
- Specify the **Width Factor**, which is the ratio of the current width of the CAD block instance to its original width.

Note: If the Height and Width Factors are set to different values, the selected CAD block instance cannot be exploded and ovals and arcs within it may appear distorted.

❹ Specify the location of the selected CAD block instance’s **Insertion Point (Relative to Center)**. These offset values use the CAD block instance’s coordinate system rather than that of the drawing area, so if the block is rotated, its insertion point will remain in the same location relative to the block itself. See “Select Insertion Point” on page 1079.

- Specify the **X Offset**, the horizontal distance of the insertion point relative to the CAD block’s center point.
- Specify the **Y Offset**, the vertical distance of the insertion point relative to the CAD block’s center point.

❺ **Line/Fill Style** - Specify how line and fill styles are applied to the selected CAD block instance.

- Select **By Block** to use the line and fill styles specified for the selected CAD block instance.
- Select **By Object** to use the line and fill styles of the individual objects in the selected CAD block instance.

New block instances use to By Block unless **Use ‘By Object’ when creating new CAD blocks** is checked in the **Preferences** dialog. See “CAD Panel” on page 108.

Line Style Panel

Many of the settings on the Line Style panel are only available if **By Block** is selected on the General panel of this dialog. For information about this panel, see “Line Style Panel” on page 1053.

Fill Style Panel

The settings on the Fill Style panel are only available if **By Block** is selected on the General panel of this dialog. For information about these settings, see “Fill Style Panel” on page 1067.

If **Always use “By Object” for CAD block fill style** is checked in the **Preferences** dialog, the settings on this panel are not used. See “CAD Panel” on page 108.

CAD Details

CAD Details are special view windows for drawing, saving and organizing 2D drawings associated with the current plan or layout file, such as site plans and cross section details. They are listed in the **CAD Detail Management** dialog as well as in the **Project Browser** and can be created in both locations, as well. See “Project Browser” on page 1093.

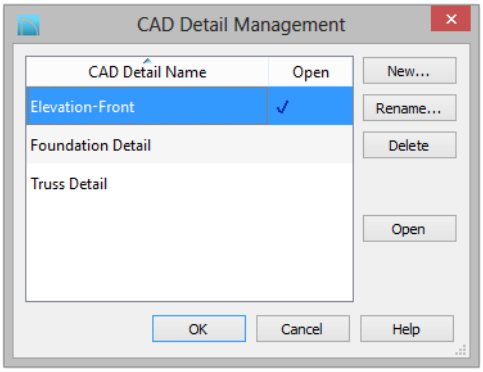
Like other views, CAD Details are saved in the file they are created in and can be printed. If saved with a plan file, a CAD Detail can also be sent to layout. See “Sending Views to Layout” on page 1208.

2D CAD information can be copied into or out of a CAD Detail window using the group select and copy functions. See “Copying and Pasting Objects” on page 168.

A new CAD Detail window can be created in the CAD Detail Management dialog as well as in the Project Browser. See “Project Browser” on page 1093.

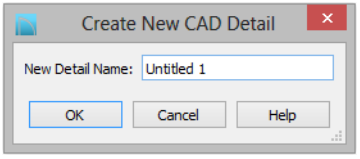
CAD Detail Management Dialog

Select **CAD> CAD Detail Management** to open the **CAD Detail Management** dialog.



An alphabetical list of all CAD Details in the current file displays here.

- Click on a **CAD Detail Name** in the list to select it. The selected item is highlighted in blue.
- If a CAD Detail is currently open, it will have a checkmark in the **Open** column.
- Click **New** to open the **Create New CAD Detail** dialog:



- Type a short, descriptive name for the CAD Detail, click **OK**, and a new CAD Detail view window opens.
- To rename an existing CAD Detail, select it and click **Rename**. Type a new name for it in the **Rename CAD Detail** dialog and click **OK**.
- To delete a CAD Detail from the list, select it and then click **Delete**. An auto-

matically generated Truss Detail cannot be deleted if there are trusses present in the current plan. See “Truss Details” on page 607.

- To open an existing CAD Detail, select it and click **Open**. CAD Details that are presently open have a checkmark to the right of their name.

Special CAD Details

Some CAD details are created automatically by the program. If any roof or floor trusses are present in your plan, the program creates a Truss Detail that includes an editable diagram of each truss type used and a count of each. See “Truss Details” on page 607.

When walls are framed using the **Build Framing** dialog, a Wall Detail is created for each wall. These details are listed in the **Project Browser** and are also accessible by selecting a wall and clicking the **Open Wall Detail** edit button. Wall Details are not listed in the **CAD Detail Management** dialog. See “The Library Browser” on page 798.

CAD Detail from View

CAD> CAD Detail from View converts the current view into a 2D CAD drawing composed of editable CAD objects.

CAD Detail from View is available in all line-based views, including floor plan view and any 3D view using the Vector View rendering technique. See “Rendered and Vector Views” on page 868.

Note: CAD Details created using CAD Detail from View are not dynamically linked to the original view. Changes made to the view do not update in the detail or vice versa.

A CAD Detail created using **CAD Detail from View** inherits a variety of settings from the original view, including:

- The layer set used by the original view. See “Layer Sets” on page 145.
- When the original view is a layout page with one or more layout boxes, a new “Layout Box Export Contents” layer is created for the contents of the layout boxes. See “Layout” on page 1203.
- The **Dimension Defaults** settings used by the original floor plan or cross section/elevation view. See “Dimension Defaults Dialog” on page 963.
- The rotation of the original view. See “Rotate Plan View” on page 233.
- Any text objects using a specific Text Style in the original view will maintain the same settings in the CAD Detail; however they will use a Custom Text Style.

Camera views and overviews do not have **Dimension Defaults**, so the defaults for floor plan view are inherited by CAD Details created from these types of views.

Plot Plans and Plan Footprints

Using the CAD Tools and conventional survey information, you can create an accurate plot plan in floor plan view or a CAD Detail. See “Creating a Plot Plan” on page 182 of the User’s Guide.

A plot plan can be sent to layout and included in working drawings. See “Floor Plan Views and CAD Details” on page 1211.

A plot plan can also be converted into a terrain perimeter, allowing you to add elevation data and accurately position buildings for 3D modeling of home and lot.

Plan Footprint

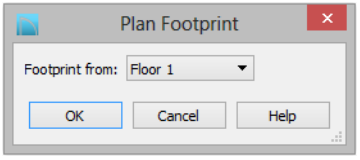
Select **CAD> Plan Footprint** to create a CAD object representing the building footprint in a CAD Detail window. Once the Plan Footprint appears in the detail window, you can control what information displays.

To create a Plan Footprint

1. Open the floor plan view of the plan you want to create a plan footprint from.
2. Select **CAD> Plan Footprint**. The program creates a new CAD Detail with the footprint of the current floor.
   - By default, this new CAD Detail uses the Plan Footprint layer set. You can control what displays in the footprint using the **Layer Display Options** dialog. See “Layer Sets” on page 145.
   - You can also control the appearance of a Plan Footprint in the **Plan Footprint Specification** dialog. See “Plan Footprint Specification Dialog” on page 1088.

To insert a plan footprint in a CAD Detail

1. Open the CAD Detail in which you want to insert a Plan Footprint.
2. Select **CAD> Plan Footprint**.
3. Select the floor to use from the drop-down list and click **OK**.



4. The floor plan appears in the CAD Detail window. Select **Window> Fill Window** to center the footprint on screen.
5. The footprint can be rotated and moved anywhere in the window.

If the model consists of several buildings, a footprint is created for each. Moving one footprint automatically adjusts all the footprints in order to maintain their relationship.

If you edit a plan using **Reverse Plan** or the **Edit Area** tools, the plan footprint updates automatically.

Layer Display Options

When you create a plan footprint by selecting **CAD> Plan Footprint** while in floor plan view, the default layer set for plan

footprints is used. See “Layer Set Defaults” on page 146.

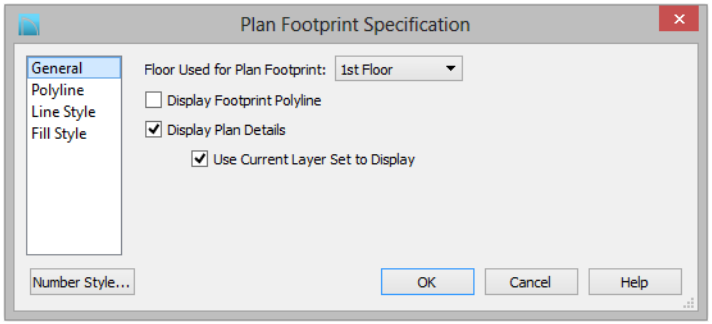
When a plan footprint is created by selecting **CAD> Plan Footprint** while in a CAD Detail, the current layer set is used. See “Layer Set Management” on page 147.

Regardless of the layer set in use, the appearance of objects in a Plan Footprint is controlled in the **Layer Display Options** dialog. Individual objects are on the same layer as in floor plan view, while the entire Plan Footprint is on the “CAD, Default” layer. See “Layer Display Options Dialog” on page 148.

Plan Footprint Specification Dialog

Select a plan footprint and click the **Open Object** edit button to open the **Plan Footprint Specification** dialog for the selected plan footprint.

General Panel



- Select the **Floor Used for Plan Footprint** from the drop-down list.
- Check **Display Footprint Polyline** to draw a polyline around the perimeter of the footprint. This polyline may not be visible if you also have **Display Plan Details** checked.This option must be chosen if you want to use a fill pattern or specify a line style.
- Check **Display Plan Details** to show the walls and other details as they appear in floor plan view.
- Check **Use Current Layer Set to Display** to control what displays in the footprint using Layer Display Options. If you uncheck this box, you lose control of what displays and the program makes the determination for you.

Polyline Panel

The Polyline panel states the plan footprint polyline’s **Length/Perimeter** and its **Area**. See “Polyline Panel” on page 1066.

Line Style Panel

For information about using the Line Style panel, see “Line Style Panel” on page 1053.

Fill Style Panel

For more information about the Fill Style panel, see “Fill Style Panel” on page 1067.

Chapter 34:

Project Management

The tools described in this chapter allow you to track the time you spend on plans, eliminating guesswork and making billing easier.

Others let you draw plans with ease and flexibility, run checks on plans so you can be more confident that they are free of code violations and common drawing errors, and consider loan calculations for your projects.

Chapter Contents

Time Tracker

The **Time Tracker** tool monitors the time spent on each Chief Architect file. You can enter start and end times each time a plan or layout file is opened and closed, or allow it to run automtically. The Time Tracker keeps a log that can be amended and edited as needed.

Select **Tools> Time Tracker**> **Start Time Logging** to begin logging time for the current plan or layout file. This creates a new entry. Opening a plan or layout automatically starts a time log if you set your preferences to do so. See “Time Tracker Panel” on page 106.

Select **Tools> Time Tracker> Stop Time Logging** to stop logging time for the current file. Only available when an entry is currently being recorded.

Select **Tools> Time Tracker> View Time Log** to open the **Time Log** dialog and view the time log for the current file.

Time Tracker information is stored with each file and can be printed or exported from the **Time Log** dialog.

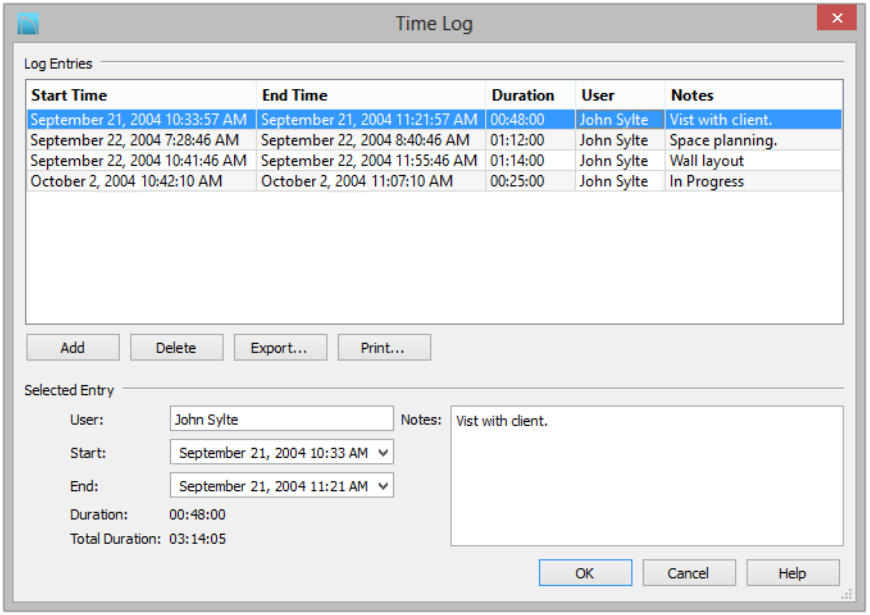
You can control how **Time Tracker** functions, including its timeout period, in the **Preferences** dialog. See “Time Tracker Panel” on page 106.

> Time Tracker logs times for each plan and layout file separately, even if they have the same project name or are saved in the same directory on your computer.

Time Log Dialog

The **Time Log** dialog displays all entries logged for the current plan or layout file. Entries can be added, deleted, edited, exported, and printed.

Select **Tools> Time Tracker> View Time Log** to open the **Time Log** dialog.



1. A summary of the entries displays here. Select an entry in the **Start Time** column and edit the details in the lower portion of the dialog.

2. Click **Add** to add a new entry using the current time.

- Select an entry and click **Delete** to remove it.

- Click **Export** to open the **Save Time Log** dialog and specify a name and destination for the exported file. Time log information can be exported as either a text (.txt) or Comma Separated Values (.csv) file.

If you have multiple plan and/or layout files associated with a particular project and wish to bill them together, export your Time Logs to another application and then combine them.

- Click **Print** to open the **Print** dialog and print the log.

❸ Select an entry and edit the **Start** and **End** times. Highlight the digits and enter new values or use the arrow keys on the keyboard. You can also click the drop-down list and select a date from the calendar. The start time must predate the end time.

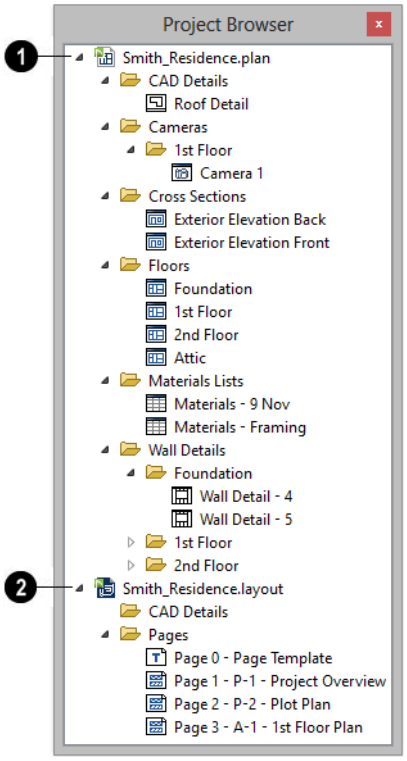
The **Duration** of the selected entry and the **Total Duration** display at right.

❹ Initially the **User** information is derived from the Chief Architect license registration information. By default, the **User** information prefills from the Default User Name on the Time Tracker panel of the **Preferences** dialog. You can select an entry and change the **User** here.

❺ Select an entry and add **Notes**.

Project Browser

The **Project Browser** is a convenient way access to all of the views and Materials Lists saved with an open plan and all of the pages saved in an open layout. You can dock it to the top, bottom, or side of the Chief Architect window or let it float freely. To open the **Project Browser**, select **View> Project Browser**. See “View and Side Windows” on page 33.



Undocked Project Browser

1 The name of an open plan file displays here.

- All **CAD Details** saved with the plan are listed here. Right-click on the folder to create a new CAD Detail. See “CAD Details” on page 1085.
- All **Cameras** and overviews saved with the plan are listed here by floor. See “3D View Tools” on page 877.
- All saved **Cross Sections** and elevation views are listed here.
- All **Floors** in the plan are listed here, including the Foundation and Attic. See “Multiple Floors” on page 425.
- All **Materials Lists** saved with the plan are listed here. See “Materials Lists” on page 1247.
- All **Wall Details** saved with the plan are listed here by floor. See “In Wall Detail Views” on page 589.

2 The name of an open layout file displays here. See “Layout Page Management” on page 1224.

- Any **CAD Details** saved with the layout are listed here. See “CAD Details” on page 1085.
- Any pages that are in use in an open layout display here, in numeric order. See “In the Project Browser” on page 1224.

Using the Contextual Menu

Items in the Project Browser can be accessed, modified and organized using the contextual menu. To access its contextual menu, simply right-click on an item. See “Contextual Menus” on page 36.

- All folder level items with contents in them have **Expand All** and **Collapse All** in their contextual menus.
- All views and pages can be accessed by selecting **Open View** or **Show Page**, respectively. You can also open a view or page by double-clicking on its name.
- All views aside from Floors and layout Pages can be **Renamed**.
- All views aside from Floors and layout Pages specified as Templates can be **Deleted**. See “Page Templates” on page 1204.
- New Pages can be **Inserted Before** or **After** a selected layout Page.

- A **New CAD Detail** can be created in the CAD Details folder.

Project Information

Information about the current project, the client it is drawn for, and the registered Chief Architect user can be inserted into text objects to improve organization and clarity in your documents. See “Text Macros” on page 1033.

Some of this information can also be included when exporting information to REScheck. See “Export to REScheck” on page 1157.

Designer Information

Designer Information is initially populated by registered user information, such as name and address, that was entered when the software installation was registered. This information is saved in the **Default Designer Information** dialog. which can be accessed through the **Preferences** dialog. See “Text Panel” on page 95.

If you would like to customize the Designer Information for a particular file, select **Tools> Project Information> Designer Information**  to open the **Designer Information** dialog.

Enter information in each text field exactly as you want it to display when the corresponding text macro is used. See “Text Macros” on page 1033.

Client Information

Select **Tools> Project Information> Client Information** to open the **Client Information** dialog. This dialog is similar to the **Designer Information** dialog, but its specifications apply to Client text macros. This information must be filled out seperately for plan files and layout files.

When entering new Client Information, begin by clicking the Clear Form button.

Registered User Information

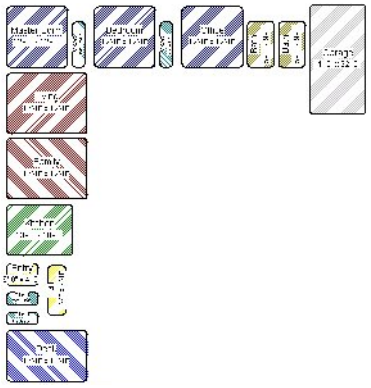
Registered User information corresponds to the information that was given when the current Chief Architect installation was registered and cannot be modified without reinstalling and registering the program.

Space Planning

The **Space Planning Assistant Tools** are a time-saving way to create a preliminary room-by-room design of a home without getting caught up in the details. Once the shape and layout of the rooms are finalized, the **Build House** tool converts them into a working plan that can be edited and detailed to completion.

Space Planning Assistant

Select **Tools> Space Planning> Space Planning**. The **Space Planning Assistant** leads you through a series of windows that gather information about the rooms you want to include in your house. When you click **Finish**, the selected room boxes display.



Room boxes can now be arranged into a floor plan.

Placing Room Boxes

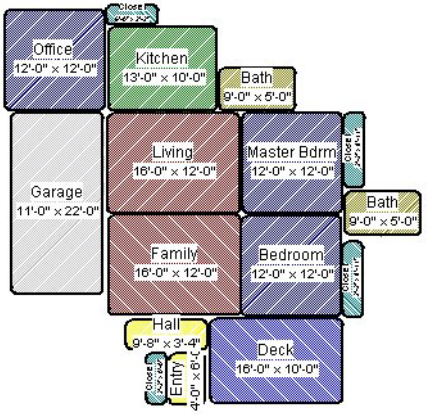
In addition or as an alternative to the room boxes created for you by the **Space Planning Assistant**, you can create your own room boxes. To do so, select **Tools> Space Planning**, then choose the desired room type from the submenu. Click in floor plan view to place a room box of the selected type at that location.

Displaying Room Boxes

Room boxes and their labels are located on the "Space Planning Boxes" layer. Space Planning Box labels use the Text Style assigned to that layer, as well. See "Displaying Objects" on page 144.

Editing Rooms

Once created, room boxes can be edited in a variety of ways.



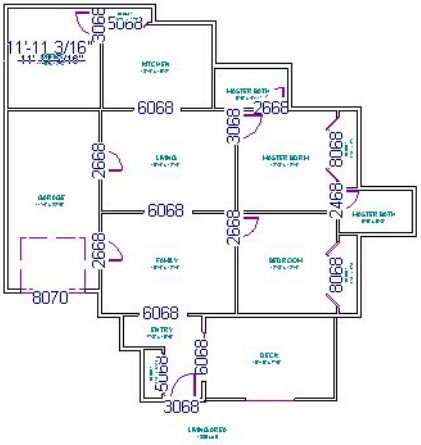
- Select room boxes using the **Select Objects** tool just like other objects in Chief Architect. See "Selecting Objects" on page 180.
- Room boxes can be resized, rotated, and rearranged. See "Editing Box-Based Objects" on page 203.
- Try to line up the rooms so that they are just touching. Excessive overlaps may cause your rooms to form incorrectly. Closets are the exception. You can overlap a room with a closet, or place in inside another room box.
- Rooms can be copied and pasted using the **Copy/Paste** edit button and deleted using the **Delete** edit button.
- Select **Tools> Space Planning** or click the **Space Planning Configuration**

button to access the room box tools and place additional room boxes in your plan. Select a tool and click in the plan to place a room box of that type.

- Select **Tools> Space Planning> Toggle Room Boxes** or click the toggle button to hide or show the room boxes.

Build House

When the rooms are in place, select **Tools> Space Planning> Build House** to convert the rooms into a building model. Walls and doors are inserted between the rooms that you arranged.



When you Build House, the "Space Planning Boxes" layer is automatically turned off. The room boxes that you created are not deleted, however.

Multiple Floors

If you specified a two-story house, follow these steps:

1. Edit and arrange the room boxes on Floor 1 as desired.
2. Select **Tools> Space Planning> Build House** tool to create the walls on the first floor.
3. Go **Up One Floor** and notice that the positions of the walls on Floor 1 display in red as a reference.
4. Arrange the rooms on Floor 2 as desired, using the reference display as a guide.
5. On the second floor, select **Tools> Space Planning> Build House** to complete the second floor.

Plan Check

Plan Check checks the floor of your plan currently shown on screen for anything that appears to violate common building practices. Plan Check may not find all the problems in a plan, but does it point out areas that may need improvement.

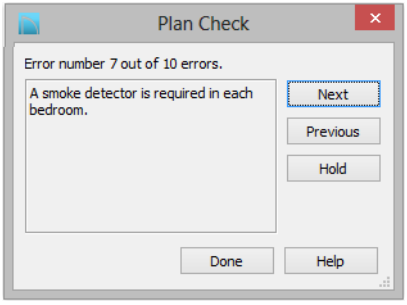
As your plan evolves, a number of things that may become incorrect can be fixed using

Plan Check. For example, doors that change from exterior to interior as you add new rooms are redrawn without the threshold line that marks an exterior door. A cabinet, fixture or furniture item that is against a wall because the wall was moved into it, as opposed to the item moving, are attached to the wall.

Disclaimer: The Plan Check feature in Chief Architect compares your plan with common building practices. Plan Check does not claim to detect all building code and design requirements. Always have your plans checked by a licensed professional before beginning actual construction.

To run Plan Check, select **Tools> Checks> Plan Check**.

Plan Check Dialog



1. The current error number, along with the total number of errors found.
2. A description of the current error displays here.
3. Options for navigating Plan Check are found on the right side.

- Click **Next** to ignore the current error and proceed to the next.
- Click **Previous** to return to the previous error.
- Click **Hold** to suspend Plan Check so you can fix the current error. Select **Tools> Checks> Plan Check** again and the check starts where it left off.
- Click **Done** to terminate Plan Check.

Potential plan errors found are usually highlighted in floor plan view. To ensure the highlighted item is on-screen, make sure the entire plan is shown in the window before you run **Plan Check**.

If this dialog obscures the floor plan view, drag its title bar to move it. It remembers its new position and displays there the next time **Plan Check** is run.

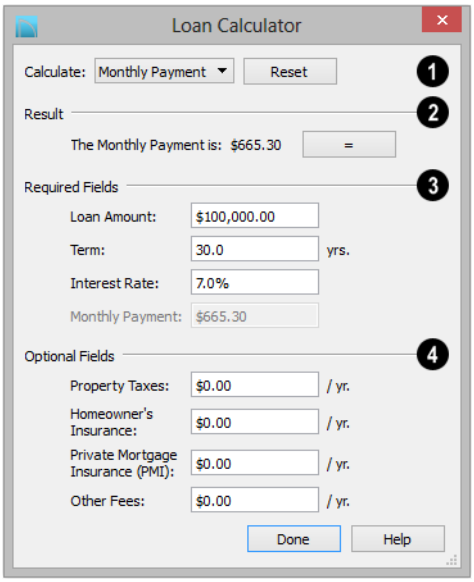
Room Types

Plan Check can do a much better job of checking for problems if it knows what the rooms in your plan are to be used for, so you should assign a Room Type to each room in your plan. See “Room Types” on page 329.

The first time **Plan Check** runs in a plan, it automatically assigns a room type to as many undesignated rooms as it can. Some rooms are determined by their size and shape, and others by their contents. For example, a shelf in a small room indicates a closet; a stove or refrigerator indicates a kitchen; or a bed, a bedroom. If the program cannot assign a room type, **Plan Check** highlights it and suggests that you do so manually.

Loan Calculator

Select **Tools> Loan Calculator** to open the **Loan Calculator** dialog. This dialog lets you calculate different aspects of a loan for the current plan based on a variety of parameters.



1 Specify what aspect of the loan you would like to calculate from the **Calculate** drop-down list:

- Monthly Payment
- Loan Amount
- Term
- Interest Rate

2 The calculation **Result**, based on the information you provide, displays here.

If you make changes to any of the fields in the dialog, click the = button to refresh the **Result**.

3 The **Required Fields** are the same as the options in the **Calculate** drop-down list. The option selected under **Calculate** will be inactive under **Required Fields**.

- Specify the desired **Loan Amount**.
- Specify the desired **Term**, in years.
- Specify the desired **Interest Rate**.
- Specify the desired **Monthly Payment**.

4 The **Optional Fields** allow you to include additional information in your loan calculation.

- Specify the expected **Property Taxes** per year.
- Specify the expected **Homeowner's Insurance** cost per year.
- Specify the expected **Private Mortgage Insurance (PMI)** cost per year.
- Specify the cost of any expected **Other Fees**.

When Monthly Payment is calculated, each Optional value is divided by twelve (months) and then added to the total payment.

When a Calculate option other than Monthly Payment is selected, these values are divided by twelve (months) and then subtracted from the specified Monthly Payment value. The result, which does not display, is then used to determine the Loan Amount, Term or Interest Rate.

Chapter 35:

Pictures, Images, and Walkthroughs

Chief Architect uses picture files in a variety of ways to enhance your drawings.

The Library Browser contains images of real world objects like plants and vehicles that can display in 3D views.

Picture files can also be imported into Chief Architect and shown in most views.

You can save any view using a variety of picture file formats. In addition, Chief Architect allows you to create virtual tours that can be saved as .**avi** files, shared with others, and played back later.

Chief Architect can also generate ray trace images from a Standard rendered view for photo-realistic rendering capabilities. Ray tracing is discussed in its own chapter. See “Rendering and Ray Tracing” on page 911.

Chapter Contents

Picture Files vs Pictures and Image Objects

In common computer language, picture files, pictures and images are more or less synonymous. In the Chief Architect environment, however, there are some notable differences between these terms.

In Chief Architect, a two dimensional image file such as a .bmp, .jpg, .gif, or .png is referred to as a picture file or an image file. Examples of these files are saved on most computers and can be opened in a variety of applications.

A Picture, on the other hand, is a file that has been imported into the program. Pictures can be imported into floor plan view, cross section/elevation views, CAD details, and layout pages. They are two-dimensional only and do not display in camera views or overviews.

An Image object is also based on a picture file, but it does display in both 2D and 3D views. Images have 3D width and height data associated with them, as well as a 2D symbol which displays in floor plan view.

Picture files have additional uses in Chief Architect, as well:

- Backdrops are picture files that display behind 3D views. See “3D Backdrops” on page 888.
- Textures are picture files that realistically represent materials in 3D views. See “About Materials” on page 828.

Images

Images add realistic detail to 3D views without adding many surfaces to the model. For example, a tree image with a single surface can be used instead of a tree symbol with thousands, dramatically improving realism without compromising drawing time.

There are two types of Images in Chief Architect:

- **Images**  rotate so that they always face the camera in 3D views.
- **Billboard Images**  do not rotate to face the camera. An example of when this may be useful is an image of a trellis, which might look awkward when facing a camera from a side view.

Placing Images

A selection of Images are available in the Library Browser. Select one and click in a floor plan view, camera view or overview to place it. See “Placing Library Objects” on page 814.

Creating Images

Custom Images can be added to the Library Browser, as well as created in plan files. Chief Architect can use any image with a ***.bmp**, ***.jpg**, ***.png**, ***.gif**, ***.tif**, ***.pcx**, or ***.tga** extension.

Generally, **.png** files work best as Images because this format has good compression

and allows for the Image to contain transparency information.

To create an Image in floor plan view

1. In floor plan view, select **Build> Image> Create Image** or **Billboard Image** to open the **Image Specification** dialog. See “Image Specification Dialog” on page 1105.
2. On the Image panel:
   - Click the **Browse** button to select a picture file on your computer or enter the path to a valid picture file in the **Image File** field.
   - Select a **2D Plan Symbol** from the drop-down list or click the **Library** button and select a CAD block or symbol from the library. The selected symbol represents the image in floor plan view. See “Image Panel” on page 1106.
   - Specify the **Size** and **Position** of the image.
3. Specify transparency information on the Transparency panel.
4. Click OK to close the **Image Specification** dialog.
5. Click to place the new Image in floor plan view.

To create an image in the Library Browser

1. In the Library Browser, right-click on an unlocked folder.
2. Select **New> Image** from the contextual menu to open the **Image Specification** dialog.
3. Browse to the image file you want to add and select your other options. See “Image Specification Dialog” on page 1105.
4. Once created, the image is listed in the library folder that you right-clicked on. Size and other data is saved.

Using Paste Image

You can also import an image by first copying it to the Windows Clipboard, then navigating to a Chief Architect window and selecting **Edit> Paste> Paste** from the menu, or by using the Screen Capture tools. See “Paste Special” on page 171 and “Creating Screen Captures” on page 1121.

Converting a Folder of Images

A folder of image files can be converted into Image objects and added to the library all at once, saving the effort of converting them individually.

To convert a folder of images

1. Select **Build> Image> Create Image Library** .
2. In the **Select an Image Folder** dialog, select a folder of image files to convert and click OK.
3. A new library with the same name and directory structure as the converted folder is listed in the Library Browser. Depending on the number of images in the folder, this may take a few moments.

Displaying Images

The display of images in floor plan and 3D views is controlled in the **Layer Display Options** dialog. See “Displaying Objects” on page 144.

Images are placed on the”Images” layer by default but can be moved to other layers once they have been created. See “Image Specification Dialog” on page 1105.

In Floor Plan View

In floor plan view, most images are typically represented by an Image  symbol. You can specify a different symbol to represent an image if you wish. See “Image Specification Dialog” on page 1105.

Any 2D CAD block from the library can represent an image object. If you do not see a CAD block that suits your needs, you can create one or import one from another application. See “Custom 2D Symbols” on page 1080.

In 3D Views

The actual picture associated with an image object can be seen in 3D views, as can any transparency data associated it. See “Image Specification Dialog” on page 1105.

Images can be set to either rotate so that they always face the camera or remain stationary, like billboards. See “Images” on page 1102.

You can choose to turn off the display of images in 3D views in the **Preferences** dialog. See “Render Panel” on page 122.

In Layout

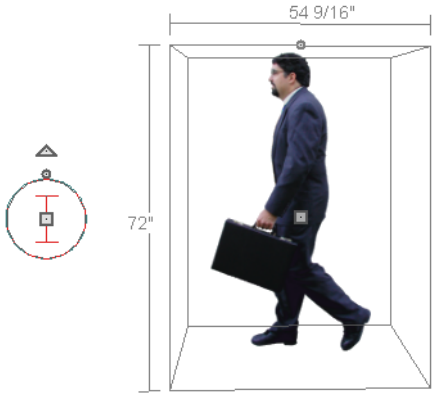
The symbols representing images in floor plan view, whether 2D symbols or CAD blocks, can display on a layout sheet and be printed or plotted. See “Sending Views to Layout” on page 1208.

Editing Images

Images can be selected in 2D and 3D views and edited using the edit handles, edit tools and the **Image Specification** dialog. See “Image Specification Dialog” on page 1105.

Using the Mouse

In floor plan view, a selected image rotated, moved, and resized. In 3D views, a selected image only has one edit handle: the circular Resize handle.



When an image is resized using the edit handle, its aspect ratio is retained and 2D symbol resizes proportionally.

Using the Edit Toolbar

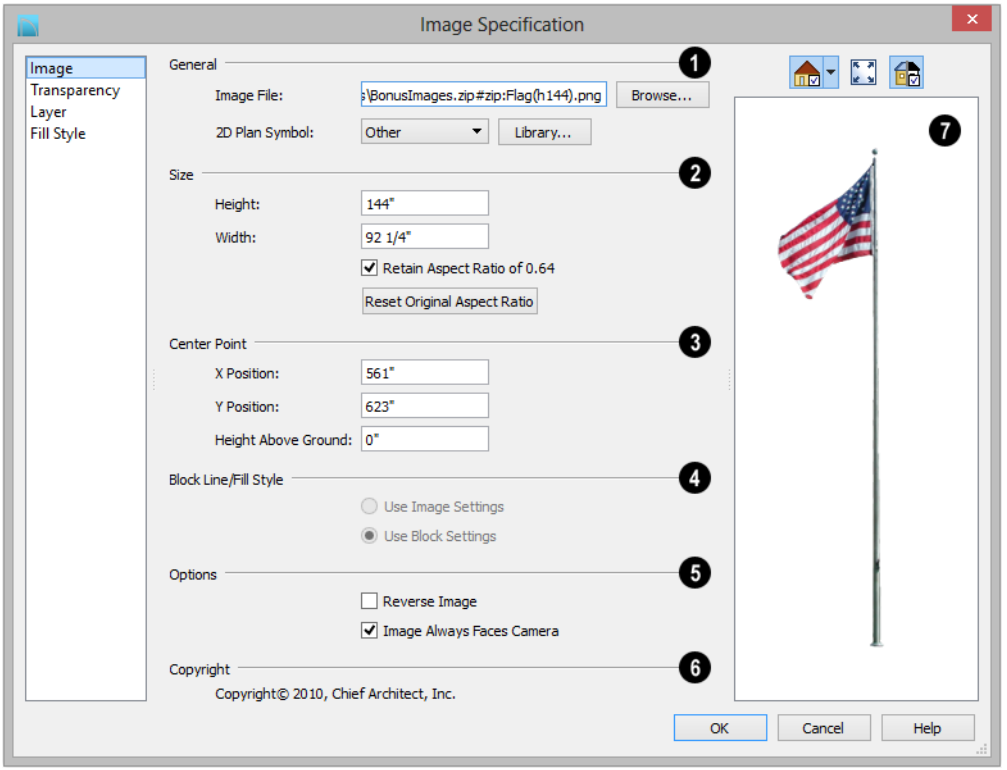
A selected image or images can be edited in a variety of ways using the buttons on the edit toolbar. As with most objects, images can be copied, replicated, moved, deleted, etc. See “The Edit Toolbar” on page 35.

Image Specification Dialog

Select an image and click the **Open Object** edit button to open the **Image Specification** dialog.

You can also open this dialog by right-clicking on an image in an unlocked library and selecting **Open** from the contextual menu.

Image Panel



1 **General** information about the selected Image can be specified here.

- The **Image File** associated with the Image can be specified. Click **Browse** to choose a file saved on your computer or type the file's full pathname in the text field.
- Select a **2D Plan Symbol** from the drop-down list to represent the Image in floor plan view. See "Displaying Images" on page 1104.
- Click the **Library** button to choose a CAD block from the library to act as the Image's 2D symbol. See "Select Library Object Dialog" on page 816.

Note: Images cannot be assigned a 2D Plan Symbol that contains a nested CAD block. See "CAD Blocks" on page 1078.

2 Specify the **Size** of the image as it displays in 3D views.

- Enter a **Height** for the selected image.
- Enter a **Width** for the selected image.
- Uncheck **Retain Aspect Ratio of X** if you would like to modify the Height or Width without affecting the other value.

If you do this, the image may appear distorted.
This checkbox does not affect editing performed outside of this dialog and is an action rather than a state: the next time you open this dialog, it will be checked.

- Click **Reset Original Aspect Ratio of** to reset the image's original aspect ratio and remove any distortion caused by resizing.

❸ Specify the location of the selected Image's **Center Point**.

- Position the selected image precisely by specifying its **X** and **Y Coordinates**.
- Specify the image's **Height Above Ground**.

❹ Specify the appearance of the **Block Line/Fill Style** of the image's 2D symbol in floor plan view. Only available when a CAD block from the library is selected as the image's 2D Plan Symbol.

- Select **Use Image Settings** to use the image's line style, which is set by layer, and its fill style, which is None (Transparent).
- Select **Use Block Settings** to use the 2D CAD block's line and fill styles. See "Custom 2D Symbols" on page 1080.

❺ **Options -**

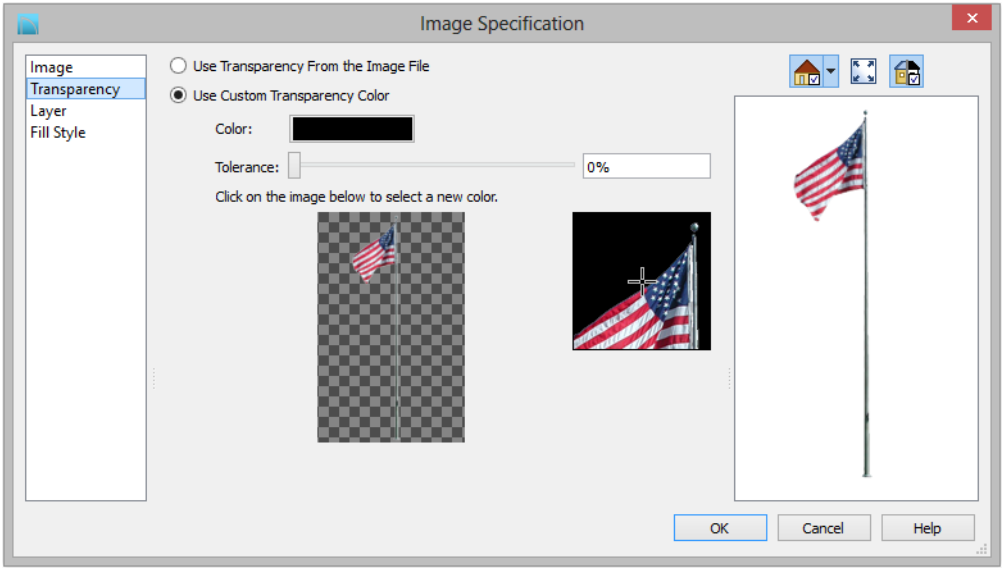
- Check **Reverse Image** to reflect the appearance of the image about an imaginary vertical line through its center.
- Check **Image Always Faces Camera** to prevent the image from rotating to face the camera in 3D views. This box is unchecked for Billboard Images. See "Images" on page 1102.

❻ Any **Copyright** information associated with the selected Image will be stated here.

❼ A preview of the selected Image displays here. The Glass House Rendering Techniques is not available for images. See "Dialog Preview Panes" on page 38.

Transparency Panel

The settings on the Transparency panel let you specify portions of the selected image as transparent.



- Click the **Use Transparency From The Image File** radio button to use any transparency data included in the image file.
- Click the **Use Custom Transparency Color** radio button to specify a color in the image to represent the transparency and enable the settings below.
- Click the Color box to select a color in the **Select Color** dialog. See “Color Chooser/Select Color Dialog” on page 853.
- Use the slide bar or enter a value to specify a level of **Tolerance** to be applied to colors that are almost the same as the specified transparency color.
- Move your pointer over the small preview image below. The pointer changes to an eyedropper and a magnified preview displays to its right. Click to select the color of the pixel your pointer is over as the Transparency color. The selected color displays in the Color box, below.
- A magnified preview of the area in the preview image above displays here, allowing for accurate pixel selection.

Note: The image preview will display its original orientation, even if Reverse Image is checked on the Image panel.

The Transparency Color

If the portion of the image file that you wish to use contains the transparency color, that part of the image also becomes transparent. If this happens, the image may appear partially disintegrated.

You may need to experiment to find the best transparency color and tolerance for the image.

Layer Panel

For information about the settings on this panel, see “Layer Panel” on page 152.

Fill Style Panel

For information about the settings on this panel, see “Fill Style Panel” on page 1067.

Pictures

A variety of picture file types can be imported into and exported out of Chief Architect.

Metafiles are also types of picture files that can be imported and exported. See “Metafiles” on page 1112.

Exporting Pictures

Using the **Export Picture** tool is similar to creating a screen capture of everything in the current Chief Architect view window. Pictures can be saved in various file formats and used in other applications.

Export Picture  is best suited for rendered and Ray Trace views. When exporting a line-based view, best results can be achieved by saving it as a Metafile. See “To export a metafile” on page 1113.

To export a picture

1. Open the view that you would like to export as a picture file.
2. Zoom, pan or otherwise adjust the view so that what you see on screen suits your needs. See “Displaying 3D Views” on page 885.
3. Select **File> Export> Picture (BMP, JPG, PNG)**  in any view to open the **Export Picture File** dialog. See “Exporting Files” on page 56.

The **Copy Region as Picture**  tool also lets you create a picture file based on the current view, but allows you to specify what portion of the view is exported. See “Copy Region as Picture” on page 1120.

The **Screen Capture** tools offer another way to create a picture file based on the current view. See “Creating Screen Captures” on page 1121.

Importing Pictures

Pictures can be imported into and displayed in floor plan view, cross section/elevation views, CAD Details, and layout pages. Pictures do not display in camera views or overviews. See “Displaying Pictures, Metafiles, and PDF Boxes” on page 1118.

There are several ways to import a Picture into Chief Architect:

- Select **File> Import> Picture (BMP, JPG, PNG)**  to open the **Import Picture File** dialog, which is a typical open file dialog. See “Importing Files” on page 61.
- Click and drag an image file from an operating system window into the Chief Architect window.

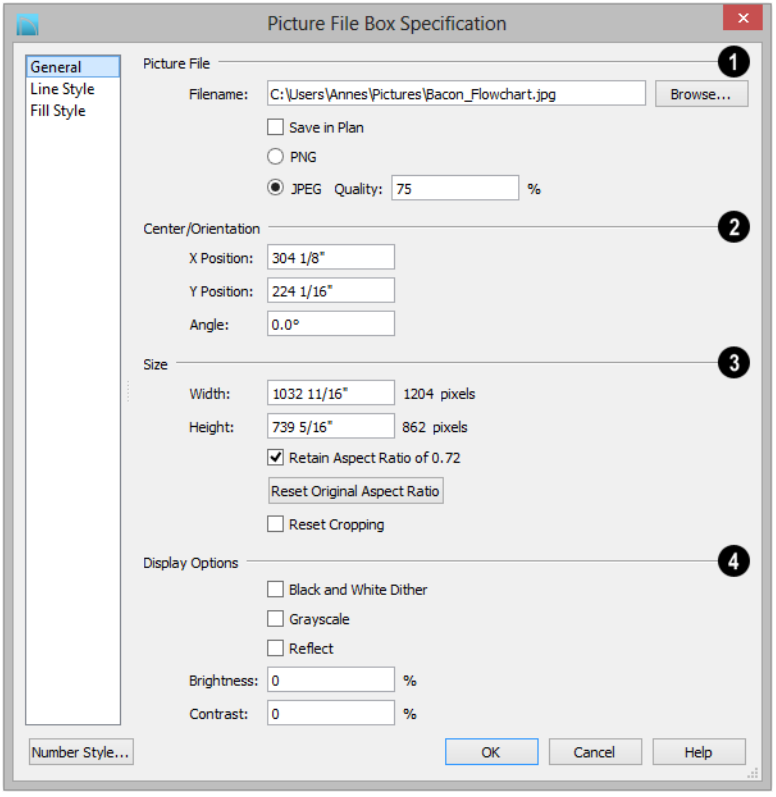
- In any application, copy an image to the Windows Clipboard, then select **Edit> Paste> Paste**  from the Chief Architect menu in an eligible view window. See “Paste Special” on page 171.
- Use the Screen Capture tools. See “Creating Screen Captures” on page 1121.

Note: Importing large, or multiple, Pictures into a plan or layout file can result in program slowness.

An imported picture is placed in the center of the current view. Once imported, pictures can be selected and edited. See “Editing Pictures, Metafiles, and PDF Boxes” on page 1118.

Picture File Box Specification Dialog

 Select an imported picture file and click the **Open Object** edit button to open the **Picture File Box Specification** dialog.



1 Information about the selected **Picture File** can be specified here.

- The **Filename** of the picture file displays here. Type a new pathname to change the picture assigned to this box.
- Click the **Browse** button to choose a new picture file or to relink to a missing file.
- Check **Save in Plan** to embed the picture in the plan or layout file. If a picture file is embedded, you do not need to include it when sending the plan or layout to a different computer.
- Click the radio button beside either **PNG** or **JPEG** to specify how to save the embedded picture data. Pictures that were originally **.jpg** or **.tga** files use the **JPEG** option by default; those that were **.gif** or **.png** files use the **PNG** option by default.
- Specify the picture's **Quality %**. when **JPEG** is selected. A lower value results in better compression, while a higher value reduces data loss.

Note: PNG is the better option for pictures of line drawings, text, or large areas of a single color. JPEG is the better option for photos.

❷ **Center/Orientation** - Specify the position of the selected Picture's center point and its angle. See "3D Drafting" on page 29.

- Specify the **X** and **Y Positions** of the picture box's center point relative to the absolute origin.
- Specify the **Angle** of the picture box relative to a horizontal line pointing towards the right hand side of the screen.

❸ Specify the **Size** of the picture in plan inches (mm).

- Specify the **Width** of the picture box. The original width in pixels displays to the right.
- Specify the **Height** of the picture box. The original height in pixels displays to the right.
- Uncheck **Retain Aspect Ratio of X** if you would like to modify the Height or Width without affecting the other value. If you do this, the picture may appear distorted.
  This checkbox does not affect editing performed outside of this dialog and is an action rather than a state: the next time you open this dialog, it will be checked.
- **Reset Original Aspect Ratio** - If the aspect ratio is changed, you can click this button to return the picture to its original aspect ratio.
- Check **Reset Cropping** to fill the extents of the selected Picture box with the image associated with it. If the box has been resized, the image may appear distorted. See "Editing Pictures, Metafiles, and PDF Boxes" on page 1118.

❹ A variety of **Display Options** are available.

- Check **Black and White Dither** to dither the selected picture file. Dithering creates a two tone effect that may produce better results when printed.
- Check **Grayscale** to replace the color in the selected picture with shades of gray.
- Check **Reflect** to reverse the image.
- Enter a degree of **Brightness** from 1 - 100%.
- Enter a degree of **Contrast** from 1 - 100%.

Line Style Panel

The settings on this panel are similar to those on the Line Style panel in numerous other dialogs, with one exception: check **Show Outline** to turn on the display of the picture's border polyline.

See "Line Style Panel" on page 1053.

Fill Style Panel

For information about using the Fill Style panel, see "Fill Style Panel" on page 1067.

Metafiles

A metafile (**.emf**, **.wmf**) is a special picture file format made up of vectors (lines) that allow the image to be rescaled without loss of quality. High resolution pictures of line-based views can be exported as a metafile.

Note: Metafiles are not supported in Mac operating systems and cannot be imported or exported in Mac versions of the software.

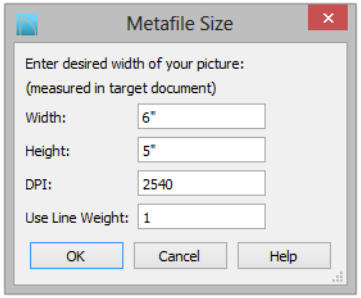
Exporting Metafiles

An enhanced metafile (**.emf**) can be exported from any line-based view: that is, from floor plan view, CAD Details, layout pages, and 3D Vector Views.

Only objects that display on screen are included in an exported metafile.

To export a metafile

1. Accurately position the view on screen.
2. Select **File> Export> Metafile (EMF)** .
3. Drag a marquee from corner to corner, defining the area that will included in the metafile.
4. Release the mouse to open the **Metafile Size** dialog.



5. Specify the desired **Width** or **Height** of the metafile. When one value is edited, the other changes to maintain its aspect ratio.

   Specify, too, the desired **Dots Per Inch (DPI)** for the metafile. A larger value results in a higher quality metafile, but also a larger file size.
6. When a metafile is exported from a 3D Vector View, you can also specify the printed thickness of lines in the view. To increase the printing line weight, type a larger number in the **Use Line Weight** field. See “Vector View” on page 928.

   Metafiles exported from floor plan view use the line weights defined in the **Layer Display Options** dialog. See “Layer Display Options Dialog” on page 148.
7. Click OK to open the **Export Metafile** dialog, which is a typical Save As dialog. See “Saving, Exporting, and Backing Up Files” on page 53.
8. Enter a name and location on your computer for the metafile, then click **Save**.

Importing Metafiles

Metafiles can be imported into and displayed in floor plan view, cross section/elevation views, CAD Details, and layout pages. Metafiles do not display in camera views or overviews. See “Displaying Pictures, Metafiles, and PDF Boxes” on page 1118.

There are two ways to import a metafile into Chief Architect:

- Select **File> Import> Metafile (EMF,WMF)** to open the **Import Metafile** dialog, which is a typical open file dialog. See “Importing Files” on page 61.

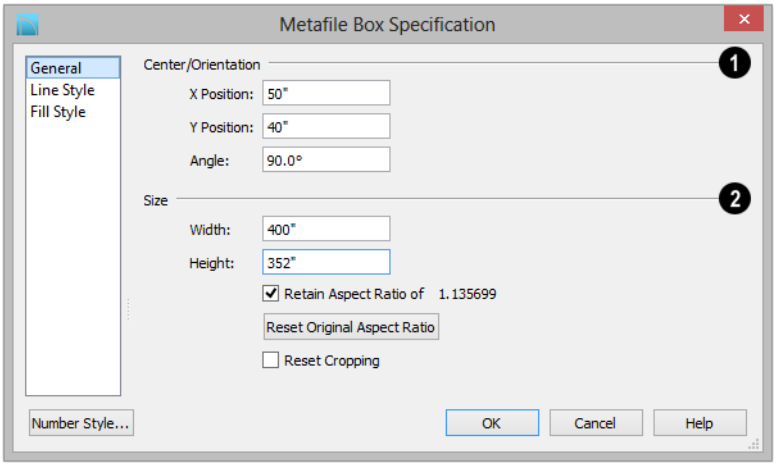
- You can also click and drag a metafile file from an operating system window into the Chief Architect window to import it.

An imported metafile is placed in the center of the current view. Once imported, metafiles can be selected and edited. See “Editing Pictures, Metafiles, and PDF Boxes” on page 1118.

Metafile Box Specification Dialog

Select an imported metafile and click the **Open Object** edit button to open the **Metafile Box Specification** dialog.

General Panel



1 **Center/Orientation** - Specify the position of the selected metafile’s center point and its angle. See “3D Drafting” on page 29.

- Specify the **X** and **Y Position** relative to the absolute origin.
- Specify the **Angle** of the metafile box relative to a horizontal line pointing towards the right hand side of the screen.

2 Specify the **Size** of the metafile in plan inches (mm).

- Specify the **Width** of the metafile box.
- Specify the **Height** of the metafile box.
- Uncheck **Retain Aspect Ratio of X** if you would like to modify the Height or Width without affecting the other value. If you do this, the metafile may appear distorted.
  This checkbox does not affect editing performed outside of this dialog and is an action rather than a state: the next time you open this dialog, it will be checked.

- **Reset Original Aspect Ratio** - If the aspect ratio is changed, you can click this button to return the picture to its original aspect ratio.
- Check **Reset Cropping** to fill the extents of the selected metafile box with the image associated with it. If the box has been resized, the image may appear distorted. See “Editing Pictures, Metafiles, and PDF Boxes” on page 1118.

Line Style Panel

The settings on this panel are similar to those on the Line Style panel in numerous other dialogs, with one exception. Check **Show Outline** to turn on the display of the picture’s border polyline.

See “Line Style Panel” on page 1053.

Fill Style Panel

For information about using the Fill Style panel, see “Fill Style Panel” on page 1067.

PDF Files

Portable Document Format (**.pdf**) files are a special type of file that can be viewed on nearly any computer and can include a wide variety of visual information.

You can import **.pdf** files into Chief Architect in floor plan view, cross section/ elevation views. CAD Details, and in layout. Once imported, PDF boxes behave and can be edited similar to imported pictures and metafiles. See “Editing Pictures, Metafiles, and PDF Boxes” on page 1118.

Some **.pdf** files can contain both 2D and 3D information; however, Chief Architect can only support 2D data in an imported **.pdf** file. When a 3D **.pdf** file is imported, it may display text, a static image of the 3D model, or it may not import at all.

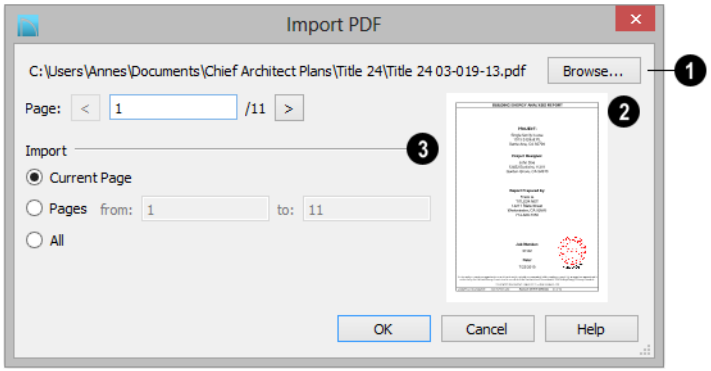
You can also create a 2D **.pdf** from any view by printing. See “Printing to a PDF File” on page 1190.

Note: Importing large, or multiple, .pdf files into a plan or layout file can result in program slowness.

Importing PDF Files

To import a **.pdf** file, select **File> Import> Import PDF**.

You can also import a **.pdf** file by dragging it from an operating system window into the Chief Architect window.



1 The full pathname of the **.pdf** file displays here. If the pathname is not that of a valid **.pdf** file, this text will display in red.

- Click the **Browse** button to choose a new **.pdf** file or to relink to a missing file.
- Specify the **Page** of the **.pdf** file that displays in the preview on the right. Type a page number in the text field or use the arrow buttons to browse the pages sequentially.

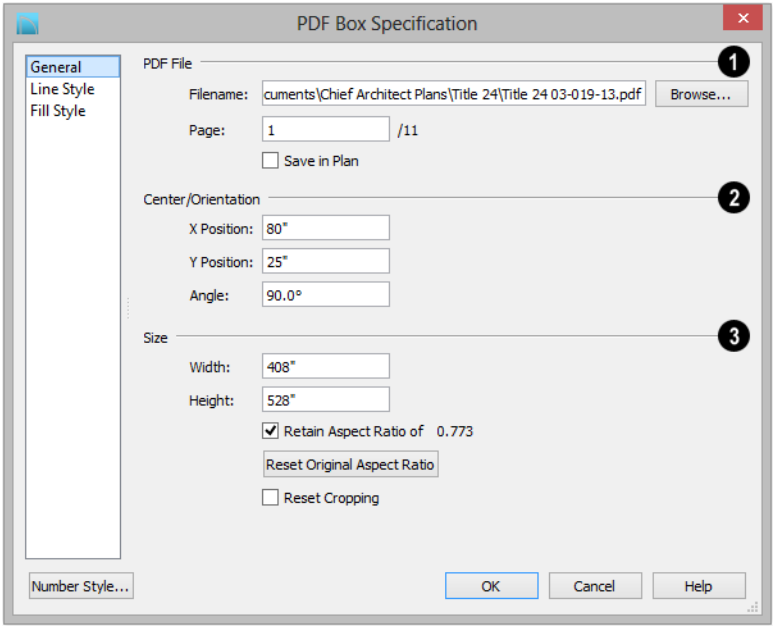
2 A preview of the page selected above displays here.

3 Specify how much of the **.pdf** file you wish to **Import**. When multiple pages are imported, a separate PDF box is created for each one.

- Select **Current Page** to import only the page specified above and shown in the preview to the right.
- Select **Pages**, then specify the starting page in the **From** field and the ending pgae in the **To** field.
- Select **All** to import the entire **.pdf** file.

PDF Box Specification Dialog

Select an imported PDF box and click the **Open Object** edit button to open the **PDF Box Specification** dialog.



1 The full **Filename** of the **.pdf** file displays here. Type a new name to associate the selected PDF box with a different **.pdf** file.

- Click the **Browse** button to choose a new **.pdf** file or to relink to a missing file.
- Specify the **Page** of the **.pdf** file that displays in the selected PDF box.
- Check **Save in Plan** to embed the **.pdf** in the plan or layout file. If a **.pdf** is embedded in a file, you do not need to include it when sending the file to a different computer.

2 **Center/Orientation** - Specify the position of the selected PDF box's center point and its angle. See "3D Drafting" on page 29.

- Specify the **X** and **Y Positions** of the PDF box's center point relative to the absolute origin.
- Specify the **Angle** of the PDF box relative to an imaginary horizontal line pointing towards the right hand side of the view window.

3 Specify the **Size** of the PDF box in plan inches (mm).

- Specify the **Width** of the PDF box.
- Specify the **Height** of the PDF box.
- Uncheck **Retain Aspect Ratio of X** if you would like to modify the Height or Width without affecting the other value. If you do this, the PDF box may appear distorted.
  This checkbox does not affect editing performed outside of this dialog and is an

action rather than a state: the next time you open this dialog, it will be checked.

- **Reset Original Aspect Ratio** - If the aspect ratio is changed, you can click this button to return the picture to its original aspect ratio.
- Check **Reset Cropping** to fill the extents of the selected PDF box with the image associated with it. If the box has been resized, the image may appear distorted. See “Editing Pictures, Metafiles, and PDF Boxes” on page 1118.

Line Style Panel

The settings on this panel are similar to those on the Line Style panel in numerous other dialogs, with one exception: Check the **Show Outline** box to turn on the display of the PDF box’s border polyline.

See “Line Style Panel” on page 1053.

Fill Style Panel

For information about using the Fill Style panel, see “Fill Style Panel” on page 1067.

Displaying Pictures, Metafiles, and PDF Boxes

The display of Pictures, Metafiles, and PDF Boxes is controlled in the **Layer Display Options** dialog. See “Displaying Objects” on page 144.

Pictures, Metafiles, and PDF Boxes are placed on the Current CAD Layer by default; but once imported, they can be moved to other layers. See “Image Specification Dialog” on page 1105.

Pictures, Metafiles, and PDF Boxes can be imported into and displayed in floor plan view, cross section/elevation views, CAD Details, and layout pages. A Picture, Metafile, or PDF Box can only be seen in the view where it was imported and cannot be imported into a camera view or overview.

Drawing Groups

By default, imported pictures are placed in the Back Drawing Group, and imported metafiles and PDF Boxes are placed in the Default Drawing Group. Once imported, they can be moved to a different group. See “Drawing Groups” on page 215.

In Layout

Pictures, metafiles, and PDF boxes are included when a view is sent to layout, and can also be imported directly onto a layout page. See “Pictures, Metafiles, and PDFs in Layout” on page 1207.

Editing Pictures, Metafiles, and PDF Boxes

Pictures, Metafiles, and PDF Boxes can be selected and edited using the edit handles, the edit toolbar, and their specification dialogs.

Imported pictures, metafiles, and PDFs are placed on the Current CAD Layer by default; but once imported, these objects can be

placed on any layer. See “Layers” on page 143.

In the Specification Dialog

Pictures, Metafiles, and PDF Boxes can be customized in their specification dialog. See:

- “Picture File Box Specification Dialog” on page 1110
- “Metafile Box Specification Dialog” on page 1114
- “PDF Box Specification Dialog” on page 1116

Using the Mouse

Pictures, Metafiles, and PDF Boxes have edit handles similar to other box-based objects. See “Editing Box-Based Objects” on page 203.

- The corner Resize handles behave do not behave the same for Pictures, Metafiles, and PDF Boxes as they do for CAD boxes, however. If you drag a corner handle of one of these objects while the Default Edit Behavior is active, its contents will resize and height to width ratio will be retained.
- If you drag an Extend handle along a Picture, Metafile, or PDF Box’s edge, the contents of the box will not be resized. If you resize it larger, an empty space will be created between that edge and the contents; if you resize it smaller, the contents will be cropped.

Using Dimensions

Pictures, Metafiles, and PDF Boxes can be relocated relative to other objects with precision using dimensions.

To avoid changing the selected object’s aspect ratio, make sure you choose to move the entire object rather than the selected edge. See “Moving Objects Using Dimensions” on page 989.

Using the Edit Tools

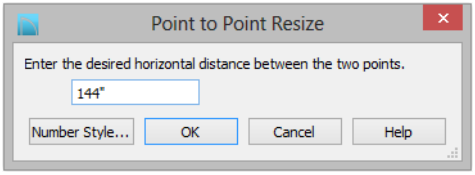
A selected Picture, Metafile, or PDF Box can be edited in a variety of ways using the buttons on the edit toolbar. See “The Edit Toolbar” on page 35.

Point to Point Resize

A selected picture, metafile, or PDF box can be resized in either the X or Y direction with the **Point to Point Resize** edit tool.

To use the Point to Point Resize tool

1. Select a picture box, metafile box, or PDF box.
2. Click the **Point to Point Resize**  edit button.
3. Click on two points in the selected object’s box area that have a known distance between them.
4. After you click at the second point, the **Point to Point Resize** dialog opens showing the current distance between the points.



5. Enter a new dimension that matches the desired distance between the points.

6. Click **OK** to resize the picture, metafile, or pdf.

Resize Factor

With a bit of calculation, an imported picture, metafile,or PDF boxcan be resized to scale using the **Transform/Replicate Object** dialog. Once resized, the information in the object box can be traced using Chief Architect's drawing tools and then deleted.


It is a good idea to delete a resized picture after it is traced to help avoid program slowness and limit your plan or layout file's size.

To calculate the Resize Factor

1. Find two items in the imported object that are separated by a known horizontal or vertical distance, such as two walls or plot lines.
2. Draw parallel CAD lines on top of these two items. See "The CAD Drawing Tools" on page 1043.
3. Find the distance between the CAD lines. See "The Manually Drawn Dimension Tools" on page 977.
4. The Resize Factor for the image is the distance described in the picture divided by the distance between the CAD lines.

For example, if the items are supposed to be 10 feet apart on the picture, but the distance between the two CAD lines drawn on them is only 2 feet, you need to set the Resize Factor for the picture to 5. (10' divided by 2' equals 5). When the picture is 5 times the original size, the items on the picture are at the actual scale shown on the picture.

5. Select the picture and click the **Transform/Replicate Object** edit button.
6. In the **Transform/Replicate Object** dialog, select the **Resize Factor** check box.
7. Enter the Resize Factor calculated above, then click **OK**.

Copy Region as Picture

You can copy any portion of the screen and save it as a picture file using the **Copy Region as Picture** tool. See "Exporting Pictures" on page 1109.

To use Copy Region as Picture

1. Open the view that you would like to copy all or part of as a picture.
2. Select **Edit> Copy Region as Picture**. Your pointer displays a marquee icon.
3. Click and drag a rectangular selection marquee around the desired region.
4. The selection is copied to the Windows clipboard.
   - If the current view is vector-based, the **Metafile Size** dialog displays because metafiles are better suited for line-based pictures. See "Metafiles" on page 1112.

- If the current view is a rendered or Ray Trace view, the region is sent directly to the Windows clipboard.

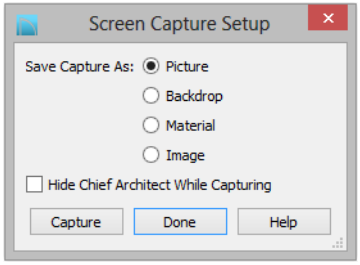
5. From there, the picture can be pasted into another view or another program.

Creating Screen Captures

Use the **Screen Capture** tools to add images, backdrops, or materials to the Chief Architect Library or to create picture objects. You can capture screens in Chief Architect or other applications.

Begin by selecting **Tools> Screen Capture> Screen Capture Setup** to open the **Screen Capture Setup** dialog.

Screen Capture Setup Dialog



Save Capture As - Specify in what form you would like the screen capture to be saved.

- If you select **Backdrop** as the capture type, the program will add the capture to the library, and it will display in the library preview panes. See “3D Backdrops” on page 888.
- If you select **Image** as the capture type, the program will add the capture to the library as an image object. The image will display in the preview panes and will be selected. Click in the plan to place it. See “Images” on page 1102.
- If you select **Material** as the capture type, the new material will be added to the My Materials library category and will be shown in the preview panes. Use the **Material Painter** to apply the material. See “The Material Painter” on page 828.
- If you choose **Picture** as the capture type, the picture displays on screen in Chief Architect. See “Pictures” on page 1109.
- Check **Hide Chief Architect While Capturing** to minimize the program window so you can capture an image in another application.
- Click **Capture** to proceed with a screen capture and click **Done** when you are finished. The **Screen Capture Setup** settings are saved between program sessions and are used in all files.

To create a screen capture

1. Select **Tools> Screen Capture> Capture Screen**, or click the **Capture** button in the **Screen Capture Setup** dialog.
2. The mouse pointer displays a cross hairs icon when the **Screen Capture** tool is active. Move it to the window that you want to capture from. This can be in Chief Architect, a web page, or another program.

3. Click and drag a rectangular marquee to capture the area within the marquee.
4. A captured Picture will be placed immediately in the Chief Architect drawing area. Captured Backdrops, Materials, and Images are saved in the User Catalog of the Library Browser.

To change the name of a captured backdrop, image, or material, right-click on it's name in the library list, select **Rename**, and type in the new name. See "Renaming Library Items" on page 810.

3D Backdrops

A backdrop is an image, typically of an exterior view, that displays in the background of 3D views to help place the model into a realistic setting and add a sense of perspective.

The backdrop in this view includes hills and clouds

A selection of backdrop images is available in the Library Browser. You can also create your own backdrop images and import them into the library. See "Adding New Backdrops" on page 808.

Backdrops automatically adjust to fit each view window, so they look best when they are created with a height to width ratio that is similar to the window you are working in.

You can create digital photos of a building site for use as a backdrop.

Specifying a Backdrop

You can select a backdrop image for a plan from the library in either of two ways:

- In any view, select **3D> 3D View Defaults**  to open the **3D View Defaults** dialog. See "Backdrop Panel" on page 875.
- In a 3D view, open the Library Browser. Select a Backdrop image, then move your mouse pointer  into the view window. Click anywhere in the view to apply the selected backdrop.

Regardless of how it is selected, only one backdrop can be used in a plan at any given time. If a backdrop is not applied, Chief Architect applies a background color.

You can specify which view types and Rendering Techniques use the selected backdrop in the **3D View Defaults** dialog. By default, Perspective Camera views using the Standard, Painting, and Watercolor Rendering Techniques use backdrops while the other techniques and view types do not.

Spherical Panoramic Backdrops

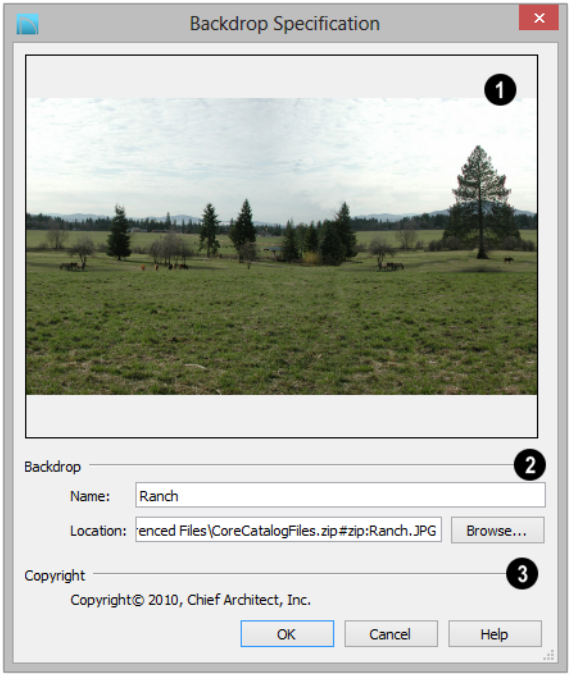
Spherical Panoramic Backdrops are a special type of backdrop that wraps around the model in 3D views as though it were applied to a sphere surrounding it. It takes an image processing program or special camera to generate spherical panoramic backdrops.

The **Use Generated Sky** option produces a special Spherical Panoramic Backdrop that simulates a daytime sky using the Default Sun. It can be specified in the **3D View Defaults** dialog and uses the **Sun Angle** data present in the plan. See “Sun Angles and Shadows” on page 921.

Backdrop Specification Dialog

To open the **Backdrop Specification** dialog, select **File> Import> Backdrop** or right-click on the User Catalog in the Library Browser and select **New> Backdrop** from the contextual menu. See “Adding New Backdrops” on page 808.

You can also open this dialog by right-clicking on a backdrop image in the User Catalog in the Library Browser and selecting **Open** from the contextual menu.



1. A preview of the selected image displays here.
2. **Backdrop** - Specify backdrop’s Name and the image file associated with it.

- Type a **Name** for the selected backdrop, to be used in the Library Browser and **3D View Defaults** dialog.
- In the **Location** field, type the full pathname of the image file or click the **Browse** button and browse to the file on your computer.

❸ The **Spherical Backdrop Options** should only be used if the selected backdrop was specially created to serve as a spherical panoramic backdrop.

- Check **Spherical Panoramic Backdrop** to project the image onto a sphere that surrounds the model in camera views and overviews.
- The **Horizontal Angle** controls how many times the backdrop appears as you rotate in a full circle around the model. A value of 360° wraps the image around once; a value of 720°, twice; and a value of 180° makes only half the image wrap around the sphere.
- The **Vertical Angle** determines how much of the backdrop stretches up and down. To have it stretch from the highest point in the sky to the lowest point below the ground, use a value of 180°. To have the backdrop stretch from just below a horizontal render to just above, use a smaller value, such as 100°.

Some experimenting with the **Angle** values may be necessary to achieve the desired results. You may prefer to do this in the **3D View Defaults** dialog after adding the backdrop to a plan. See “Backdrop Panel” on page 875.

❹ If the selected image has a **Copyright**, information about it will display here.

Walkthroughs

A 3D Walkthrough is a series of pictures saved as an **.avi** file that can be played like a video by other applications such as Windows Media Player.

There are two approaches to recording a walkthrough of a plan:

- Draw a path in floor plan view, then direct the program to record a walkthrough along that path.
- Create a 3D view, then begin recording and use the Move Camera tools to navigate through the view.

Create Walkthrough Path

There are several ways to record a walkthrough along a path, but the **Create Walkthrough Path** tool is the fastest and most flexible option.

To create a Walkthrough Path

1. In floor plan view, select **3D> Walkthroughs> Create Walkthrough Path**, then click and drag to draw a Walkthrough Path. See “To use the Spline tool” on page 1073.
2. Edit the direction and curvature of the spline’s segments, as needed. See “Editing Spline Based Objects” on page 206.
3. Add **Key Frames** to the path and modify their specifications.

4. Select the path and click the **Record Walkthrough Along Path** edit button. See “Record Walkthrough Along Path” on page 1126.

Walkthrough Paths can follow stairs and ramps to span multiple floors. See “Walkthrough Paths and Stairs” on page 1126.

You can also create a walkthrough based on a regular CAD polyline or spline by selecting it and clicking the **Record Walkthrough Along Path** edit button. This was the only way to record a walkthrough along a path in Chief Architect versions X1 through X4 and does not provide as many options as using a Walkthrough Path.

In floor plan view, you can convert a CAD polyline or spline into a Walkthrough Path. See “Convert Polyline Dialog” on page 236.

Walkthrough Paths display in floor plan view when the “Walkthrough Paths” layer is turned on. When displayed, Walkthrough Paths display in front of other objects and will print. They are included in views sent to layout or exported to **.dxf**/**.dwg**. See “Layers” on page 143.

Key Frames

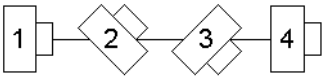
Key Frames are points along a Walkthrough Path that allow you to change:

- Camera direction, tilt angle, and height;
- Changes in walkthrough speed;
- The floor that the walkthrough is on.

These changes are applied as the camera moves along the Walkthrough Path from one Key Frame to another.

To add a Key Frame to a Walkthrough Path, select the path and click the **Add Key Frame** edit button. Then click on the path to add a Key Frame at that location.

In floor plan view, each Key Frame is represented by a camera symbol centered along the walkthrough path. It displays the frame number, is pointed in the direction of its **Camera Angle**, and its position along the path corresponds to the **Time** setting.



Key Frame positions and other properties can be edited in the **Walkthrough Path Specification** dialog. See “General Panel” on page 1129.

You can also use the **Edit Key Frames** edit tool to enable Move and Rotate edit handles for each Key Frame on the selected Walkthrough Path.

To use the Edit Key Frames edit tool

1. Select a Walkthrough Path and click the **Edit Key Frames** edit tool.
2. Each Key Frame on the selected Walkthrough Path will display a Move and Rotate edit handle.
   - Click and drag the square Move handle to reposition the Key Frame along the path.

- Click and drag the rectangular Rotate handle to change the Key Frame's direction angle

3. When you are finished adjusting the Key Frames, click the **Main Edit Mode** edit tool to restore the Walkthrough Path's normal edit handles.

Walkthrough Paths and Stairs

If you draw a Walkthrough Path up or down a staircase or ramp, it will follow the height of the stairs or ramp and continue on the next floor.

To create a multiple floor walkthrough

1. Draw a Walkthrough Path so that it extends into a staircase or ramp in the same direction as its Direction Arrow. See "Displaying Stairs, Ramps, and Landings" on page 527.
   - Do not drag the Walkthrough Path across the entire length of the stairs or ramp. If you do, its height will remain relative to the current floor.
2. When you release the mouse button, the program will automatically display a dashed line with an arrow extending past the last Key Frame on the current floor.
   - If it follows stairs or a ramp going upward, the path will also extend to the top end of the staircase or ramp.
3. Go up or down one floor, select the Walkthrough Path, and resize and reshape it as needed. You can use the **Create Walkthrough Path** tool to draw more segments and additional Key Frames can be added, as well.

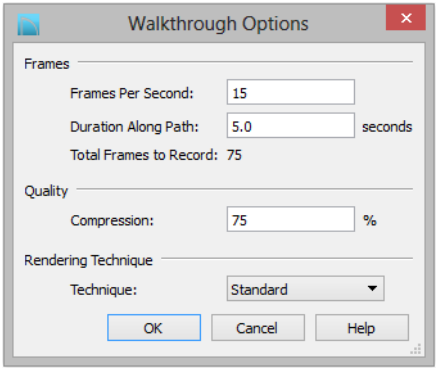
Record Walkthrough Along Path

Once a Walkthrough Path has been drawn, you can use it to record a walkthrough video.

Before recording a walkthrough, it is a good idea to choose a codec that will best suit your needs. See "Selecting a Codec" on page 1128.

To record a walkthrough along a path

1. In floor plan view, select a Walkthrough Path or a CAD polyline or spline.
2. Click the **Record Walkthrough Along Path** edit button or select **3D> Walkthroughs> Record Walkthrough Along Path** from the menu.
3. An Information message displays, reminding you that while a walkthrough is being recorded along a path, you should avoid using your computer.
4. In the **Save Video As** dialog, specify a name and saved location for your **.avi** walkthrough file. See "Exporting Files" on page 56.
5. In the **Walkthrough Options** dialog:



- Specify the desired number of **Frames Per Second**, between 1 and 100. A higher number results in a higher quality recording but also a larger **.avi** file.
- Specify a **Duration Along Path**, in seconds.
- The **Total Frames to Record** displays for reference and equals the Frames Per Second times the Duration along Path.
- Specify a **Compression** percentage between 0 and 100. A value of 0 gives the highest quality images and largest file sizes.
- From the drop-down list, select the **Rendering Technique** you would like the walkthrough to use. See “Rendering Techniques” on page 928.
- Click **OK**.

To cancel the recording as it is being created, press the ESC key on your keyboard.

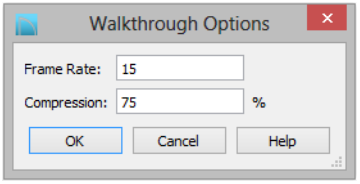
Frame by Frame Walkthroughs

You can also create a walkthrough by recording it frame by frame. Although time-consuming, creating a walkthrough in this manner lets you see exactly what is being recorded as you record it.

As with walkthroughs recorded along paths, it is a good idea to select a codec that meets your needs before recording a walkthrough frame by frame. See “Selecting a Codec” on page 1128.

To record a walkthrough frame by frame

1. Create a camera view. This view is the first frame of the walkthrough.
2. From the view, select **3D> Walkthroughs> Record Walkthrough** .
3. Specify a location and name for the walkthrough in the **Save Video As** dialog and click **Save**.
4. In the **Walkthrough Options** dialog:



   - Select a **Frame Rate** between 1 and 100. The value entered is the number of frames per second.
   - Select a **Compression Percent** between 0 and 100. A value of 0 gives the highest quality images and the largest file size.
   - Click OK.
5. Use the camera movement tools to create additional views. Each time the screen redraws, that view is recorded as the next frame in sequence. See “Editing 3D Views” on page 893.
6. To move the camera without saving a view, select **3D> Walkthroughs> Pause Recording** to temporarily stop recording.
   - You can then select **3D> Walkthroughs> Save Frame** button to control what views are saved.
   - You can start recording again by selecting **Pause Recording** once more.
7. When the walkthrough sequence is complete, select **3D> Walkthroughs> Stop Recording** or close the view.

Note: Zooming in and out and using the scroll bars does not change the viewpoint and does not produce a frame for the walkthrough.

If you resize the current view window while recording a walkthrough, the program will stop recording.

Playing a Walkthrough

Once a walkthrough has been recorded, it can be played on any media player.

To play a walkthrough

1. Select **3D> Walkthroughs> Play Walkthrough** to open the **Select Video File** dialog.
2. Browse to an **.avi** file on saved on your computer. Your default video application plays the walkthrough video.

Selecting a Codec

A codec is a a utility that compresses and decompresses media files, and is used when both recording and viewing **.avi** files such as walkthrough videos.

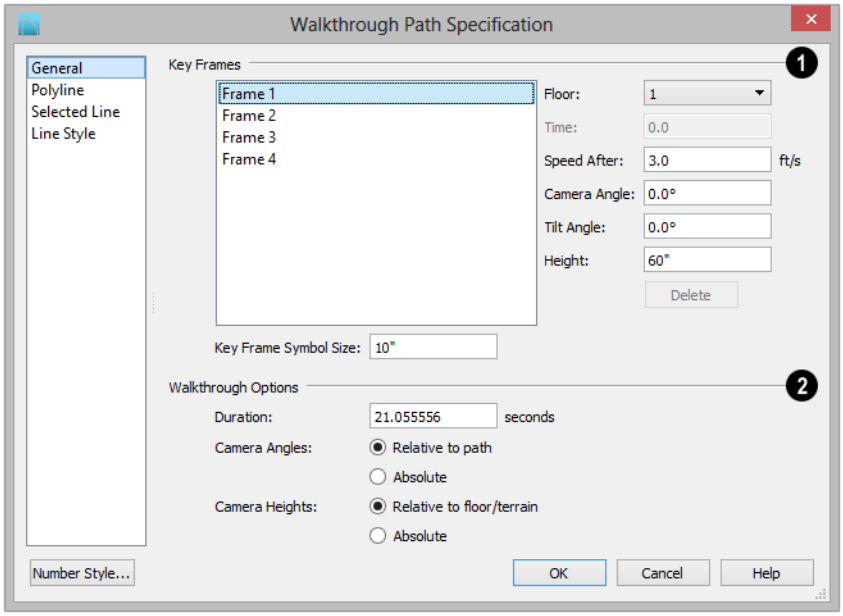
You can specify which codec to use when recording walkthroughs in the **Preferences** dialog. See “Render Panel” on page 122.

Before recording a walkthrough, it is a good idea to try each of the codecs installed on your system to see how well their walkthrough quality and file compression meet your needs.

Walkthrough Path Specification Dialog

Select a Walkthrough Path and click the **Open Object** edit button to open the **Walkthrough Path Specification** dialog. See “Walkthroughs” on page 1124.

General Panel



1 A list of the selected path's **Key Frames** displays on the left. Click on a Frame in the list to select and edit it using the settings on the right. When the dialog is opened, the last key frame edited in the current program session will be selected automatically. See "Key Frames" on page 1125.

- Specify the **Floor** that the selected Key Frame is located on. See "Multiple Floors" on page 425.
- Specify the **Time** in seconds at which the selected Key Frame is found in the duration of the walkthrough. Frame 1 is always at 0.0 and cannot be moved; similarly, the last frame is always at the end of the walkthrough Duration.
- Specify the **Speed After (ft/s)**, which is how fast the camera moves along the walkthrough path from the current Key Frame to the next. Not available if the last Key Frame is selected.
- Specify the **Camera Angle** at the selected Key Frame.
- Specify the **Tilt Angle** of the camera at the selected Key Frame.
- Specify the **Height** of the camera at the selected Key Frame.
- Click the **Delete** button to remove the selected Key Frame from the path.
- Specify the **Key Frame Symbol Size**, which is the size of the symbols representing the selected walkthrough path's Key Frames in floor plan view. See "Key Frames" on page 1125.

By default, Key Frames use the **Camera Symbol Size** set in the **Camera Defaults**

dialog. See “Camera Defaults Dialog” on page 869.

❷ **Walkthrough Options** -

- Specify the **Duration**, or total length of the walkthrough video in seconds.

Specify how **Camera Angles** are measured:

- Select **Relative to Path** to measure each camera angle relative to the direction of the walkthrough path at each Key Frame location.
- Select **Absolute** to measure each camera angle relative to the plan’s X, Y, and Z axes. See “3D Drafting” on page 29.

Note: When Relative Angles are used, a Camera Angle of 0° points in the direction of the walkthrough path. When Absolute Angles are used, 0° always points in the positive direction along the X axis.

Specify how **Camera Height** is measured:

- Select **Relative to Floor/Terrain** to measure camera height relative to the floor or terrain at each Key Frame location.
- Select **Absolute** to measure camera height relative to the plan’s Z axis.

Polyline Panel

The Polyline panel indicates the path’s **Length/Perimeter**. The **Area** and **Volume** of a walkthrough path will always be described as “Not closed”. See “Polyline Panel” on page 1066.

Selected Line Panel

The Selected Line panel is available when the selected path edge is a line as opposed to an arc. See “Selected Edge” on page 181.

Moving the Start of a line segment moves the end of the previous connected line, if there is one. Similarly, moving the End of a line segment moves move the start of the next connected line, if there is one.

This panel is similar to the Line panel of the **Line Specification** dialog. See “Line Panel” on page 1052.

Selected Arc Panel

The Selected Arc panel is available when the selected path edge is an arc as opposed to a line. See “Change Line/Arc” on page 229.

This panel is similar to the Arc panel of the **Arc Specification** dialog. See “Arc Panel” on page 1061.

Spline Panel

The Spline panel has a single option and is only available if the selected walkthrough path is a spline. See “Splines” on page 1073.

New Segment Angle - Specify the angle between line segments that are used to draw the spline. Specifying a smaller angle makes the spline’s curvature smoother.

Line Style Panel

This panel is similar to the Line Style panel in the **Line Specification** dialog. See “Line Style Panel” on page 1053.

Creating VRML Files

VRML (Virtual Reality Modeling Language) is a 3D file format that can be used by various “walkthrough” viewers, as well as other rendering packages.

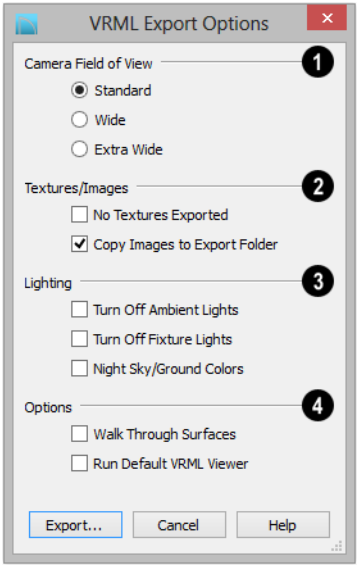
VRML files use the **.wrl** file format and contain an entire 3D model, including lighting information. Images and textures can also be referenced. You can post a **.wrl** file and its associated image and texture files to the web or e-mail them to a customer.

VRML files are often created from rendered views so that lighting and textures are used; however, you can export from a Vector View if you wish. See “Editing 3D Views” on page 893.

The entire model is exported, but the starting point for the walkthrough is defined by the camera location at the time of export.

When a camera view or overview is active, select **File> Export> Export VRML** . The **VRML Export Options** dialog opens.

VRML Export Options Dialog



1 Define the **Camera Field of View**. **Standard** most closely corresponds to the default Chief Architect camera view. The other options generate a wider field of view.

2 Specify how **Textures/Images** are exported.

- Check **No Textures Exported** to prevent texture files from being exported with the **.wrl** file. If textures are exported, the texture files must be in the same folder as the **.wrl** file.
- Check **Copy Images to Export Folder** if you plan to share the VRML with others. This copies texture bitmaps with the **.wrl** file so that they render correctly when exported.

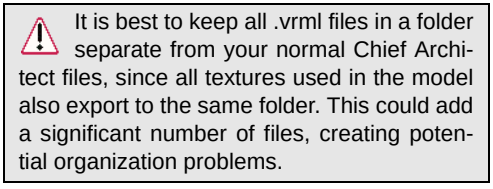
❸ Specify how **Lighting** is exported.

- **Turn off Ambient Lights** turns off the default lights that are used to light a scene.
- **Turn off Fixture Lights** turns off the default lights that are generated for fixtures and used to light a scene.
- **Night Sky/Ground Colors** darkens the ground plane and sky to create a nighttime appearance.

❹ **Options**

- **Walk Through Surfaces** allows you to walk through walls and closed doors from room to room, instead of stopping when you reach a wall.
- **Run Default VRML Viewer** starts the **.vrml** viewer and opens the new **.vrml** file as soon as it is generated.

Once the general parameters have been selected, click **OK**. Name the **.wrl** file and save it in the desired folder and click **Save**.



VRML Use of Texture and Image Files

In order for textures to be rendered correctly, the texture and image files associated with an exported VRML file must be in the same directory as the **.wrl** file.

VRML files do not support the use of **.bmp** textures or images. Instead, compressed file formats such as **.gif**, **.png**, or **.jpg** files must be used.

If you wish to use custom textures or images in your VRML file, you have two options:

- Make sure that they are saved in a format other than **.bmp** before you bring import them into Chief Architect. This is the recommended option.
- Create a **.gif** file with the same name and in the same directory as the **.bmp** file. When you export the **.wrl** file, Chief Architect automatically substitutes the **.gif** for the **.bmp** file. Whenever possible, you should use a supported file format instead of using **.bmp** and **.gif** pairs.

For more information about **.vrml** players, visit chiefarchitect.com.

Chapter 36:

Importing and Exporting

Importing is the process of opening a file that was produced in a different program in Chief Architect. Exporting, on the other hand, is the process of saving information in a Chief Architect file to a format that can be read by another program.

Chief Architect allows you to import and export a variety of information from and to other applications. This chapter focuses on importing and exporting 2D .dwg/.dxf files and a variety of 3D file formats. Other importing and exporting options are described in the chapters in which those objects or settings are discussed.

Chapter Contents

Import Room Planner File

Select **File> Import> Import Room Planner File**, then log in to your account on the Chief Architect web site to select and download a Room Planner 2.0 or higher file from the cloud.

Visit roomplanner.chiefarchitect.com for more information about the Room Planner mobile app.

DXF vs DWG File Formats

.dwg is the native AutoCAD® file format. Originally a proprietary format, it is now widely used with many different products.

.dxf (**D**rawing e**X**change **F**ormat) is a standard file format created by Autodesk for the transfer of data between other programs.

Many design programs can read and write **.dxf** and **.dwg** files. Both formats interpret data as CAD objects such as lines, polylines, and circles. Both formats can also contain 3D data which can be imported into Chief Architect, as well.

Binary **.dxf** format is another related file format. It is easier for computers to read, is more accurate, and occupies less disk space and regular .dxf files. When exporting, however, bear in mind that not all applications support binary **.dxf**.

Importing 2D Drawings

2D drawings are imported by reading entities from a **.dwg** or **.dxf** file and creating the equivalent CAD objects in Chief Architect.

Chief Architect X6 can import 2D **.dxf** or **.dwg** files compatible with AutoCAD® through version 2014.

Only drawings created in AutoCAD®'s Model Space can be imported directly into Chief Architect. Entities drawn on the first page of Paper Space are imported as a CAD block and can be inserted into a drawing from the **CAD Block Management** dialog. See "CAD Block Management" on page 1081. Entities drawn on subsequent pages of Paper Space are not recognized.

A **.dxf** or **.dwg** file can be imported into floor plan view, a Wall Elevation view, Cross Section/Elevation view, or a CAD Detail.

In general, all Z coordinates are mapped to zero. If an entity in an imported drawing has thickness, Chief Architect ignores it.

Supported Entities

The following is a list of the entities that are imported and how they are converted. All other entities are ignored:

- **Lines -** Both 2D and 3D lines.
- **Circles** - Fully supported in 2D.
- **Arcs** - Fully supported in 2D.

- **Ellipses** - Fully supported in 2D.
- **Spline entities** - Fully supported as 2D polylines.
- **Polylines and Lightweight Polylines** - Polylines are imported as polylines. Bumps are converted to arcs. Line widths are ignored.
- **Lightweight Polylines** - Fully supported in 2D.
- **Points** - Points are not supported unless the layer they are on is converted to Elevation Data. See “Importing Elevation Data” on page 726.
- **Text and Multi-line Text** - Both are imported as Rich Text and mapped to the Text layer. Multi-line text objects retain their original width. The first font in a multi-line text object is applied to the entire object. If that font is unavailable, Arial is used.
- **Unicode Text -** Fully supported.
- **Blocks and Block Inserts** - A block is a named group of CAD entities that have been joined together to behave as a single object. A block insert is a reference to such a block. Blocks are loaded by name. If a duplicate name is found, you can specify whether a block is imported under a new name, replaces an existing block or simply uses the existing block of the same name.
- **Hatch entities** - If **Import Hatch entities** is selected on the Select File page of the **Import Drawing Assistant** for a .dwg file, Hatch patterns are imported as a CAD block consisting of solid black filled polylines.
- **2D Solids** (Not ACIS Solids) - Fully supported in 2D.
- **Solids** - A solid is a 3 or 4-sided filled area. These are imported as 2D faces.
- 2D Solids (Not ACIS Solids)
- **3D Faces/Polyface Meshes** - A 3D face has its Z coordinate mapped to zero, and imports as a polyline.
- **Dimensions** - Rotated, aligned and 3-point angular dimensions are supported. All other dimension types are imported as lines and text rather than functioning dimensions.

  CAD blocks containing dimensions as text must be exploded before the text can be edited separately. For more on exploding, see “CAD Blocks” on page 1078.
- **Attributes** - Attributes are text objects associated with other items, like blocks. These are imported as text objects at the appropriate location but the association with the original object is broken.
- **Line Styles** - Line styles are not imported. Instead, if a style of the same name displays in the Chief Architect line styles, that line style is used. Otherwise a solid line style is used.
- **Layers** - You can specify which layers in the imported drawing to import into your Chief Architect file. You can also choose how you wish to map drawing layers to layers in the destination file. See “Layers” on page 143.

Layers

There can be some confusion between importing a layer and mapping a layer; the distinction, however, is important.

You can control which objects in a drawing are imported by choosing to import the layers they are on.

Once you have elected to import a layer, you can then specify how you would like to map it in the Chief Architect drawing. You have three options:

- You can map all layers in the imported drawing to a single Chief Architect layer.
- You can map all layers in the imported drawing to Chief Architect layers of the same name. The program will create those layers if they do not already exist.
- You can use **Advanced Layer Mapping** to individually map each imported layer to a Chief Architect layer.

Import Drawing Assistant

A 2D .**dxf** or .**dwg** file can be imported into floor plan view, a **Wall Elevation** view, **Cross Section/Elevation** view, or a CAD Detail.

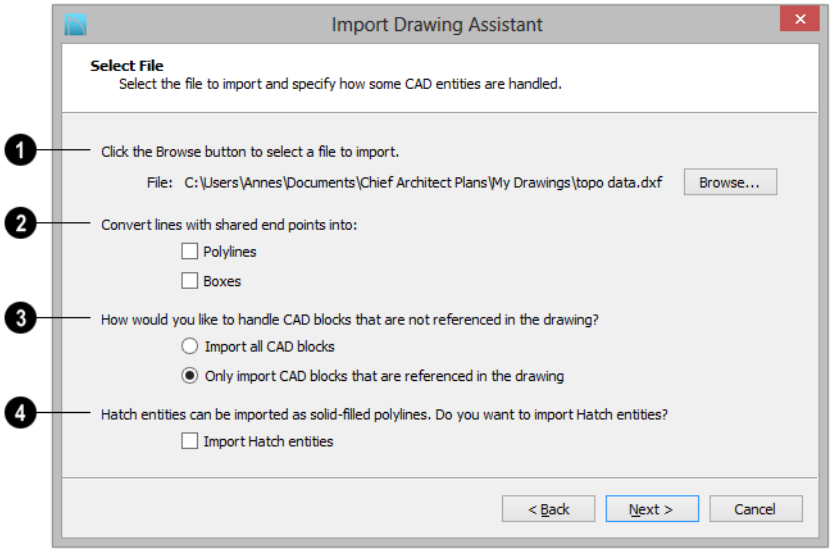
To import a 2D drawing file, open the view in which you would like to place the drawing and select **File> Import> Drawing (DWG/DXF)**  to open the welcome page of the **Import Drawing Assistant**. Click **Next** to continue.

You can also launch the **Import Drawing Assistant** by dragging a .dxf/.dwg file from an operating system window into the Chief Architect window.

CAD Details are an excellent place to import and organize CAD drawings.
See “CAD Details” on page 1085.

If the file you are importing is password protected, you will be prompted to enter the password before continuing.

Select File



1 Click the **Browse** button to select the file that you wish to import. When a file is selected, its full pathname displays to its left. The directory containing the last file selected using the **Import Drawing Assistant** displays here otherwise. If the pathname is not a valid dxf/.dwg file, this text will display in red.

Note: If the file you are importing is password protected, you will be prompted to enter the password before continuing.

2 If you want to convert lines with shared end points to polylines and/or boxes, check the appropriate options. Polylines are not affected by these settings, nor are lines that do not share end points.

- Check **Polylines** to import lines with shared end points as polylines.
- Check **Boxes** to import lines with shared end points that form a closed rectangular shape as boxes.

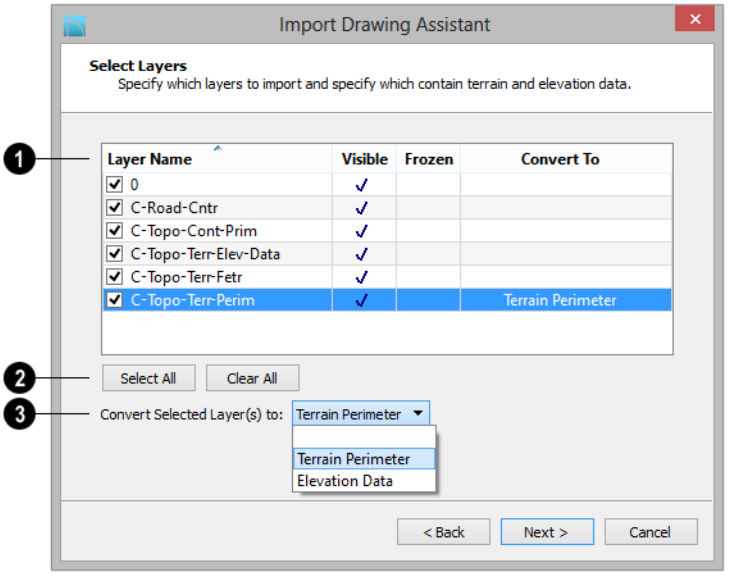
3 Specify how to treat CAD blocks associated with the selected drawing.

- Select **Import all CAD blocks** to include all CAD blocks associated with the file being imported whether or not they are in use. See “CAD Block Management” on page 1081.
- Select **Only import CAD blocks if they are referenced in the drawing** to reduce the volume of transferred data.

4 Check **Import Hatch entities** to import areas of hatching as solid-filled polylines.

Click **Next** to load the file into memory so that Chief Architect can present information about the contents of the file. This can take a while for larger files.

Select Layers



1 A list of the layers found in the imported file and information about each layer displays in this table. See "Layers" on page 143.

- In the **Layer** column, check the box to the left of each layer name to specify which layers you want to import. Layers with checked boxes are imported; those with unchecked boxes are not.
- Layers that were **Visible** in the original program are checked by default. You can include a layer that is not visible by checking the box to the left of its name.
- Layers that were **Frozen** in the original program are not checked by default. You can include a frozen layer by checking the box to its left.
- If a layer is set to **Convert To** a Terrain Perimeter or Elevation Data, it will be indicated in this column provided that you are importing into floor plan view.

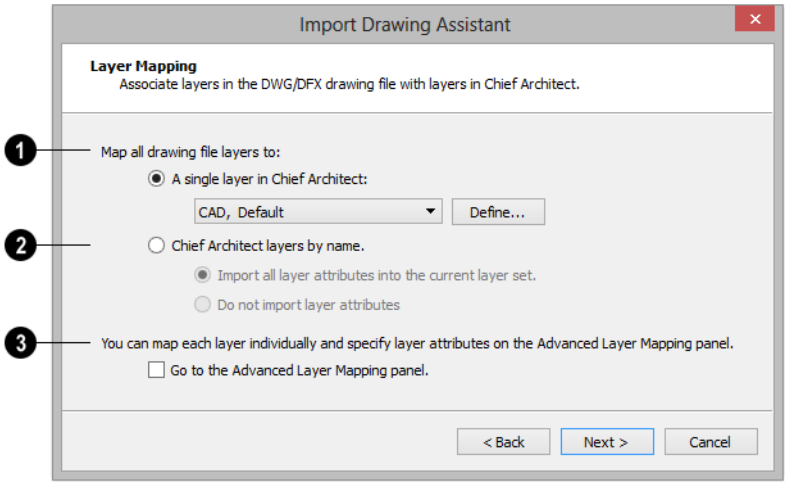
2 Click **Select All** to check the box to the left of all layer names in the table. Click **Clear All** to clear the checkbox to the left of all layer names in the table.

3 The **Convert To** drop-down list allows you convert the data on any layer into a Terrain Perimeter or Elevation Data. See "Terrain Perimeter" on page 696 and "Importing DXF/DWG Elevation Data" on page 732. Only available when importing into floor plan view.

To convert a layer to a Terrain Perimter or Terrain Data, click on its name in the table and then select an option from the **Convert To** drop-down list. The option you choose will then display in the **Convert To** column in the table.

Note: if an open polyline is converted into a Terrain Perimeter, the program will draw an additional edge to close the gap.

Layer Mapping



The **Layer Mapping** page lets you control how layers in the imported drawing are mapped into the destination file.

1 The simplest option is select **A single layer in Chief Architect** and assign all objects in the imported drawing to that layer. Original layer attributes are lost, but line color, style, and weight are preserved on a per object basis.

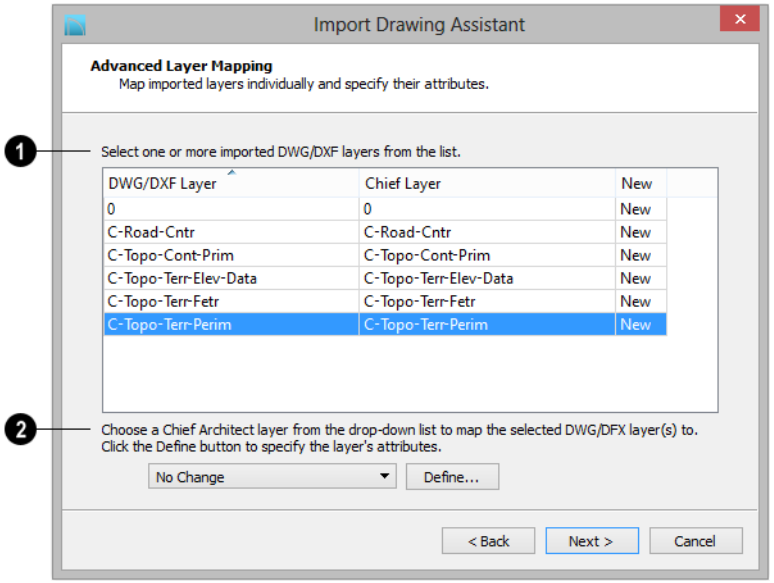
- Select a layer from the drop-down list or click the **Define** button to open the **Layer Display Options** dialog and specify a layer and its properties. See “Layer Display Options Dialog” on page 148.

2 The second option is to map the layers in the drawing to **Chief Architect layers by name**. Layers are created in the destination file with the same names as those listed on the **Select Layers** window of the **Import Drawing Assistant**, and the imported CAD objects are placed on those layers.

- In combination with the second alternative, you may choose to import all attributes for each layer into the current Layer Set, or import no attributes at all.

3 The third option is to map each layer individually with complete control of all layer mapping options. Selecting the third option opens the **Advanced Layer Mapping** page.

Advanced Layer Mapping



If you select the **Advanced Layer Mapping** option, the **Advanced Layer Mapping** page displays, allowing you complete control of how all imported layers are mapped.

1 A list of the layers found in the imported file and the layers in Chief Architect that they are mapped to display in this table.

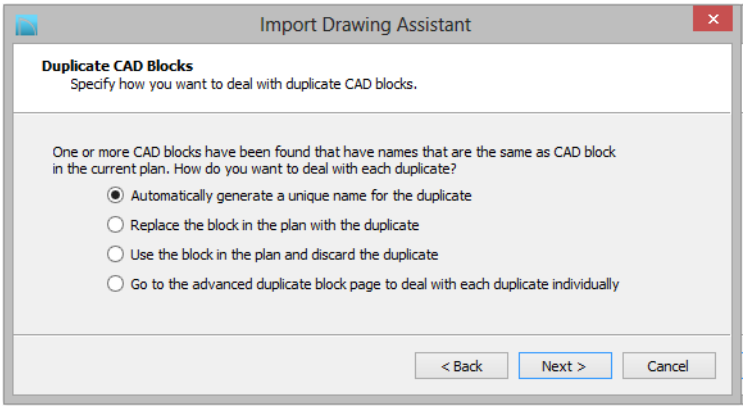
- The original name of each **DWG/DXF Layer** is found in the first column.
- The name of the **Chief Layer** that each imported layer is mapped to is listed in the second column. The initial Chief Layer selections depend on which option was selected on the Layer Mapping page.
- If a Chief Layer does not already exist in the destination plan or layout file, it will be listed as "**New**" in the third column.

2 When a row in the table above is selected, the **Chief Layer** options become active. Select multiple entries by holding down the Shift key

- If the layer in the selected row is mapped to an existing Chief layer, it will display in the drop-down; if not, the drop-down will be blank.
- Select a layer already present in the destination plan or layout file from the drop-down list.
- Click the **Browse** button to open the **Layer Display Options** dialog. See "Layer Display Options Dialog" on page 148.

Click **Next** to continue.

Duplicate CAD Blocks



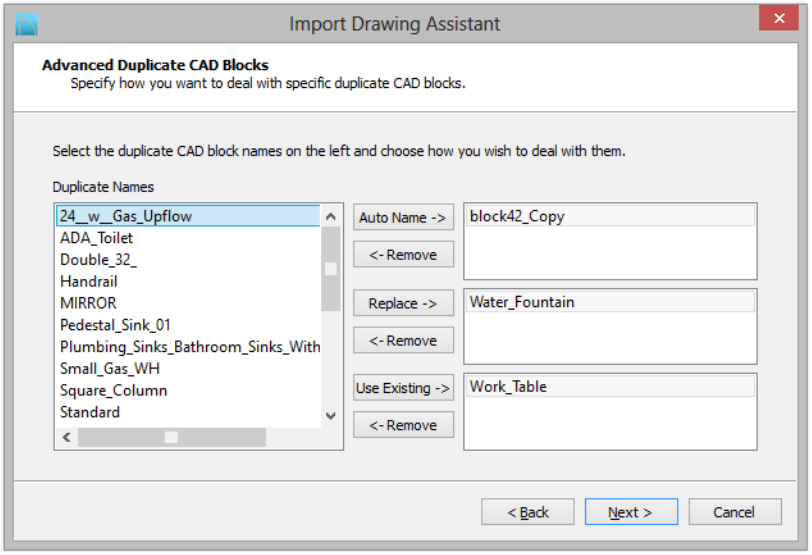
If one or more CAD blocks in the imported file have the same name as a CAD block in the destination plan or layout, the **Duplicate CAD Blocks** page will display. See “CAD Blocks” on page 1078.

There are four options. The first three apply to all duplicate CAD blocks in the plan.

- The first choice is to have the program automatically generate unique names for each duplicate. For instance, if the original file’s name is “blockname,” the program gives the new block a name like “blockname_Copy_1”.
- The second option is to replace the block already in the plan with the duplicate being imported. This option is not recommended, as every instance of the CAD block in the plan will be replaced.
- The third is to keep the block that already exists in the plan and discard the duplicate being imported.
- Select the fourth option to open the **Advanced Duplicate CAD Blocks** page and manage each duplicate individually.

Click **Next** to continue.

Advanced Duplicate CAD Blocks



If you chose the fourth option on the **Duplicate CAD Block** page, the **Advanced Duplicate CAD Block** page displays, allowing you to manage each duplicate CAD block individually.

Click on a CAD block name in the list of **Duplicate Names**. Select multiple names by holding down the Shift key.

Click one of the three active buttons in the center of the dialog to specify how the selected block(s) are to be treated.

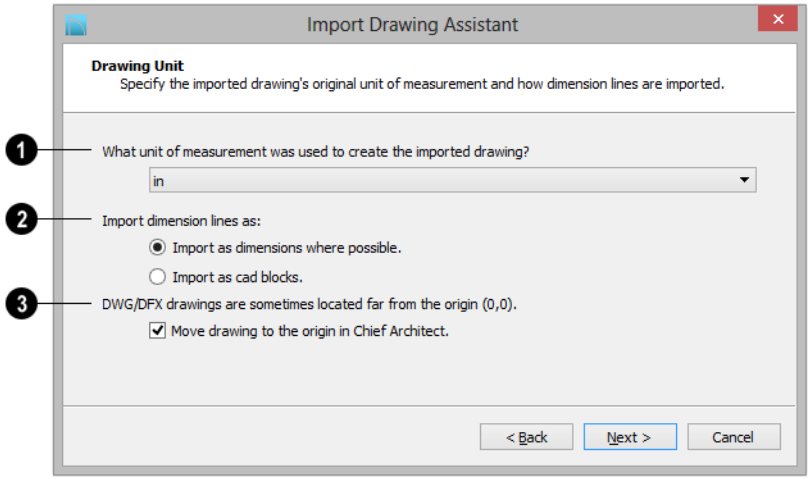
- Click **Auto Name** to have the program automatically generate a unique name for the selected CAD block. The duplicate's name is the same as the original with "_Copy" appended to the end.
- Click **Replace** to replace the existing CAD block in the destination file with the CAD block listed here. This option is not recommended, as all instances of the CAD block are replaced.
- Click **Use Existing** to keep the CAD block already in the destination file and discard the CAD block listed here.

Review your choices in the tables at the right.

- To remove a CAD block from a field on the right, select it and click the **Remove** button.

Click **Next** to continue.

Drawing Unit



1 Select a unit of measurement from the drop-down list. Selecting the correct unit helps ensure that your imported drawing is accurately sized.

> Note: During the import process, Chief Architect defaults to inches or millimeters. If you are importing a site plan or topo prepared by a surveyor, or if you are importing a metric drawing into an imperial plan (or vice versa), you may need to change units.

If the file being imported was drawn at a scale other than 1:1, you can compensate for this scaling by creating a custom unit of measurement and specifying it here. See “Unit Conversions Panel” on page 103.

2 Specify how dimensions are imported.

- Select **Import as dimensions where possible** to import dimensions as Chief Architect-supported dimension lines.
- Select **Import as CAD blocks** to import dimensions as CAD entities that are not recognized by Chief Architect as dimensions.

3 Check **Move drawing to the origin in Chief Architect** to place the drawing at 0,0. When unchecked, it is imported to the same location as it was drawn in the original application. See “3D Drafting” on page 29.

Import Complete

When a **.dxf/.dwg** file is imported into Chief Architect, all of its components are selected as a group. The selection set has Move and Rotate edit handles available for relocating the entire drawing, as well as a variety of edit tools. Once another object or tool is selected, the drawing components are no longer group-selected.

If you do not see your imported drawing, select **Window> Fill Window** , as it may have been placed at a location not currently

visible on screen. When the drawing can be seen, move your mouse pointer over it and note its coordinates in the Status Bar. If any coordinate value has more than six digits, use the **Transform/Replicate Object** edit button to move it closer to the origin. See "Transform/Replicate Object Dialog" on page 238.

Imported CAD objects can be selected and edited just like objects that were drawn in the program. See "Editing Objects" on page 175.

The CAD to Walls tool can be used to convert imported CAD lines in floor plan view into doors, windows, walls, and railings. See "CAD to Walls" on page 293.

Exporting 2D DXF/DWG Files

Line-based 2D files can be exported from Chief Architect in both **.dxf** and **.dwg** file formats. You can specify the version of AutoCAD® to export to. Compatibility with other software may vary.

Custom line styles created in Chief Architect cannot be exported. When exported to **.dxf/ dwg**, they are replaced by a solid line style, although the line weight and color are retained. See "Creating Line Styles" on page 1076.

There are two ways to export a 2D drawing file in Chief Architect: Export Current View and Export All Floors.

Export Current View

To export a floor plan view, CAD Detail, or Vector View that is currently active, select **File> Export> Current View (DWG/DXF)**.

Bear in mind that Orthographicf are drawn to scale and will produce a 2D drawing that can be accurately dimensioned. Perspective views, on the other hand, are not scaled and do not produce drawings that can be dimensioned accurately. See "Perspective and Orthographic Views" on page 868.

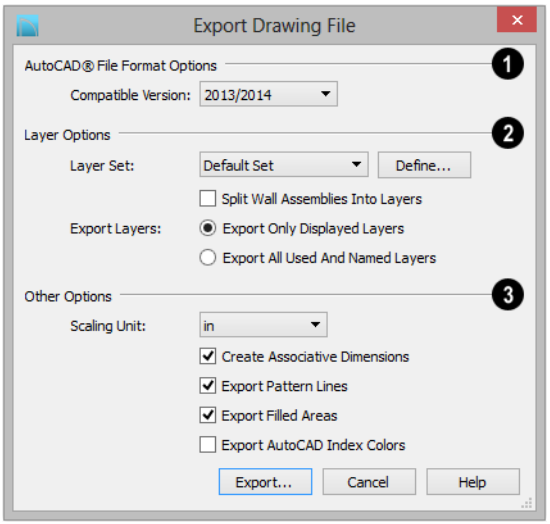
Export All Floors

To export the floor plan view for all floor plans simultaneously, select **File> Export> All Floors (DWG/DXF)** from any floor of the plan. The floor plans are exported to a single **.dxf** or **.dwg** file.

If you choose to export all floors, the file will contain all floors superimposed on each other. Upon export, each layer in your Chief Architect drawing is divided into separate layers: one for each floor. For example: "Electrical-2" contains objects on Floor 2 that were originally on the "Electrical" layer.

You can use the CAD Detail from View tool to automatically create a 2D line drawing from a 3D Vector View. See "CAD Detail from View" on page 1086.

Export Drawing File Dialog



1 **AutoCAD® File Format Options** - **.dxf** and **.dwg** files created by Chief Architect can be compatible with a variety of AutoCAD® versions. Specify which version from the drop-down list.

2 The **Layer Options** settings allow you to control the layers associated with the file being exported. See “Layers” on page 143.

- Select a **Layer Set** to for the drawing being exported. See “Layer Sets” on page 145. Not available in layout files.
- Click the **Define** to open the Layer Display Options dialog and modify the selected Layer Set. Not available in layout files.

You can create a custom layer set to accommodate desired naming conventions or display attributes.

- **Split Wall Assemblies Into Layers** - The lines that represent wall layers can be exported onto different layers, allowing them to be displayed separately. See “Wall Type Definitions” on page 295.
- Select **Export Only Displayed Layers** to export only those layers that are displayed on screen. This is what always occurs when exporting from layout, but is not an available option in layout files.
- Select **Export all used and named layers** to export all layers that either have something on them or have a layer name specified. Not available in layout files.

3 **Other Options**

- **Scaling Unit** - Select the unit of measurement to be used. For best results, choose inches or feet for Imperial plan or layout files, or metric units for metric files. See

"Dimension Preferences and Defaults" on page 962.

- Uncheck **Create Associative Dimensions** to export dimensions as simple CAD entities that are not recognized dimensions by other programs. Associative dimensions are recognized by AutoCAD® and many other CAD programs.

  When exporting a layout page, it is often best to uncheck this box.
- Check **Export Pattern Lines** to export pattern lines. Pattern lines are exported as normal CAD lines.
- Check **Export Filled Areas** to export filled areas as AutoCAD® 2D solid entities.
- Check **Export AutoCAD® Index Colors** to automatically map all colors used in the drawing to the closest 256 AutoCAD® Index Color (ACI). Black (RGB 0,0,0) and white (RGB 255,255,255) are mapped to ACI 7. When unchecked, colors are exported using RGB colors.

Dimension lines using non-default primary or secondary formatting will lose their changes and will use the default format(s) upon export.

When you are satisfied with your selections, click the **Export** button to save the exported file as either a **.dxf**, **binary .dxf**, or **.dwg** file.

Note: Binary .dxf is easier for computers to read, is more accurate, and occupies less disk space, but some applications do not support binary .dxf.

Additional 2D Export Information

The export process converts high level Chief Architect objects (doors, windows, etc) into simple, CAD-based objects (lines, arcs, etc). Chief Architect exports all data to AutoCAD®'s Model Space.

Supported Entities

The following entity types are currently supported for 2D export:

Line - The simplest entity. In AutoCAD®, lines are 3 dimensional with the Z coordinate set to zero.

Arc - Arcs have a start angle, end angle and radius.

Circle - Fully Supported.

Multi Line Text - If exporting to an AutoCAD® release that supports multi-line text, Chief Architect writes the file as multi-line text. If exporting to a version that does not support multi-line text, the file is written as simple text.

Unicode Text - Fully supported.

Polylines - Polylines are a collection of points with lines or arcs connecting them. Chief Architect supports both lines and arcs. Arcs are referred to as bulges in AutoCAD®.

Block Insert - A block insert is a reference to a block, which is a named collection of

entities. A block can also contain block inserts.

Dimensions

Aligned, rotated, and angular dimensions can all be exported. CAD blocks containing dimensions as text must be exploded before the text can be edited separately. See “CAD Blocks” on page 1078.

Dimensions with text added using the **Add Additional Text**  tool are not supported when exported to .dxf/.dwg. When exported, they are converted to text and CAD lines. See “Add Additional Text” on page 989.

Each dimension has an associated block containing a representation of the dimension as it is drawn in Chief Architect. It also contains all the data to recreate that information.

- When an exported dimension is modified in AutoCAD® or other CAD program, its appearance changes.
- Chief Architect does not support arrowhead styles or fonts.
- Three kinds of dimensions are generated: Aligned, Rotated and 3 Point Angular.
- Please refer to AutoCAD® documentation for more information.

Note: Uncheck “Use Associative Dimensions” in the Export Drawing File dialog if the CAD program you are using does not support AutoCAD® Associative dimensions. See “Export Drawing File Dialog” on page 1145.

Layers

Layers in other systems are similar to Chief Architect layers, but there are some subtle differences. Layer information is mapped as follows:

Chief Architect	Other Systems
Name	Name
Color	Nearest AutoCAD® Color. Chief Architect uses the default AutoCAD® color table to determine this mapping.
Display	On
Size	Line Weight. In AutoCAD®, line weights are determined by a table of mm line widths. Chief Architect maps to the closest match in this table based the current view’s Line Weight Scale. See “Drawing Sheet Setup Dialog” on page 1184.
Style	Line type
Lock	Lock

Line Types

A line type, or line style, is used by layers and entities to determine how lines are drawn. Chief Architect line types installed with the program are supported on export; custom, user-created line styles, however, are not. See “Line Styles” on page 1076.

3D Data Import Requirements

Importing a symbol that can be used by Chief Architect is a relatively simple process that begins with previously created 3D data. This 3D data often comes from a program other than Chief Architect. If you use another 3D modeling program to create the 3D data, be aware of the following requirements before attempting to create symbols.

> Chief Architect is not able to provide support for any third party software.

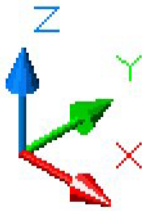
There are a number of requirements that must be met before any 3D data can be used to create a symbol in Chief Architect:

- The 3D data must be stored in a standard Drawing Exchange File (**.dxf**), AutoCAD® Drawing (**.dwg**), object (**.obj**), 3D Studio® Mesh (**.3ds**), stereolithography (**.stl**), COLLADA (**.dae**), or SketchUp version 8 and prior (**.skp**) file format. If you have 3D data in another format, you must convert it into one these formats first.
- Geometry and material information stored in **.3ds** files are imported; cameras and lights are not.
- The 3D model must be composed of 3D DWG or 3DSOLID solid entities, or face data. Faces are typically referred to as 3D faces, polygonal faces, or poly meshes. Other types of entities such as lines, curves, circles, polylines, and free form surfaces can exist in the file but are not imported when the symbol is created. This is true for all (**.dxf/.dwg/.obj/.3ds/.skp**) file types.
- The face data should be assigned to different layers so that you can map them to the correct materials when viewing them in 3D. It is helpful to name your layers using a convention that identifies that materials should be assigned to each subcomponent.
- Pay attention to the origin and orientation of the 3D data when designing symbols. Chief Architect allows some adjustment when creating the symbol, but it is easier to build the 3D data correctly before importing it into Chief Architect. For more information about defining the origin, see “Symbol Origin” on page 1174.
- If a symbol with faces that have more than four vertices is imported, the faces are truncated, resulting in an object that appears to have holes. The best remedy is to re-export the model from the original application using only triangular or quadrilateral faces.
- Chief Architect does not support grouped objects in symbols imported from **.3ds** files.

Surface Normals

If you use third party software to create a **.dxf /.dwg/.obj/.3ds./skp** files that will be imported as a symbol, you should be familiar with the concept of surface normals.

If you use third party software to create a **.dxf/.dwg/.obj/.3ds./skp** file that will be imported as a symbol, you should be familiar with the concept of surface normals.



A surface normal is a vector that is perpendicular to the plane of a surface. This vector points in one direction, determined by the way the face is drawn.

If a face is drawn clockwise, the surface normals are directed outward; if a face is drawn counter-clockwise, the surface normals point inward. Chief Architect assumes that the face on the positive side of the normal vector is the outside face.

Many objects can be drawn using only one side of each face. A cube is a good example: the inside of a cube is not visible, so it is not necessary to create its inside faces. When inside faces are not calculated, 3D views in Chief Architect can generate more quickly.

Importing 3D Symbols

Chief Architect supports the import of 3D surface and 3D solid objects saved in **.dwg**, **.dxf**, **.3ds**, **.obj**, **.stl**, **.dae**, and **.skp** formats.

For most file types, there are two ways to import a 3D symbol into Chief Architect:

- By dragging and dropping the file from an operating system window into floor plan view.
- Using the **Import 3D Symbol** tool.

3D **.dxf/.dwg** files can only be imported by selecting **File> Import> Import 3D Symbol**.

Symbols imported by clicking and dragging are imported for use in the current plan, while those imported using the **Import 3D Symbol** dialog can also be saved in the library. See “The Library” on page 797.

Note: The .skp file format is not supported in Mac operating systems and cannot be imported or exported in Mac versions of the software.

To drag and drop a 3D symbol file

1. Open the plan in which you would like to import a 3D symbol and remain in floor plan view.
2. Open an operating system window in front of the Chief Architect program window.
3. Resize and position the window so that the Chief Architect program window can be seen behind it.
4. Click on the desired **.3ds**, **.obj .stl**, **.dae**, or **.skp** file and drag it into the Chief Architect program window.
5. When your cursor changes to a +, click in the drawing area to place as many copies of the symbol as desired. When you are finished, select a different tool.

Symbols imported by clicking and dragging are imported as generic stand-alone interior fixtures. If you wish to assign different characteristics to a symbol, use the **Import 3D Symbol** dialog to import it.

Importing Multiple Symbols

More than one symbol can be imported into the Chief Architect library at a time provided that the following requirements are met:

- The symbols are located in the same folder on your computer.
- Multiple symbols can only be imported using the **Import 3D Symbol** dialog. If you try to drag and drop group-selected files in an operating system window, only the file that was selected first is imported.
- When imported as a group, symbols must be assigned to the same symbol category. If you wish to assign them to different categories, they must be imported separately.

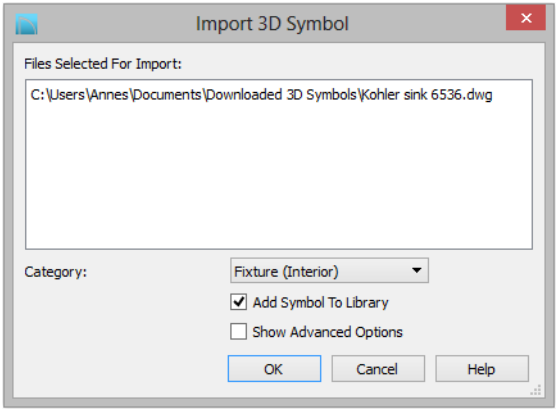
Symbols that are imported as a group are assigned names based on their original file names with the file extension omitted.

Import 3D Symbol Dialog

Select **File> Import> 3D Symbol** to open the **Import 3D Symbol** dialog.

The **Import 3D Symbol File** dialog is a typical **Open File** dialog in which multiple files can be group-selected for import. See “Importing Files” on page 61.

The **Import 3D Symbol** dialog, which opens next, allows you to specify additional information about the symbol.



- The **Files Selected for Import** display here for reference.
- Choose a symbol **Category** from the drop-down list. The category affects how and where the symbol can be used, and cannot be changed after it is imported.
- Check **Add Symbol to Library** to save the symbol in the User Catalog. This is always checked when multiple symbols

files are selected. See “Add to Library” on page 807.

- Check **Show Advanced Options** to open the symbol’s specification dialog. See “Symbol Specification Dialog” on page 1159.
- Click **OK** to import the symbol, then click in floor plan view to place the symbol at that location. Continue clicking to place as many copies of the symbol as needed. Select another tool when finished.

Note: If you import a **.obj**, **.3ds** or **.skp** file with textures that are already present in your library, the **Texture Filename Conflict** dialog opens. See “Texture Filename Conflict” on page 1153.

Symbol Categories

The category that you assign to a symbol will influence how the symbol can be placed in a plan and how it will appear in the Materials List and in schedules. See “Materials Lists” on page 1247 and “Schedules and Object Labels” on page 1231.

Category	Placement	Schedules and Materials Lists
Cabinet	Can only be placed as a free-standing object. See “Cabinets” on page 659.	Listed in Cabinets category of Materials Lists; can be included in Cabinet Schedules.
Cabinet Door/Drawer	Can be assigned to a cabinet or free-standing. See “Cabinets” on page 659.	When free-standing, listed in Cabinets category of Materials Lists. When assigned to a cabinet, listed as a component of the cabinet in Materials Lists and Cabinet Schedules.
Door	Can only be placed in a wall or assigned to a doorway. See “Doors” on page 355.	Listed in Doors category of Materials Lists; can be included in Door Schedules.
Doorway	Can only be placed in a wall. See “Doorways” on page 357.	Listed in Doors category of Materials Lists; can be included in Door Schedules.
Electrical	Can be specified as a variety of free-standing electrical items and may be ceiling-, floor-, wall- or cabinet-mounted. See “Electrical” on page 623.	Listed in Electrical category of Materials Lists; can be included in Electrical Schedules.
Fixture (Exterior)	Exterior Fixtures can act as plumbing items or appliances and have many different options. They may be free-standing, inserted into a cabinet, mounted on the ceiling, a wall, under a cabinet or on a roof.	Listed in Fixtures category of Materials Lists; can be included in Fixture Schedules.

Fixture (Interior)	Interior Fixtures can act as plumbing items or appliances and, like Exterior Fixtures, have many different options.	Listed in Fixtures category of Materials Lists; can be included in Fixture Schedules.
Furnishings (Exterior)	Can only be placed as a free-standing object but can be ceiling-, floor- or roof-mounted.	Listed in Furniture category of Materials Lists; can be included in Furniture Schedules.
Furnishings (Interior)	Can only be placed as a free-standing object but can be ceiling-, floor- or roof-mounted.	Listed in Furniture category of Materials Lists; can be included in Furniture Schedules.
Geometric Shapes	Can only be placed as free-standing object. See "General Shapes" on page 773.	Listed in General category of Materials Lists.
Hardware	Can be specified as a hinge, handle or lock and assigned to a cabinet, to a door, or free-standing.	Listed as a component of the object it is assigned to in Materials Lists or in Hardware category when free-standing; can be included in schedules as a component of the object it is assigned to.
Millwork	Can be free-standing or assigned to an object such as a railing or cabinet. See "Millwork" on page 643.	Listed in Exterior Trim, Interior Trim, or Fixtures category of Materials Lists. May be included in Fixtures Schedules.
Molding	Can only be assigned to a room, cabinet, countertop or molding polyline. See "Trim and Molding" on page 637.	Listed in Exterior Trim or Interior Trim category of Materials Lists.
Plant	Can only be placed as a free-standing object. See "Plant Tools" on page 748.	Listed in Landscaping category of Materials Lists; can be included in Plant Schedules.
Sprinkler	Can only be placed as a free-standing object. See "Sprinkler Tools" on page 755.	Listed in Landscaping category of Materials Lists.
Window	Can only be placed in a wall. See "Windows" on page 383.	Listed in Windows category of Materials Lists; can be included in Window Schedules.

3D Symbols and Materials

When a symbol is imported into Chief Architect, material definitions may be included with it. Whether and how material information is included depends on the symbol's file format. See "About Materials" on page 828.

DXF/DWG and STL Files

.dxf/.dwg and **.stl** files do not include information about material definitions. When imported, default materials for the selected symbol type will be assigned. If the **.dxf/.dwg** or **.stl** file associated with a symbol is

changed, all previously specified material information for the symbol will be lost.

All layers, layer names, solids and instances of blocked solids from the **.dxf/.dwg** or **.stl** file display in the list of components on the left side of the Materials panel of its specification dialog. See “Materials Panel” on page 831.

OBJ Files

Material definitions for most **.obj** files are saved in a separate file with the **.mtl** file extension. If such a file exists, the materials associated with the **.obj** file display in the list on the left side of the Materials panel of its specification dialog.

If Chief Architect does not receive material definition information in an accompanying **.mtl** file, default material properties are assigned.

Material definitions for **.obj** files can also include texture information in the form of image files (**.jpg**, **.png**, etc).

In order to properly import an **.obj** file, Chief Architect needs the **.obj** file, the **.mtl** file, and any referenced texture files. If a texture file is not available, the material it is associated with is created without a texture.

The material definitions associated with an imported **.obj** symbol are not available for use by other objects in Chief Architect until that symbol has been placed into a plan. The associated texture files are then copied to the user’s Textures folder. See “Chief Architect Data” on page 51.

3DS and DAE Files

Material definitions for **.3ds** and **.dae** files refer to texture information in separate image files.

In order to properly import a **.3ds** and **.dae** file, Chief Architect needs these referenced image files. If a texture file is not available, the material it is associated with will be created without it. The associated texture files are copied to the user’s Textures folder.

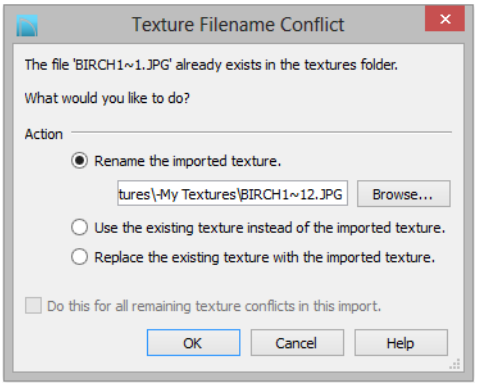
SKP Files

The textures associated with a **.skp** file are saved in the file. After you import a symbol and either place it in a plan or add it to the Library, these textures are saved in the Chief Architect Textures folder.

Chief Architect does not support deformed textures. If a texture associated with a **.skp** file is deformed, it will be imported without the deformations.

Texture Filename Conflict

If a texture of the same name already exists in the plan when an **.obj**, **.3ds** or **.skp** file is imported, the **Texture Filename Conflict** dialog displays.



- Select **Rename the imported texture**, then click the **Browse** button to create a copy of the texture's image file with a new name that you specify.
- Select **Use the existing texture instead of the imported texture** to keep the existing texture.
- Select **Replace the existing texture with the imported texture** to replace the texture already present in the plan with the new, imported one.
- Check **Do this for all remaining textures in this object** to use the same selection for all textures with filename conflicts associated with this symbol.

Exporting a 3D Model

The entire 3D model, o rany part of it that you choose, can be exported from Chief Architect int o one of four different formats:

- 3DS Format
- DAE Format
- STL Format
- DXF/DWG Format

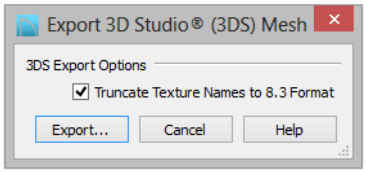
To export the 3D model

1. A camera view or overview must be active. See "Types of 3D Views" on page 868.
2. Make sure that everything that you want to export is set to display in the current view, and everything you do not want to export is not set to display. See "Layers" on page 143.
   - Any surfaces removed using the **Delete Surfaces** tool will not be exported. See "Displaying 3D Views" on page 885.
3. When the model is ready, select **File> Export** and choose the format that you want to use.
4. Give the file a name, making sure to save it in the desired location. See "Exporting Files" on page 56.

3DS Format

A **.3ds** file can be opened by any program that uses 3D Studio®'s **.3ds** format. When the model is ready, select **File> Export> 3D Model (3DS)** to export to this format.

The **Export 3D Studio (3DS) Mesh** dialog opens:



- Check **Truncate Texture Names to 8.3 format** to truncate material and object names to an eight character file name with a three character extension. This allows import into applications that support only legacy **.3ds** files.

The **Export 3D Studio® (3DS) Mesh** dialog, which opens next, is a typical File Save dialog.

Any material textures used in the model are saved as image files in the same location as the saved **.3ds** file. You may find it helpful to export the **.3ds** file to an empty folder created for this purpose.

DAE Format

A **.dae** file can be opened by any program that uses COLLADA™'s **.dae** format. When the model is ready, select **File> Export> 3D COLLADA Model** to export to this format.

The **Export COLLADA Model** dialog is a typical File Save dialog.

Any material textures used in the model are saved as image files in a folder in the same location as the saved **.dae** file. The folder has the same name as the **.dae** file, appended with "_textures".

STL Format

An **.stl** file can be opened by any program that uses Stereolithography format, and can be printed using a stereolithography machine, or 3D printer. When the model is ready, select **File> Export> 3D Model (StL)**.

The **Export StL Model** dialog is a typical File Save dialog.

A 3D model exported to **.StL** format does not include any material or texture information.

DXF/DWG Format

A **.dxf** or **.dwg** file can be opened by any program that uses AutoCAD®'s 3D **.dxf** or **.dwg** format. When the model is ready, select **File> Export> 3D Model (DWG/DXF)** to export to this format.

The entire 3D model, including geometry, is exported, with all surfaces exported as 3DFACE entities.

A 3D model exported to .dxf/.dwg does not include any material or texture information.

3D DXF/DWG Layer Names

When you export a 3D model to **.dxf/.dwg** format, all surfaces are exported as 3DFACE entities. Each entity represents a surface in the 3D model. The entities are placed on layers that are named by Chief Architect:

AutoCAD® Layer Name	Chief Architect Surface / Object
A-APPL-MAIN	Appliance
A-CASE-CABF	Cabinet Door

A-CASE-CABN	Cabinet Box
A-CASE-CNTR	Cabinet Counter Top
A-CASE-GLAS	Cabinet Glass
A-CASE-SOFF	Soffit
A-CASE-TOEA	Cabinet Toe Area
A-CEIL-BAY	Bay / Bow Window Ceiling
A-CEIL-MAIN	Platform Ceiling
A-CEIL-SLOP	Roof Ceiling
A-DOOR-STND	Door
A-EQPM-DOOR	Window Hardware
A-EQPM-HDWR	Cabinet Hardware
A-FIXT-GLAS	Fixture Glass
A-FIXT-MAIN	Fixture
A-FLOR-BAY	Bay / Bow Window Floor
A-FLOR-MAIN	Platform Floor
A-FOOT-FOOT	Footing Top
A-FRAM-CEIL	Ceiling Framing
A-FRAM-DECK	Deck Framing
A-FRAM-GENL	Framing
A-FRAM-JOIS	Floor Framing
A-FRAM-ROOF	Roof Framing
A-FRAM-TRUS	Truss Framing
A-FRAM-WALL	Wall Framing
A-FURN-MAIN	Furniture
A-GLAZ-DOOR	Door Glass
A-GLAZ-WIND	Window
A-HRAL-BAL	Stair Baluster
A-HRAL-BLST	Railing Baluster
A-HRAL-NWEL	Newel
A-HRAL-RAIL	Handrail
A-CASE-CABD	Cabinet Drawer
A-MASN-FIRE	Fireplace
A-NONE-NONE	Miscellaneous
A-PLAT-RIM	Platform Rim
A-RISR-MAIN	Stair Riser
A-ROOF-EAVE	Roof Soffit
A-ROOF-FASC	Roof Fascia
A-ROOF-MAIN	Roof
A-STRS-RUNR	Stair Runner
A-STRS-TRED	Stair Tread
A-STRS-UNDR	Stair Bottom
A-WALL-BAY	Bay / Bow Window Wall
A-WALL-EXTW	Corner Board
A-WALL-MAIN	Wall
A-WALL-PAPE	Wallcovering
A-WALL-PONY	Pony Wall
A-WDWK-EXTR	Exterior Door / Window Trim
A-WDWK-EXTTRIM	Exterior Sash
A-WDWK-MOLD	Molding
A-WDWK-SHLF	Shelf
A-WDWK-TRIM	Interior Door / Window Trim
C-PROP-CURB	Curb
C-PROP-ROAD	Road
C-PROP-TERA	Terrain
C-PROP-TRFE	Terrain Feature
C-PROP-TRSK	Terrain Skirt
E-ELEC-TRIM	Electrical

DXF Codes

Each exported layer name can include a **DXF Code** for the materials applied to objects on that layer. If a material has been specified for an object and appears on its surface, the DXF code for the material is included in the layer name.

DXF Codes are specified for each material in the **Plan Materials** dialog. See “Plan Materials Dialog” on page 840.

Export to REScheck

REScheck™ is a residential energy code compliance program offered by the U.S. Department of Energy that evaluates the thermal envelope of a structure and determines how well it meets various energy codes. For more information, visit: http://www.energycodes.gov/rescheck.

To export a plan's thermal envelope information for use in REScheck™, select **File> Export> Export to REScheck**. Chief Architect exports using the **.rxl** file format, which can be used by both the desktop and web-based versions of REScheck™.

Exported Project Data

Chief Architect can export the following REScheck Project data:

- **Front Faces** - The side of the house that faces down on-screen is considered the front, and North is considered up on-screen unless a North Pointer is used. See "North Pointer" on page 921.
- The **Conditioned Floor Area** is calculated and exported by Chief Architect. See "Conditioned Area Totals" on page 1262.
- The **Owner/Agent** information is drawn from the plan file's Client Information. See "Client Information" on page 1095.
- The **Designer Contractor** information is drawn from the plan file's Designer Information. See "Designer Information" on page 1095.

In a REScheck report exported from Chief Architect, the Project Type is set as "New Construction" and "1-and-2 Family, Detached" is selected under Building Characteristics. Location and Title/Site/Permit are not exportable

Exported Envelope Data

Nearly all REScheck Envelope data can be exported from a Chief Architect plan:

- **Floors** - The Assembly type, Gross Area, and Cavity and Continuous R-Values are exported. See "Floor and Ceiling Platform Definitions" on page 337.
- **Slabs on Grade** - The Slab Perimeter and Continuous R-Value are exported. Slab Depth of Insulation is not included and must be entered manually. See "Foundations" on page 437.
- **Ceilings** - The Assembly type, Gross Area, and Cavity and Continuous R-Values are exported.
- **Walls** - The Assembly type, Orientation, Gross Area, and Cavity and Continuous R-Values are exported. All are exported as Walls rather than Basement or Crawl Walls. Like walls on the same floor are grouped by orientation. See "Wall Type Definitions Dialog" on page 298.

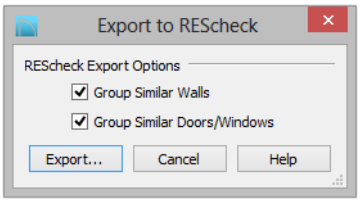
Note: The On Center Spacing of Framed walls is derived from the framing material assigned to the wall type's Main Layer. See "Material Types" on page 837.

- **Doors and Windows** - The Assembly type, Orientation, Gross Area, U-Factor,

and Solar Heat Gain Coefficient (SHGC) are exported. See “Energy Values Panel” on page 381.

Information about skylights and mulled units is not exported.

Export to REScheck Dialog



- Uncheck **Group Similar Walls** to treat walls on multiple floors separately. When checked, walls with the same properties and orientation are added together and treated as one wall, regardless of the floors they are on.
- Uncheck **Group Similar Doors/Windows** to treat all doors and windows separately. When checked, doors and windows with the same properties and orientation are added together and treated as one item

Click the **Export** button to open the **Export REScheck File** dialog, which is a typical Save File dialog. See “Exporting Files” on page 56.

Chapter 37:

Custom Symbols

Chief Architect provides a complete set of architectural tools for highly customized design, as well as the vast selection of objects in the Library Browser that can be used to add more detail to a plan.

In addition, if you don't find precisely what you need, you can either import symbols from third party sources or create your own symbols in Chief Architect. See "Importing 3D Symbols" on page 1149.

Custom symbols can also be edited and added to the library. See "The Library" on page 797.

Chapter Contents

Symbol Specification Dialog

The **Symbol Specification** dialog allows you to specify the attributes of a symbol before it is imported, as well as to edit existing symbols in either a plan or the Library Browser.

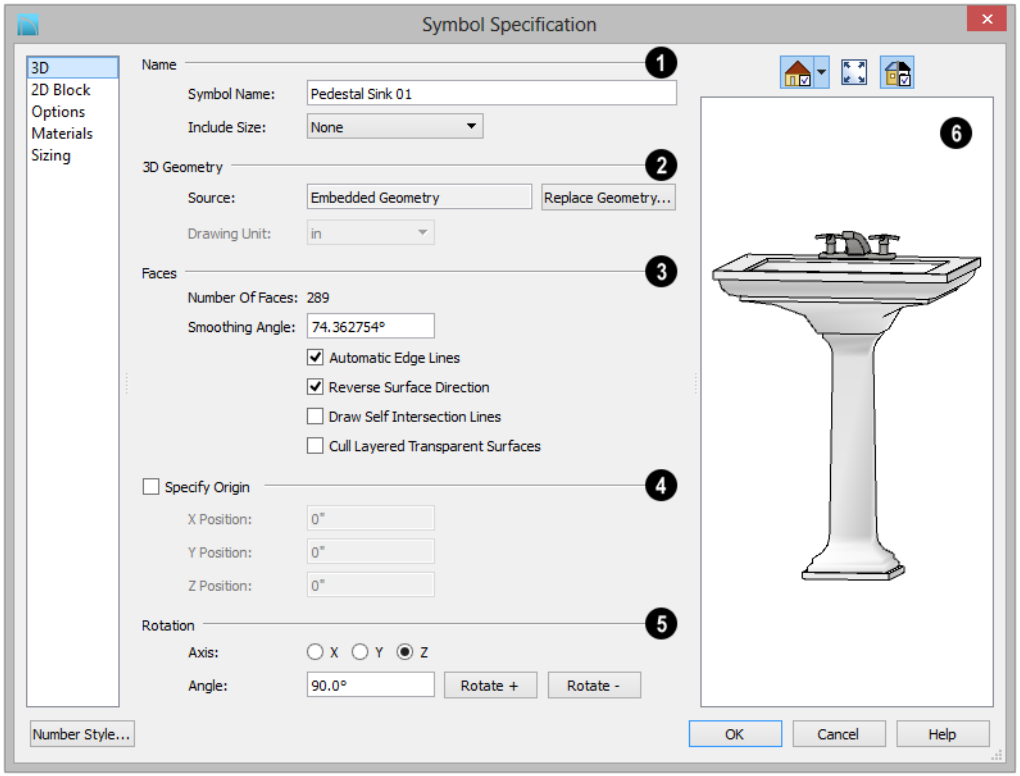
This dialog can be accessed in several ways:

- Select a symbol and click the **Open Symbol**  edit button. Only the selected symbol is affected by any changes that you make: other instances of the symbol in plans are not affected, nor is the symbol saved in the library. Cabinet symbols cannot be edited in this manner.
- Right-click on a symbol in the library and select **Edit> Open**. Editing a symbol in the library changes this original symbol and all future instances of it, but not any symbols already placed in a plan. Cabinet symbols cannot be edited in this manner. See "In the Specification Dialog" on page 821.

- Check **Show Advanced Options** in the **Import 3D Symbol** dialog. Editing a symbol as it is imported determines the initial attributes that it will have once brought into a plan or saved in the library. See “Importing 3D Symbols” on page 1149.
- Check **Show Advanced Options** in the **Convert to Symbol** dialog. See “Convert to Symbol” on page 1173.

3D Panel

The options on the 3D panel primarily affect the symbol’s appearance in 3D views.



1 Specify how the symbol’s **Name** should appear in its object specification dialog, its label, in the Materials List, and in schedules. See “Materials Lists” on page 1247.

- Enter a **Symbol Name**. When imported into the program, a 3D symbol is given the same name as its file name. Not available when multiple symbols are selected. See “Importing 3D Symbols” on page 1149.

- Select a **Display Size** format from the drop-down list to append the name of the symbol with size information.

❷ **3D Geometry** -

- The pathname of the file being imported displays here for reference. If multiple symbols are being imported, only one file displays. If the symbol is not in the process of being imported, “Embedded Geometry” displays instead.
- Click the **Replace Geometry** button to choose a file to associate with the selected symbol. Not available when a symbol is being imported or converted.
- Select the **Drawing Unit** that was used to create the symbol. If any units other than inches or mm are selected, the program will convert the data into units appropriate for Chief Architect. Not available when a symbol is being or converted. To apply a change to this setting, you must also click the Browse button and reload the symbol data from the original file.

Note: SKP files are always imported using inches, regardless of the default units used in the plan file.

❸ Specify how the selected symbol’s 3D **Faces** are generated.

- The **Number Of Faces** that a selected symbol has displays here for reference. When multiple symbols are being imported, nothing displays. Although there is no limit to the number of faces, large numbers can increase rendering time significantly.
- Specify the **Smoothing Angle**, which determines whether two adjacent surfaces are shown with a smooth or sharp angle between them in rendered views. If the angle between two surface normals is less than this angle, normal averaging is used to give the effect of a curved surface. This value also effects the generation of automatic edge lines.

  A good example is a hexagonal cylinder. The angle between adjacent surfaces is 360/8, or 45°. If you want it to look cylindrical, set the **Surface Smoothing Angle** to something greater than 45°. If you want to make the cylinder look hexagonal, set it to less than 45°.
- **Automatic Edge Lines** is checked by default so the program can choose an appropriate Smoothing Angle for legacy symbols migrated into version X6. It applies specifically to legacy symbols as they are brought into the program and in most cases, should remain checked.
- Chief Architect assumes that faces in an imported model are drawn counterclockwise and automatically reverses them to clockwise on import. If the model is already clockwise, check **Reverse Surface Direction** to keep that orientation.

  Chief Architect always imports the front side of faces in **.skp** files; however, it does not support faces with different textures on the front and back and will import the back side as a separate face.
- Check **Draw Self Intersection Lines** to display lines where parts of the selected symbol are drawn in such a manner that they occupy the same 3D space as other parts of the same symbol. In most cases,

this box should be unchecked; and if the selected symbol does not have self intersection lines, it will not be available.

- Check **Cull Layered Transparent Surfaces** to if you need to troubleshoot the appearance of a transparent symbol. Generally, this box should be left unchecked.

❹ Check **Specify Origin** to specify how the selected symbol is positioned when placed in a Chief Architect plan. Specifying a particular origin is helpful if the selected symbol will be inserted into another object, such as a sink to be placed in a cabinet. See "Symbol Origin" on page 1174.

There are three options:

- Leave this box unchecked to accept Chief Architect's default origins for the symbol. Checking this box and entering 0 in the **X**, **Y**, and **Z** fields produces the same results. For most symbols, this is the appropriate option.
- Check this box and enter new values to manually adjust the origin. The values in the **X**, **Y**, and **Z** fields represent the offset of the symbol's origin point from the default Chief Architect origin. This option is appropriate for symbols that will be placed within other objects.
- Check this box and leave the **X**, **Y**, and **Z** values unchanged to use the origin point from the original **.dxf/.dwg/.obj/.3ds/.skp** file. The values in the **X**, **Y**, and **Z** fields represent the difference between the default Chief Architect origin for that type of symbol and the origin from the original **.dxf/.dwg/.obj/3ds** file.

❺ **Rotation** - These settings allow you to rotate the selected symbol(s) about the X, Y, and Z axes.

- Select they **X**, **Y**, or **Z Axis**.
- Specify the number of **Degrees** to rotate the symbol in the text field. 90° is set by default.
- Click the **Rotate +** or **Rotate -** button to rotate the object around the selected axis in a clockwise or counterclockwise direction, respectively.

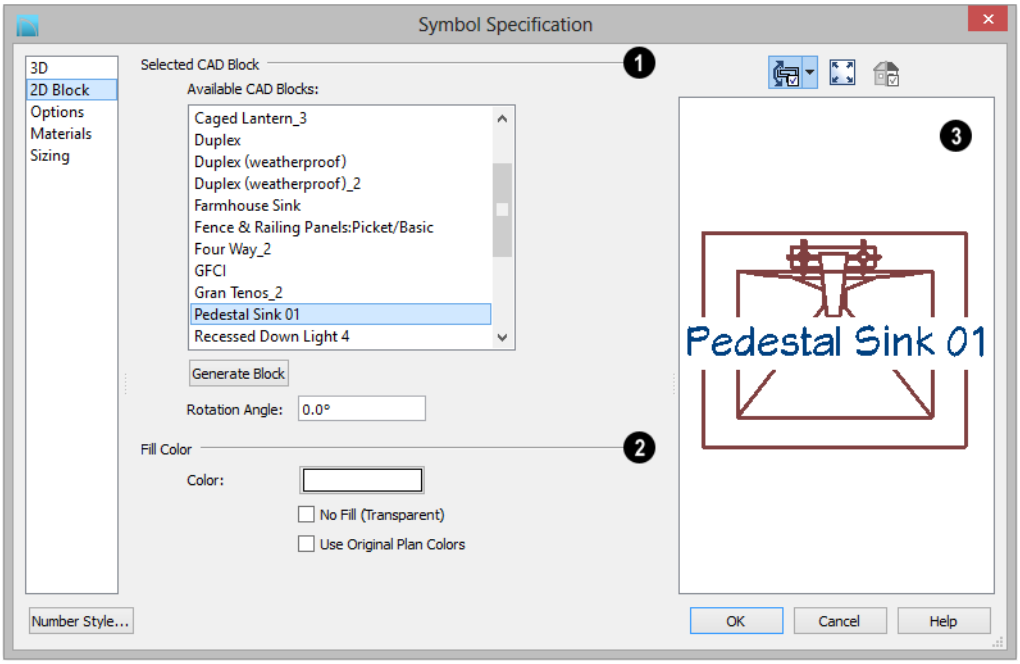
❻ A preview of the symbol's appearance displays here and updates as changes are made to the settings in this dialog. When multiple symbols are selected, the most recently selected symbol displays.

If changes are made to an existing symbol in a plan or the Library Browser, you may also want to generate a new 2D Block to represent it in floor plan view.

2D Block Panel

The 2D Block panel allows you to select a 2D CAD block to represent the selected symbol in floor plan view. See "CAD Blocks" on page 1078.

This panel is not available for Doors, Doorways, and Cabinet Doors, nor is it available when multiple symbols are being imported.



1 Selected CAD Block -

- The CAD block associated with the selected symbol is selected in the list of **Available CAD Blocks** and displays in the preview.
- The CAD block name of an imported symbol will be based on the symbol's original file name. See "Importing 3D Symbols" on page 1149.
- You can select a different CAD block from the list if you wish.
- Click the **Generate Block** button to automatically generate a CAD block based on an overhead projection of the selected symbol and add it to the list.

If you do not see a CAD block in this list that suits your needs, you can create your own. See "Custom 2D Symbols" on page 1080.

- Enter a **Rotation Angle** to rotate the 2D CAD block from its original angle of 0°. The orientation of the 2D CAD block in floor plan view does not affect the symbol's orientation in 3D views.

2 Specify the selected symbol's **Fill Color**.

- Click the **Color** bar to select a fill color for the 2D block. See "Color Chooser/ Select Color Dialog" on page 853.
- Check **No Fill (Transparent)** to have the 2D background be transparent.

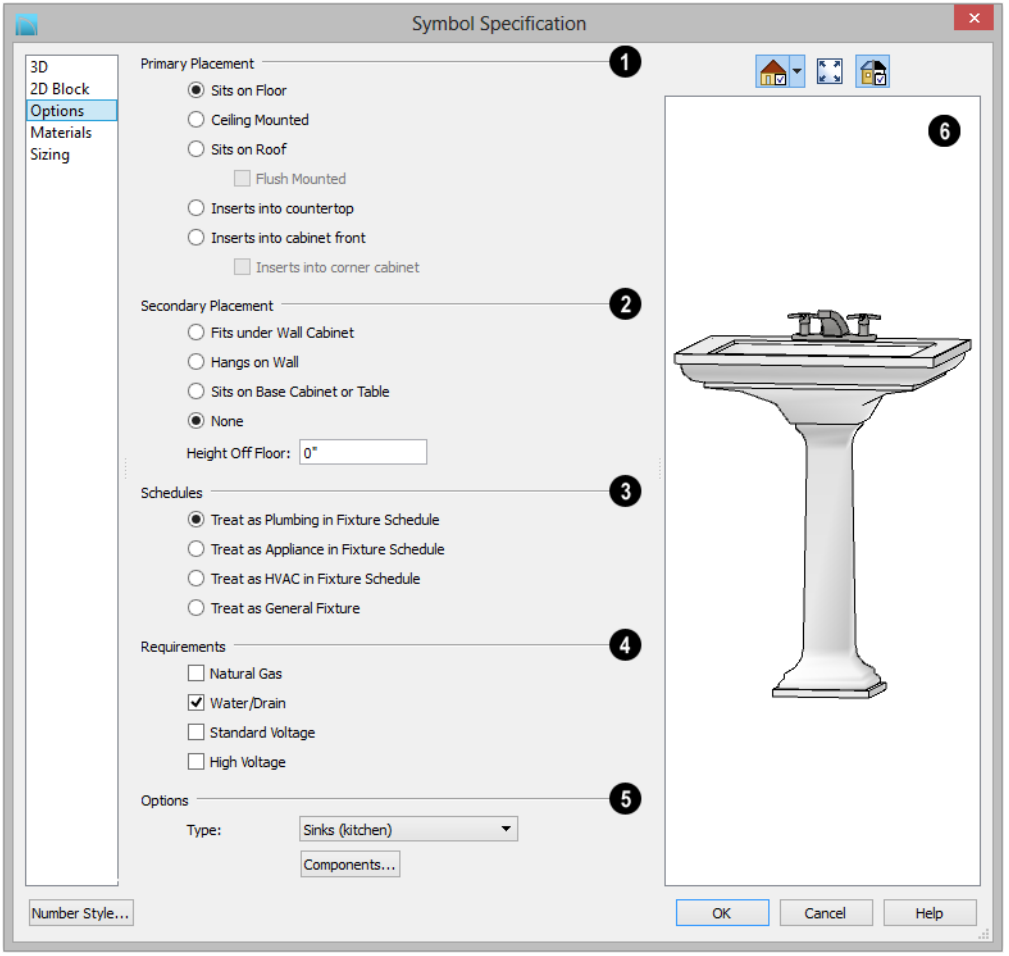
- Check **Use Original Plan Colors** to make the symbol's fill color white.

❸ A preview of the selected CAD Block displays here when Show Plan View is selected. See "Dialog Preview Panes" on page 38.

Options Panel

The settings on the Options panel affect how a symbol behaves and can be placed.

The options that display in this window vary, depending on the type of symbol selected. A complete list of the options available for different types of symbols is available in the **Help** in the program.



❶ The **Primary Placement** options specify how the selected symbol is positioned and oriented. For some symbol types, the Primary and Secondary Placement Options are combined.

❷ The **Secondary Placement** options add further placement restrictions and abilities to the selected symbol.

- Specify the selected symbol's **Height Off Floor**, which serves as its default Floor to Bottom value in its specification dialog and is dynamically linked to that setting. See "Symbol Object Specification Dialogs" on page 823.

❸ The **Schedules** options are available for interior and exterior fixture symbols and allow you to include the selected symbol in specific types of schedules. See "Working with Multiple Schedules" on page 1236.

❹ **Requirements** - Specify whether the selected fixture symbol requires Natural Gas, Water/Drain, Standard Voltage, or High Voltage.

❺ Additional **Options** specify the selected symbol's purpose.

- Select a symbol **Type** from the drop-down list. Available for doorway, cabinet door/drawer, fixture, furniture and window symbols.
- A variety of checkboxes may be available, depending on the selected symbol's Category and Type. For more information, refer to the Available Options table **Help** in the program.
- Click the **Components** button to open the **Components** dialog. Not available for symbols in the process of being imported or converted. See "Components Dialog" on page 1265.
- The **Default Light Offset** field is only available only for electrical symbols in the process of being imported or converted, and is enabled when the **Light** option is checked. Enter a distance to offset the light source from the symbol's origin. The Light Offset for an existing symbol can be specified in its **Electrical Service Specification** dialog. See "Light Data Panel" on page 920.

❻ A preview of the selected symbol displays on the left. See "Dialog Preview Panes" on page 38.

Available Options

The following table lists all Options, the symbol category that each is available for, and how each affects the behavior of the symbol:

Option	Categories	Effect on Symbol
110 / 220 Volts	Electrical	If a 110V or 220V outlet is on a wall, **Auto Place Outlets** does not place an outlet in that area.
3-Way	Electrical	Electrical symbol is a 3-way switch.
4-Way		Electrical symbol is a 4-way switch.
Treat as Appliance in Fixture Schedule	Fixture	Check this box to make this fixture appear in the Appliance Schedule.
Treat as HVAC in Fixture Schedule	Fixture	Check this box to make this fixture appear in the HVAC Schedule.
Treat as Plumbing in Fixture Schedule	Fixture	Check this box to make this fixture appear in the Plumbing Schedule.
Breaker Panel	Electrical	No effect
Can sit on base cabinet or table	Fixtures, Furniture, Electrical	Allows fixture to be placed on top of a cabinet. Symbols remain selectable and independent of cabinet after placement. Can also be placed independently, 0" from floor to bottom.
Ceiling Mounted	Electrical	Electrical item is attached to ceiling at origin.
Doorbell	Electrical	Uses switch default height.
Doorway has no threshold	Doorways	Check this box to include a threshold over the floor surface within the doorway. When unchecked, no threshold is created and the floor surface is used.
Fan	Electrical	Recognized by Plan Check as needing to be connected to a switch.
Fits under wall cabinet	Fixtures	Attaches fixture top to bottom of selected wall cabinet and fixture back to adjacent wall. Fixture can be placed independently on plan, and locates itself 54" from floor to bottom.
Floor Mounted	Electrical	Electrical item is attached to floor at origin. Use Height Off Floor to specify distance from floor.
GFCI	Electrical	If an electrical symbol has the GFCI attribute and is placed behind a cabinet in a kitchen or bathroom, **Auto Place Outlets** recognizes it and does not insert a GFCI outlet behind that cabinet.
Hangs on wall	Fixtures and Furniture	Fixture attaches to wall at 54" from floor if placed within 8" of the nearest wall. Can be placed independently of wall if placed more than 8" away and inserts at 54" from floor to bottom.

Option	Categories	Effect on Symbol
Inserts into cabinet front	Fixtures	Fixture attaches itself centrally to the front of a full height cabinet. It becomes merged with the cabinet and is selectable and resizable only in the Cabinet Specification dialog. When this is the only option selected, fixture can be placed in a full height cabinet only. *Note: CAD must also be the same size as the 3D's or width/depth modification is required. For modification, depth must equal distance from back of block to point wanted to attach to cabinet, in order for 2D CAD to show properly.
Inserts into countertop	Fixtures	When placed on a base cabinet, fixture drops into countertop.
Light	Electrical	Creates light source with available properties to individual symbols. Recognized by Plan Check as needing to be connected to a switch.
Mounts under wall cabinet	Electrical	Symbol attaches to underside of wall cabinet if one is present, or to the ceiling if one is not.
No default door in this doorway	Doorways and Windows	Check this option to exclude a door from the doorway.
Outdoor	Electrical	Plan Check warns that this is not a waterproof switch/outlet.
Outlet	Electrical	Can be placed automatically using the Place Outlets option. Electrical Defaults determines placement above floor.
Phone	Electrical	Presence is recognized by Plan Check. Uses outlet default height.
Requires high/standard voltage	Fixtures	If against a wall, Place Outlets places an outlet of the appropriate type behind the fixture. Also makes fixture appear in Appliance Schedule.
Requires natural gas	Fixtures	Appears in Appliance Schedule.
Requires water drain	Fixtures	Appears in Plumbing Schedule.
Sits on floor	Fixtures and Furniture	Default option for Fixtures. Places fixture on floor.
Sits on Roof	Fixtures and Furniture	Places symbol on top of roof plane.
Smoke Detector	Electrical	Recognized by Plan Check as a requirement for certain rooms.
Switch	Electrical	Recognized by Plan Check for connection to a switched item. Electrical Defaults determines height above floor.

Option	Categories	Effect on Symbol
Switched	Electrical	Recognized by Plan Check as needing to be connected to a switch.
System supplies rectangular casing	Doorways and Windows	Chief Architect automatically supplies rectangular casing if your model does not already have a casing.
Thermostat	Electrical	No affect. Uses switch default height.
TV	Electrical	Presence is recognized by Plan Check. Uses outlet default height.
Wall Mounted	Electrical	Electrical item is attached to wall at origin.

Available Appliance and Fixture Types

Item Type	Placement Affect
Appliances (built-in base cabs)	Placement in base cabinet is allowed if **Inserts into Cabinet Front** option is selected.
Appliances (under wall cabs)	Placement under wall cabinet is allowed if **Fits under Wall Cabinet** option is selected.
Cooktops	Placement in cabinet is allowed if **Inserts into Cabinet Top** option is selected.
Ovens (built-in)	Placement in cabinet is allowed if **Inserts into Cabinet Top** option is selected.
Refrigerators (built-in)	Placement in cabinet is allowed if **Inserts into Cabinet Front** option is selected.
Sinks (bathroom)	Placement in cabinet is allowed if **Inserts into Cabinet Top** option is selected.
Sinks (kitchen)	Placement in cabinet is allowed if **Inserts into Cabinet Top** option is selected.
Sinks (laundry)	Placement in cabinet is allowed if **Inserts into Cabinet Top** option is selected.

Materials Panel

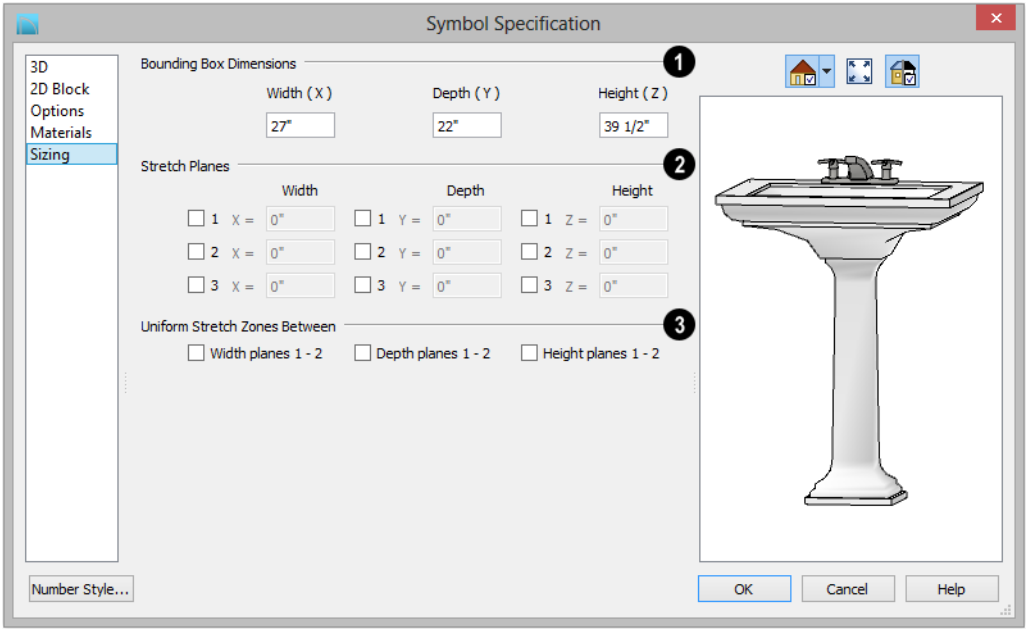
The Materials panel allows you to assign materials to the symbol's components and is similar to the Materials panel in many specification dialogs. See "Materials Panel" on page 831.

If the selected symbol is in the process of being imported, bear in mind that **.dxf**/**.dwg** files do not include material information, so the symbol's components will not have materials assigned to them. See "3D Symbols and Materials" on page 1152.

Sizing Panel

The settings on the Sizing panel allow you to control the size of a symbol's bounding box and how the symbol behaves when resized.

A symbol's actual size cannot be changed in the Symbol Specification dialog. See "Resizing Objects" on page 226.



1 **Bounding Box Dimensions** - Specify the **Width**, **Depth** and **Height** of the selected symbol's bounding box, measured from the symbol's origin with 1/16" (1 mm) accuracy. Not available when multiple symbols are selected.

When a symbol is first created, its bounding box is the same size as the actual 3D object. See "Bounding Boxes" on page 1176.

2 **Stretch Planes** define where a symbol stretches when resized. If no stretch planes are used, the symbol resizes uniformly. See "Stretch Planes and Zones" on page 1176.

- **Width** planes are oriented vertically and run from the back of the symbol to its front, or along the symbol's X axis.
- **Depth** planes are oriented vertically and run from one side of the symbol to the other, or along the symbol's Y axis.
- **Height** planes are oriented horizontally, or along the symbol's Z axis.

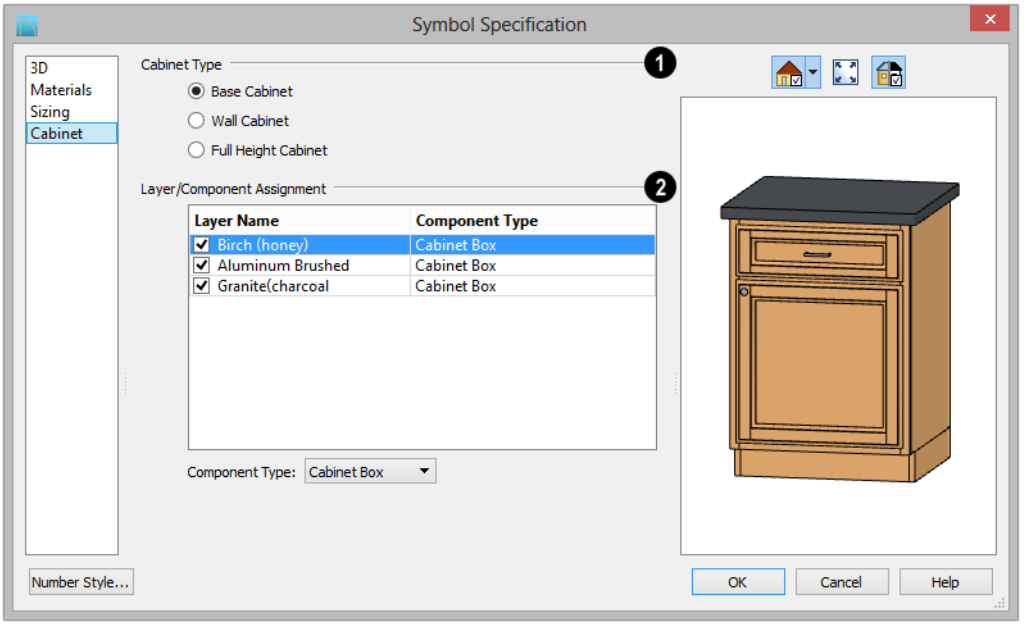
3 **Uniform Stretch Zones** define an area between two planes that stretches

uniformly when the object is resized, leaving the area outside of the zone unaffected.

Note: Stretch Planes and Stretch Zones do not affect a symbol's 2D CAD block, which always resizes in a uniform manner. If you resize a symbol using custom Stretch Planes and Zones, consider generating a new CAD Block. See "2D Block Panel" on page 1162.

Cabinet Panel

The Cabinet Front Symbols panel is only available for Cabinet symbols as they are being imported. The settings on this panel control the function of both the cabinet and its individual parts once it is imported.



1 Specify the symbol's **Cabinet Type**: Base Cabinet, Wall Cabinet or Full Height Cabinet.

2 **Layer/Component Assignment** - Specify the type of component for each layer associated with the cabinet symbol.

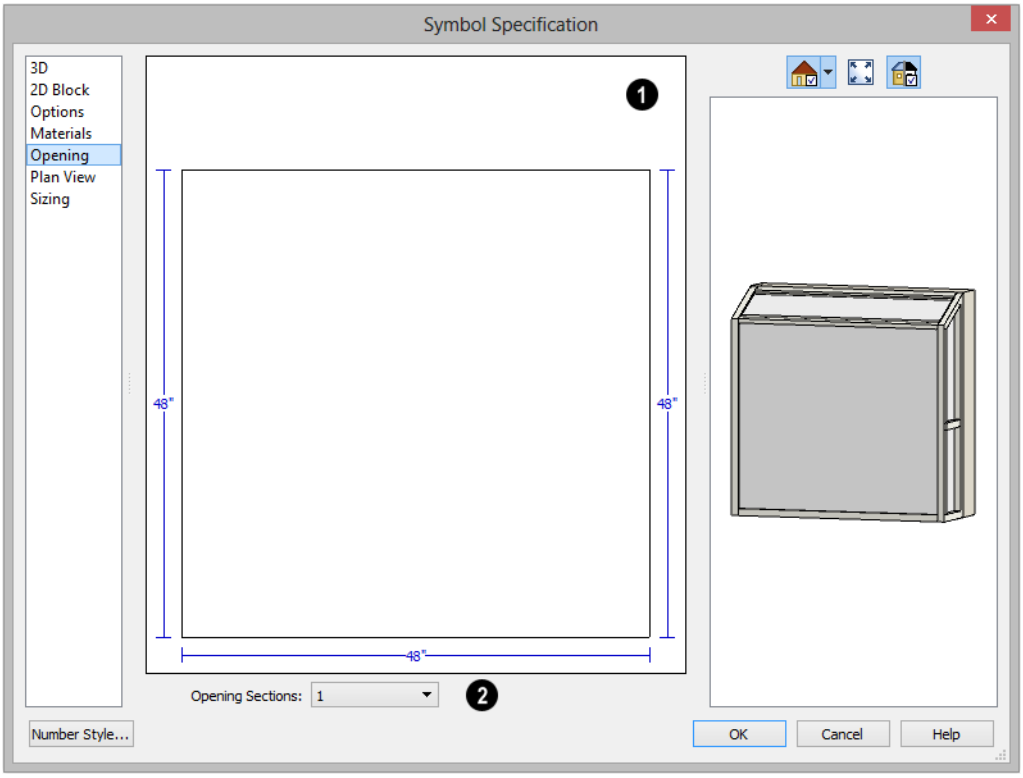
- Click on a **Layer Name** in the list, then select the type of cabinet component type from the **Component Type** drop-down list.

Cabinet symbols should not include hardware. Handles and hinges are assigned according to cabinet defaults when the cabinet is created. See “Door/Drawer Panel” on page 685.

Opening Panel

The settings on the Opening panel define the selected Window or Doorway symbol’s rough opening when placed in a wall.

The Opening panel is only available for Windows and Doorways.



1 An editable diagram of the symbol’s wall opening displays here.

Edit the symbol’s opening size and shape by clicking on a dimension number and typing the desired value. To update the preview, press the Tab key.

2 If the Window or Doorway has an angled or arched top, click the **Opening Sections** drop-down and choose the section

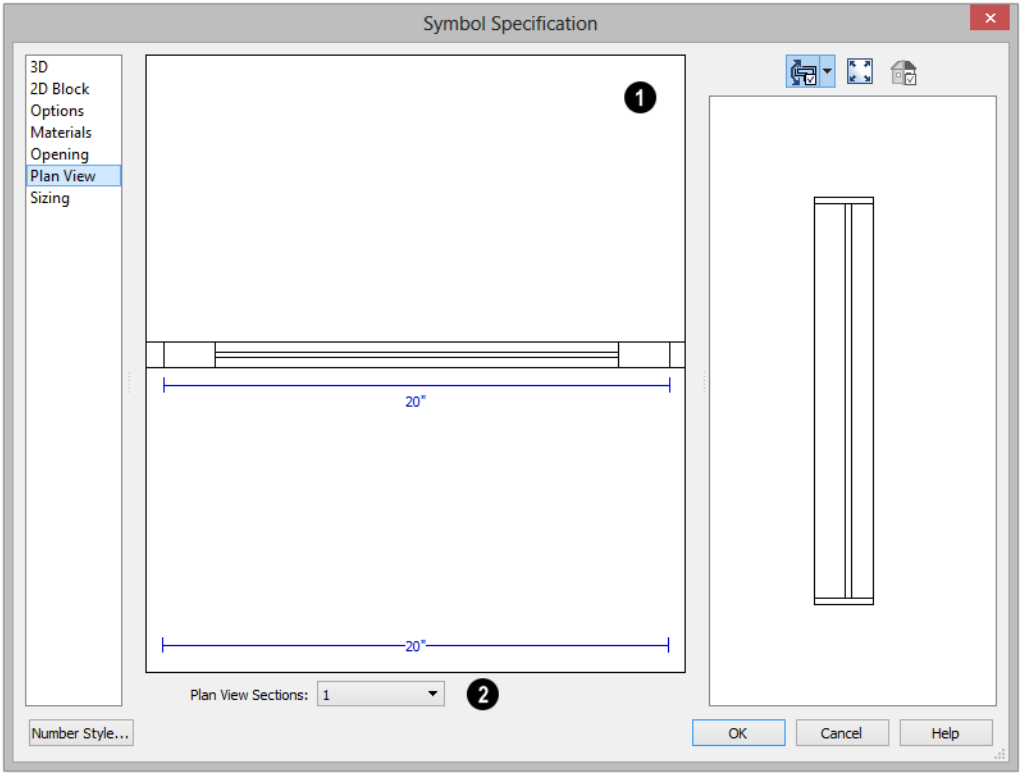
diagram that most closely resembles the rough opening shape that you want. You can then edit the section as needed.

The size and shape of a symbol's opening is independent of the symbol's size. Make sure that the two are compatible.

Plan View Panel

The Plan View panel controls the appearance of Window and Doorway symbols in floor plan view.

The Plan View panel is only available for Windows and Doorways.



1 An editable diagram of the symbol's representation in floor plan view displays here. The settings here also affect how many units the symbol contains as well as their size in both 2D and 3D views.

- To change the size of the symbol's units in floor plan view, click on a dimension number and type the desired value. Press the Tab key to update the diagram.

- To change a unit in the preview from a window to a door swing, click on the unit in the diagram.

The size of a symbol's units is entirely independent of the size of the symbol itself. Make sure that the total width of the symbol's units in plan view equals the width of the 3D symbol.

❷ Click the **Plan View Sections** drop-down and choose the number of units contained by the Doorway or Window symbol. Up to five units are possible.

Plant Information Panel

This panel is available when the **Symbol Specification** dialog is opened for a plant. The options are the same as the Plant Information panel of the **Plant Symbol Specification** dialog. See "Plant Information Panel" on page 754.

Plant Description Panel

This panel is available when the **Symbol Specification** dialog is opened for a plant. The options are the same as the Plant Description panel of the **Plant Symbol Specification** dialog. See "Plant Description Panel" on page 754.

Get Last Symbol

If you import or convert a symbol that cannot be placed in the current view or must be contained by another object that is not present in the view, you can quickly select it for placement once the needed conditions are met using the **Get Last Symbol** command.

Open a view in which the symbol can be placed or create an object to place the symbol into, then select **Tools> Symbol> Get Last Symbol** to retrieve the last symbol created and click in your plan to place the symbol.

Convert to Symbol

While 3D symbols can be imported from third parties, you can also create your own symbols in Chief Architect using any combination of architectual objects.

To create a custom symbol, begin by opening a new, blank plan and then use any combination of architectural objects to produce a model of what you would like your custom symbol to look like.

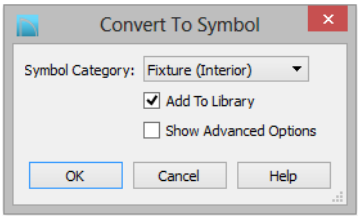
When the objects are configured as desired, use the **Convert to Symbol** tool to create a single symbol that is assigned to a category

that reflects how the object will be used. For example, if you design a cabinet door, select Cabinet Door/Drawer as the symbol's category so you can assign the resulting symbol to a cabinet.

A wide variety of unique objects can be created using the Primitive Tools. See "Primitive Tools" on page 759.

To convert an object to a symbol

1. Create a camera view or overview in which the object or objects that you wish to convert to a single symbol are the only things displaying.
2. Select **Tools> Symbol> Convert to Symbol** .
3. The **Convert to Symbol** dialog displays:



- Choose a **Symbol Category** from the drop-down list.
- Check **Add To Library** if you would like the symbol to be added to the library. See "Add to Library" on page 807.
- Check **Show Advanced Options** to open the **Symbol Specification** dialog when you click OK, where you have more extensive control over the symbol's settings. See "Symbol Specification Dialog" on page 1159.

4. Click **OK** to close the dialog and convert your custom object to a symbol.

Editing Custom Symbols

Custom symbols can be selected and edited much like other objects in the program. A symbol's category determines exactly what editing options are available; however, most symbols can be edited using the edit handles, edit toolbar and specification dialog. See "Editing Objects" on page 175.

Symbols have some additional options that allow you to control how the symbol behaves when it is placed, selected, moved and resized.

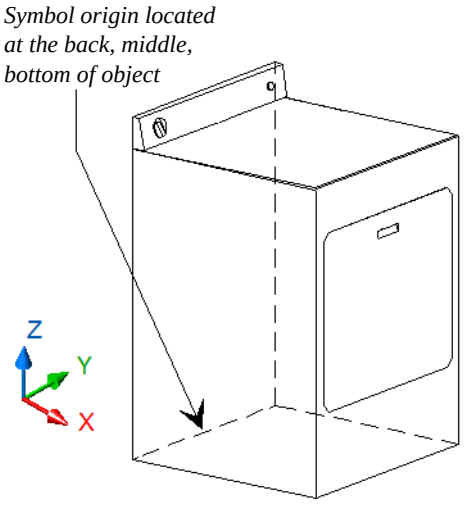
Symbol objects have two specification dialogs: one based on its object type and accessed using the Open Object edit button, and the Symbol Specification dialog accessed using the Open Symbol edit button.

Symbol Origin

All symbols have an origin point, which determines how the object is positioned when it is placed in a plan. The origin point also determines the location of a symbol's bounding box and 2D block.

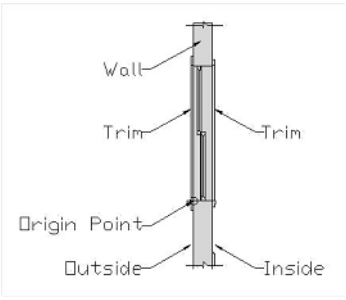
The location of a symbol's origin point is typically on its back surface, at the bottom

center; however, this may vary, depending on the symbol's category.



The following table lists these default origins by symbol type.

Symbol Type	Origin location
Cabinet	Bottom, Back, Center
Cabinet Door	Bottom, Back, Center
Doors	Bottom, Back, Center
Doorways	Bottom, Outside, Center
Electrical, Ceiling Mounted	Center Top
Electrical, Flush Mounted	Back, Center
Electrical, Floor Mounted	Center, Bottom
Electrical, Wall Mounted	Center, Back
Furniture	Bottom, Back, Center
Fixture	Bottom, Back, Center
Geometric Shapes	Bottom, Back, Center
Hardware	Bottom, Back, Center
Millwork	Bottom, Back, Center
Molding	n/a
Plant	Bottom, Back, Center
Sprinkler	Back, Center. Height varies.
Windows	Bottom, Outside, Center (of sill)



Window origin located bottom, outside, center.

You can offset a symbol from its origin point. This can make it easy to insert the object inside of another object, but does not affect the location of the bounding box or the 2D block that displays in floor plan view.

To create an insertable symbol

1. Make a note of the symbol's actual size on the General panel of its specification dialog.
2. Click the **Open Symbol** edit button to open the **Symbol Specification** dialog.
3. On the 3D panel, check **Specify Origin**.
4. Adjust the **X**, **Y** and/or **Z** values as needed:
   - To insert the back of the symbol into the side of another object at a particular distance, specify that distance in the **Y** field as a positive value.

- To insert the bottom of the symbol into the top of another object, specify the distance that it should be dropped as a negative value in the **Z** field.

Bounding Boxes

An object's bounding box determines the amount of space it requires in 3D and thus how close it can be moved to other objects before it bumps into them.

The bounding box also defines the selectable area around a symbol: when you click within an object's bounding box, it will become selected. Similarly, the bounding box affects whether an object is included in a selection marquee. See "Selecting Objects" on page 180.

When a symbol is selected, its edit handles display around the perimeter of its bounding box. See "Edit Handles" on page 32.

You can create setback space for a symbol by increasing its bounding box size on the Sizing panel of the **Symbol Specification** dialog. See "Sizing Panel" on page 1169.

To create setback space for a symbol

1. Make a note of the symbol's actual size on the General panel of its specification dialog.
2. Click the **Open Symbol** edit button to open the **Symbol Specification** dialog.
3. On the Sizing panel, increase the **Width**, **Depth** and/or **Height** values by the amount of the desired setback space.
   - The bounding box Width is always centered on the symbol's origin point.
   - The Depth is measured from the symbol's origin point towards its front.
   - The Height is measured from the symbol's origin point towards its top.

You can also allow a symbol to set into another object by reducing its bounding box size. Unlike the symbol itself, the bounding box and 2D block cannot be offset from the origin.

Stretch Planes and Zones

Stretch Planes and Stretch Zones define where a symbol stretches when resized.

If a symbol has no Stretch Planes or Zones, its surfaces will all resize uniformly; if, on the other hand, a Stretch Plane or Zone is defined, the object will resize only within the plane or zone. Any portions of the symbol located outside of the plane or zone will not resize at all.

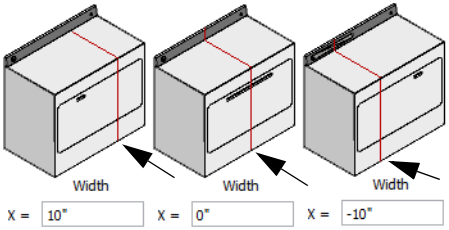
- A Stretch Plane is a two dimensional plane within a symbol which increases or decreases in thickness as the symbol is resized.
- A Stretch Zone defines an area between two Stretch Planes that resizes uniformly, leaving the area outside unaffected.

Stretch Plane coordinates are relative to the symbol's origin point. For many object types, the origin is located at the bottom center of its back surface.

To define a Width stretch plane

1. Open a symbol's **Symbol Specification** dialog using any of the available methods. See "Symbol Specification Dialog" on page 1159.

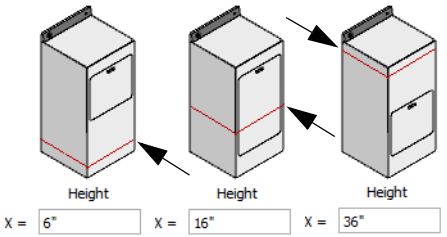
2. On the Sizing panel, under the Stretch Planes heading, check the box beside **1** to the left of the **Width** column. The field to its right becomes active.
3. The new plane has an initial value of 0.
   - Leave it at 0” to run the plane through the object’s default origin point.
   - Specify a negative number to define a plane to the left of the origin.
   - Specify a positive number to define a plane to the right of the origin.
4. Click **OK**. When the symbol’s width is changed, only the cross section defined by the Stretch Plane will be affected.



Location and effect of Width stretch planes

To define a Depth or Height stretch plane

1. On the Sizing panel of the **Symbol Specification** dialog, under the Stretch Planes heading, check the box beside **1** to the left either the **Depth** or **Height** column. The field to its right becomes active.
2. The new plane has an initial value of 0.
   - To define a Height stretch plane, specify a positive number between 0 and the overall height of the symbol.
   - To define a Depth stretch plane, specify a negative number.
3. Click **OK**. When the symbol’s depth or height is changed, only the cross section defined by the Stretch Plane will be affected.

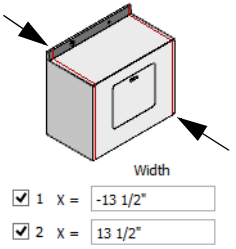


Location and effect of Z-axis stretch planes

A symbol can have up to three Stretch Planes in each direction, for a total of nine.

To define two stretch planes

1. Open a symbol’s **Symbol Specification** dialog.
2. On the Sizing panel, check the boxes beside **1** and **2** to the left of a column under Stretch Planes. The fields to their right becomes active.
3. Specify the desired values to define each Stretch Plane within the symbol.
4. Click **OK**. When the symbol is resized, the two cross sections defined by the Stretch Plane will be affected.



Location and effect of two Width stretch planes

To define a stretch zone

1. Open a symbol's **Symbol Specification** dialog.
2. On the Sizing panel, under the Stretch Planes heading, check the boxes beside **1** and **2** to the left of a column under Stretch Planes. The fields to their right becomes active.
3. Specify values for both planes.
4. Check the box beside the corresponding option in the Stretch Zones section of the panel.
5. Click **OK**. When the symbol is resized, only the area within the Stretch Zone will be affected.

Chapter 38:

Printing and Plotting

Chief Architect provides a variety of printing options, from printing scaled plan views and 3D perspectives, to a set of templates that can be assembled into a 3D model.

To create working drawings, you can use the program's Layout facility. Multiple views of the model can be arranged on pages along with a border and title block. For more information, see "Layout" on page 1203.

Chief Architect also allows you to save your drawings in **.pdf** file format that can then be sent to a printing service.

Note: Screen captures are provided for illustrative purposes only and are not an endorsement of any products.

Chapter Contents

Introduction to Printing

Chief Architect offers printing options to suit a variety of needs. It is helpful to be familiar with these options and choose the one that makes the most sense for the project at hand.

Note: Student, Academic, and Presentation versions of the software produce a watermark on all printed documents.

Output Options

Printing From Layout - For professional quality documents with a title block, border, and multiple views of the model, printing from layout provides the best results. For more information, see “Layout” on page 1203.

Printing Directly From a View - You may prefer to print individual drawings directly from a view. See “Print Tools” on page 1183.

Printing to PDF - Plans can be printed to a **.pdf** file and printed remotely. See “Printing to a PDF File” on page 1190.

Print Model - Creates a set of templates that can be used to create a 3D model of your design. See “Print Model” on page 1199.

Terminology

Drawing Sheet Size - The dimensions of the final printed output. This may or may not be the same as the printer paper size. If the sheet and paper sizes are the same, only one page is required per sheet. See “Drawing Sheet Setup Dialog” on page 1184.

Paper Size - The dimensions of the paper to be printed on. Specifying a paper size that is smaller than the Sheet Size allows large drawings to be printed across multiple pages.

Check Plot - A test printing, typically at a smaller scale, made before final output to large paper format. For more information, see “Check Plots” on page 1189.

Line Weight - The thickness of a line. A thicker line weight is easier to see, but may not show as much detail. See “Line Weights” on page 1191.

Drawing Scale - You can specify this scale in the **Drawing Sheet Setup** dialog. See “Drawing Sheet Setup Dialog” on page 1184.

When a particular scale is not important, drawings can also be sized to fill a particular area. See “Printing to Scale” on page 1188.

Printing Problems

If you encounter difficulties when trying to print, see “Troubleshooting Common Technical Issues” on page 1278.

Always familiarize yourself with your printer or plotter before a deadline is near, and bear in mind that it can take a little time to configure a new printer.

Printers and Plotters

There are many different types of printers and plotters. In general, a printer is smaller, normally outputting 8½ x 11" (Letter or ANSI A size), 8½ x 14" (Legal Size) or sometimes as large as 11 x 17" (Tabloid or ANSI B size).

Plotters are typically used to output larger sheets of paper such as 17 x 22" (ANSI C), or 18” x 24” (ARCH C).

Printer Drivers

A printer driver is a program that allows a printer to communicate with the rest of the computer system. Drivers are usually created by the printer manufacturer, are typically updated regularly, and can usually be downloaded free of charge from the manufacturer’s web site.

In addition to interpreting between the printer and the rest of the system, printer drivers save default page size, orientation, margin size, and other information that Chief Architect refers to unless you specify otherwise. See “Print View Settings” on page 1182.

If you experience printing problems, consider installing updated drivers for your printer. Visit your printer manufacturer’s web site for more information.

Options available with one driver may not be available with another. Printers and plotters supported in one operating system may not be supported by the manufacturer in another.

Printing to File

If your print service requires you to print to a file that can be read by their plotter, you can install that printer’s drivers on your system and then use the Windows **System Print** dialog to Print to File. See “Print View Dialog” on page 1194.

Please note that printing to a file is not an option in the Mac System Print dialog.

Clearing Printer Information

Some information specific to individual printers and plotters, such as available paper sizes, is saved with each plan and layout file. You can select **File> Print> Clear Printer Info** to clear the printer-specific information stored with the plan or layout file.

Printing Defaults

You can print to any printer or plotter that is supported on your operating system and can specify the current printer at any time in either the **Drawing Sheet Setup** or **Print View** dialog.

Drawing Sheet Setup

When any orthographic view is active, you can specify its Drawing Sheet size, orientation, margins, its printed Drawing Scale, and more in the **Drawing**

Sheet Setup dialog. Select **File> Print> Drawing Sheet Setup** to open this dialog. See “Drawing Sheet Setup Dialog” on page 1184.

The settings in the **Drawing Sheet Setup** dialog are view-specific. This means that in a plan file, they can be set up independently for floor plan view and each cross section/ elevation view and CAD Detail. When a new view is created, its initial settings are derived from the current settings in floor plan view.

The Drawing Scale set in the **Drawing Sheet Setup** dialog acts as the default scale for the active view’s **Print**, **Printed Size Input**, and **Send to Layout** dialogs. See “Send To Layout Dialog” on page 1209.

The settings in the **Drawing Sheet Setup** dialog can be customized and saved in your template plans and layout files. See “Template Files” on page 82.

Print View Settings

When you are ready to print an orthographic view, select **File> Print> Print**. The initial settings in the **Print View** dialog are drawn from the **Drawing Sheet Setup** for the view. The system’s default printer is selected and if possible, the paper size and orientation are set to match those of the Drawing Sheet.

Once a view has been printed, the settings in the **Print View** dialog are saved and will be applied to all views of the same type, in all Chief Architect files. View types with separate **Print View** settings are:

- Floor plan view
- Cross Section/Elevation views
- Layout
- Materials Lists
- CAD Details
- Time Tracker Logs

If you prefer that the **Print View** settings not be retained in this manner, uncheck **Remember Print Settings after Printing** in the **Drawing Sheet Setup** dialog.

Displaying Objects

You can control the display of objects when printing directly from a view in the **Layer Display Options** dialog. See “Layer Display Options Dialog” on page 148.

Objects must be visible in order for them to print; however, not all items that are visible will print. See “Print Preview” on page 1187.

To control the display of objects in an orthogonal view sent to layout, select the view, click the **Layout Box Layers**  edit button, and make any needed changes in the **Layer Display Options** dialog. See Layout View Layers.

To control the display of objects in a camera view sent to layout, turn layers on/off in the view before it is sent to layout. You may find it helpful to create a custom layer set for printing directly from a view. See “Layer Sets” on page 145

Print Preview

To get a sense of whether your current settings will meet your needs when printed, you can use the **Print Preview** toggle to view the printed output on screen before any paper is used. See “Print Preview” on page 1187.

The Printing Tools


Select **File> Print** to view the Print Tools submenu. These tools fall into four categories.

Print Setup Tools


Drawing Sheet Setup - Opens the **Drawing Sheet Setup** dialog. See “Drawing Sheet Setup Dialog” on page 1184.


Scale to Fit - Automatically selects a scale that fits your plan to the drawing sheet. See “Printing to Scale” on page 1188.


Center Sheet - Automatically centers the drawing sheet on your drawing. See “Center Sheet” on page 1188.


Print Preview - Shows on screen how the current view will appear printed, based on the current scale and other settings. See “Print Preview” on page 1187.

Print Tools


Print - Prints the current floor plan view, Vector View, CAD Detail, or layout sheet to a specified scale. See “Print View Dialog” on page 1194.


Print Image - Prints the current view including images, textures, and backdrop. Views printed with Print Image are not scaled. See “Print Image Dialog” on page 1197.


Print Model - Opens the **Print Model** dialog, allowing you to print templates for making a physical model of your plan. See “Print Model” on page 1199.

Display Toggles

A number of toggles allow you to turn various aspects of the display on or off. See “Interface Toggles” on page 30.


Color - Turn the on-screen display of color on or off in all views except perspective views. See “Color” on page 1187.


Line Weights - When this is on, line weights appear on screen as they will print. See “Line Weights” on page 1187.


Drawing Sheet - Turn this on for a preview of your plan relative to the current Drawing Sheet. See “Drawing Sheet” on page 1188.


Reference Grid - The Reference Grid does not print, so you can turn this off to get a better sense of what the view will look like printed. See “Reference Grid” on page 1187.

Additional Print Tools

Customize Sheet Sizes - Allows you to create custom sheet sizes. See “Customize Sheet Sizes Dialog” on page 1186.

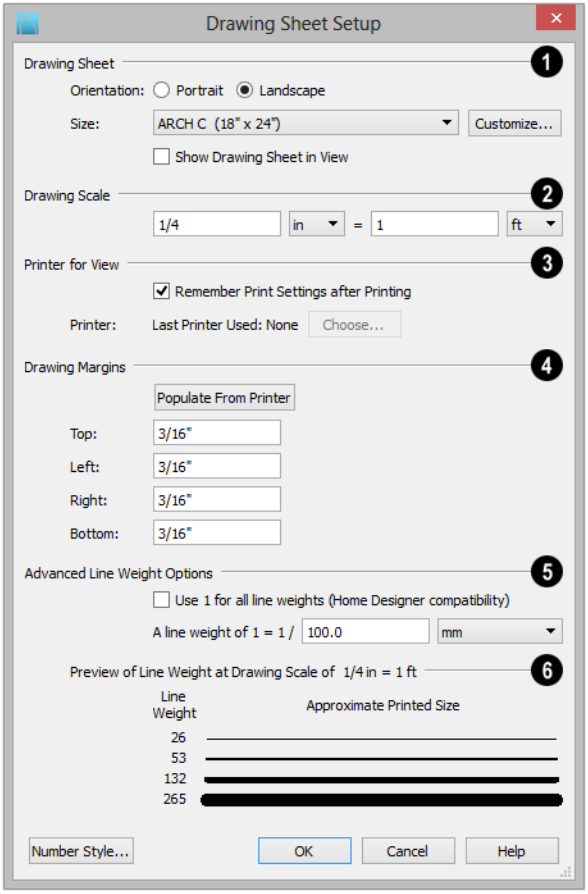
Clear Printer Info - Clears the printer information associated with the current page setup.

Drawing Sheet Setup Dialog

Select **File> Print> Drawing Sheet Setup** to open the **Drawing Sheet Setup** dialog.

The **Drawing Sheet Setup** dialog is only available when an orthogonal view or layout is active. See “Orthogonal Views” on page 1188.

The settings in this dialog are specific to the current orthogonal view and are saved with the .plan or **.layout** file. See “Printing Defaults” on page 1181.



1 Specify the **Orientation** and **Size** of the **Drawing Sheet**, which is the final printed output.

- Click the **Customize** button to open the **Customize Sheet Sizes** dialog. See

"Customize Sheet Sizes Dialog" on page 1186.

Paper can often be inserted into plotters in either of two orientations. Refer to your plotter's documentation to find out which way to insert the paper for correct results.

❷ Specify the **Drawing Scale** for the active view. This scale is applied only when the view is printed.

The scale is specified in two parts, which by default are 1 ft = 1 ft or 1 m = 1 m for layout views, and ¼ inch = 1 ft or 1 m = 50 m for all other views. Both imperial and metric units of measurement are available and can be selected independently.

The units of measurement available here can be controlled in the **Preferences** dialog. See "Unit Conversions Panel" on page 103.

The **Drawing Scale** acts as the default scale for the active view's **Print**, **Print Size Calculator**, and **Send to Layout** dialogs.

❸ Specify the **Printer for View**. which is the printer for the active view in the current file.

- Uncheck **Remember Print Settings after Printing** to enable the Choose button, below. When this is checked, the printer is selected in the **Print View** dialog. See "Printing Defaults" on page 1181.
- Click the **Choose** button to select a printer and edit its paper settings in the **Default Printer for View** dialog.

The **name** of a **Printer** displays to the left of the Choose button for reference.

- If the **Remember** box is checked, the last printer used in the current view type is shown; if no printer has been used in the current view, "None" will display.
- If the **Remember** box is unchecked, the system's default printer will be shown.

If you have questions about your printer's settings, consult its documentation.

❹ Specify the **Drawing Margins**. which define the extents of the printable area of the active view's Drawing Sheet.

- Click the **Populate from Printer** button to set the margins based on the selected printer's default settings. See "Printers and Plotters" on page 1181.
- Specify the width of the desired **Top**, **Left**, **Right**, and **Bottom** margins.

❺ The **Advanced Line Weight Options** allow you to specify the active view's line weight scale. A layout file's line weight scale should always be the same as that of any plan views associated with it. See "Line Weights and Scaling" on page 1192.

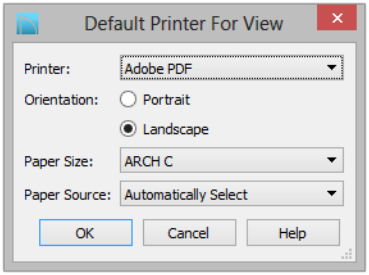
- Check **Use 1 for all line weights (Home Designer compatibility)** to have the program maintain a consistent line thickness and dash size when the drawing scale is changed. When checked, the Line Weight Scale is based on a 1/4 inch = 1 foot drawing scale and 1= 1/300 inch line weight scale. Plans originally created in any of the Home Designer programs have this checked by default; however, this option is not available for layouts and is not normally recommended. See "Line Weights" on page 1191.
- Select the **Line Weight Scale**. See "Line Weights and Scaling" on page 1192. This setting should always be the same for

both a given layout file and any plan views associated with it.

❻ A line weight **Preview** illustrates how changes to the line weight scale affect the printed size of various line weights at the current Drawing Scale.

Default Printer for View Dialog

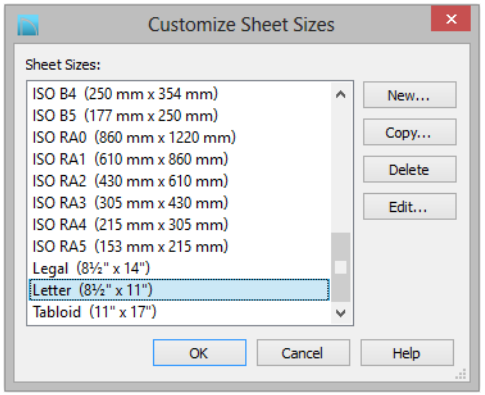
To open the **Default Printer for View** dialog, click the **Choose** button in the **Drawing Sheet Setup** dialog.



- Select a **Printer** from the drop-down list.
- Choose the **Orientation** of the paper used by the selected printer.
- Select a **Paper Size** from the drop-down list. The options available will depend on the selected printer.
- Select a **Paper Source** from the drop-down list. The options available will depend on the selected printer.

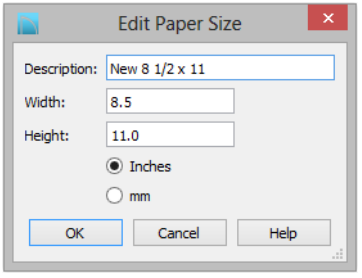
Customize Sheet Sizes Dialog

To open the **Customize Sheet Sizes** dialog, select **File> Print> Customize Sheet Sizes**, or click the **Customize** button in the **Drawing Sheet Setup** dialog.



Several options are available:

- Click **New** to create a new sheet size.
- Select a sheet size and click **Copy** to create a duplicate sheet size.
- Click **Delete** to remove the selected sheet size.
- Select a sheet size and click **Edit** to open the **Edit Paper Size** dialog and change its description, dimensions, and units of measurement.



- Click **OK** to close the dialog. Any new sheet sizes created are now available in the **Drawing Sheet Setup** dialog.
- The data for this dialog is stored in the "sheetSizes.sheet" file in the program's Data folder.

Clearing Printer Information

Select **File> Print> Clear Printer Info** to clear the printer-specific information stored in the **Drawing Sheet Setup** dialog.

This is useful for creating plan and layout templates without an associated printer. See "Template Files" on page 82.

Print Preview

Print Preview and its related display toggles allow you to get a sense of what the current view will look like when it is printed.

Print Preview

Select **File> Print> Print Preview** for an on-screen representation of how the current view will appear when printed. Print Preview is only available in views that can be scaled. See "Printing to Scale" on page 1188.

When **Print Preview**  is on, the Drawing Sheet and line weights are displayed, and the toggle buttons **Drawing Sheet**  and **Line Weights**  are overridden.

Objects such as camera symbols, CAD points, and the Snap and Reference Grids that do not print do not display in **Print Preview**  . Text and dimension objects appear on-screen as they will on the printed page.

When **Print Preview**  is enabled, color will display depending on whether **Print in Color** is selected in the **Print View** dialog. See "Print View Dialog" on page 1194.

The Reference Display does print if it is visible. See "Reference Floor Display" on page 434.

Color

The **Color** toggle turns the on-screen display of color on or off in all views. When Color is toggled off, views print in either black and white or greyscale depending on your **Preferences** setting. See "Colors Panel" on page 92.

Reference Grid

The **Reference Grid** is an on-screen grid composed of regular squares that can be used to convey a sense of scale while drawing. It does not print, and its size can be specified in the **General Plan Defaults** dialog. See "General Plan Defaults Dialog" on page 86.

Line Weights

Select **View> Line Weights** for an on-screen representation of line weights

and line styles. Turning **Line Weights** on or off does not affect the final printed output.

When **Line Weights** is turned on, you can **Zoom In** to see the location of lines and dashed lines as they will appear on the printed page.

When **Line Weights** is off, dashed lines look the same, regardless of the zoom factor.

Line Weights can also be turned on or off in the **Preferences** dialog. See "Appearance Panel" on page 90.

Drawing Sheet

Select **View> Drawing Sheet** to show the drawing sheet on screen. The sheet size is specified in the **Drawing Sheet Setup** dialog. See "Drawing Sheet Setup Dialog" on page 1184.

A blue border represents the margins of the printable area. If the margins have been set to populate from the selected printer, this border may not display on all edges of the drawing sheet. See "Printer Drivers" on page 1181.

When **Drawing Sheet** is on, the drawing sheet behaves as an object.

- When selected at its border the sheet has edit handles, allowing it to be moved. See "Editing Objects" on page 175.
- You can also resize the sheet using its edit handles; however, for best results, it is recommended that you instead select an available sheet size in the **Drawing Sheet Setup** dialog. See "Drawing Sheet Setup Dialog" on page 1184.
- Dimension lines can locate the edges of the sheet and can be used to position other objects relative to it. See "Moving Objects Using Dimensions" on page 989.

Note: Specifying a sheet size in the Drawing Sheet Setup dialog is preferable to editing the sheet size on-screen.

The drawing sheet cannot be rotated or copied.

Center Sheet

Select **File> Print> Center Sheet** to center the drawing sheet on the drawing. This moves the sheet relative to the drawing but does not affect the coordinates of objects in the drawing. The location of the drawing sheet is independent for each floor of the model.

Printing to Scale

Several different print scaling options are available. The type of view that you are printing determines which options you may choose from.

Orthogonal Views

Floor plan views, Orthographic 3D views, CAD Details, and layout pages are orthogonal views, which means:

- Your line of sight is at a right angle to all objects in the view.

- Objects do not appear to decrease in size as their distances from the viewer increase.

Orthogonal views can be printed to scale; however, Orthographic 3D views can only be printed to scale when the Vector View Rendering Technique is used.

The scale set in the **Page Setup** dialog is inherited by the **Print** and **Send to Layout** dialogs. This scale can be overridden on an individual basis in either of these dialogs. See “Print View Dialog” on page 1194 and “Sending Views to Layout” on page 1208.

Select **File> Print> Scale to Fit**  in an orthogonal view to select a suitable scale and re-center the drawing sheet so that everything fits on the sheet.

Imperial drawing scales are typically noted in inches per foot. Larger scales, such as 1 inch = 50 feet or 1:200m, are often used for property layouts.

Once a view has been sent to layout, there are a variety of additional scaling options. See “Rescaling Views” on page 1215.

Perspective Views

Camera views and Perspective overviews display the model much the way the eye would see it and cannot be scaled.

- Objects in the view may be at any angle relative to your line of sight.
- Objects seem to decrease in size as their distances from the viewer increase.

Perspective views can only be printed using the **Print Image**  tool. See “Print Image Dialog” on page 1197.

While perspective views cannot be scaled, you can control the printed size of the view. If **Fit to Paper** is selected in the **Print View** dialog, a percent value can be set that defines how much of the printed page to fill. See “Print View Dialog” on page 1194. 50% causes the print to be 50% of both the height and width of the paper, including the non-printable border.

For example, if printing to an 8½ x 11 page with a 1" non-printable border in each direction:

- 100% would print an area 8½ x 11. This is not recommended, as part of the output could fall outside the printable area.
- 50% would print an area 4¼ x 5½.
- Each printer may vary slightly.

Check Plots

A check plot is a test print that allows you to print at a reduced scale on smaller, less expensive paper so you can check that the drawing will print as expected. The drawing scale is temporarily adjusted to a specified fraction of its true value. Both drawing scale and line weights are subject to this scale adjustment.

For example, if a layout has a border designed to fit on a Drawing Sheet of 24” x 36”, a check plot at 1/2 scale would allow it to fit on a 12” x 18’ page. A view sent to that layout at a Drawing Scale of 1/4” = 1’ would be scaled at 1/8” = 1’ when printed at 1/2 scale.

To create a check plot

1. Select **File> Print> Print View**  . In the **Print View** dialog:

- Click the **Check Plot at** radio button, then choose the desired scale fraction from the drop-down list.
- The **Paper Size** will automatically adjust to fit the selected Check Plot Scale.
- Confirm that the **Paper Size** is the size you wish to use, then click **Print**.

2. The next time you print a view, remember to choose **To Scale** or **Fit to Paper** again in the **Print View** dialog.

Printing Text and Dimensions

As with other objects your drawings, text and dimension numbers are subject to scaling when views are sent to layout or printed. See “Scaling Text” on page 1017.

Printed text size is also influenced by the selected font and the method used to specify its size. See “Character Size” on page 1000.

Text may not print exactly as it appears on-screen. To get a better idea of how text and dimension characters will print, you may find it helpful to **Zoom In** on them.

For best printed results, using true-type or open-type fonts is recommended.

> Text may not appear accurately on screen when the font used by the printer is different than the font used on screen. Consult your printer documentation for more information on font substitution.

Printing Across Multiple Pages

When printing directly from a floor plan view, cross section/elevation view, or layout it is possible to print at a scale that does not fit the drawing on one page.

When printing to a paper size that is smaller than the sheet size, a 2% overlap is used. Crop marks print where the paper needs to be cut between pages. A solid line is drawn at the drawing sheet boundary on the sides that need to be cut.

To see on-screen what the drawing will look like when printed, select **View> Drawing Sheet** and then **Window> Fill Window**. Grey lines across the drawing sheet indicate where the page breaks will occur. See “Drawing Sheet” on page 1188.

Printing to a PDF File

Portable Document Format, or **.pdf** files, are one of the most universally compatible and efficient file formats and can be viewed and printed on most computer platforms.

You can save any view as a 2D **.pdf** file by selecting **Save as PDF** as the Destination printer **Name** in either the **Print View** or **Print Image** dialog. See “Print View Dialog” on page 1194 and “Print Image Dialog” on page 1197.

If you have a **.pdf** writer installed on your system, you can use it to create a 2D **.pdf** file

instead. To print to **.pdf**, simply select it as your printer in the **Print View** or **Print Image** dialog.

When you either save as or print to **.pdf**, you will be asked to create a file name and choose a destination automatically. For more information, see "Saving, Exporting, and Backing Up Files" on page 53.

You can also import **.pdf** files into Chief Architect. See "Importing PDF Files" on page 1115.

Line Weights

The weight of a line refers to its thickness on the printed page and is described in absolute terms as a fraction of a unit, often 1/100th of a millimeter or 1/1000 of an inch. In Chief Architect, line weights are assigned to objects, patterns, and layers using whole numbers that correspond to the numerator of this fraction.

You can specify the Line Weight Scale by defining the denominator and the unit used in this fraction in the **Drawing Sheet Setup** dialog. See "Drawing Sheet Setup Dialog" on page 1184.

It is extremely important that every view sent to layout and the layout file share the same Line Weight Scale. When they do not, unwanted printed output will result.

Your preferred line weights and line weight scale can be saved in your template plan and layout files. See "Template Files" on page 82.

The method for specifying an object's line weight depends on the object and the type of view.

- Most objects' line weights can be set by layer. See "Layer Display Options Dialog" on page 148.
- Some objects' line weights can be set in their specification dialogs. See "Line Style Panel" on page 1053.
- The line weights for walls in floor plan view are defined by wall type in the **Wall Type Definitions** dialog. See "Wall Type Definitions Dialog" on page 298.
- The line weights of material pattern lines, which are visible in Vector Views, can be set in the **Define Material** dialog. See "Define Material Dialog" on page 841.
- The line weight for fill patterns is set for individual objects in their specification dialogs. See "Fill Style Panel" on page 1067.
- The line weight applied to surface edges in Vector Views can be set in the **Print** dialog. See "Print View Dialog" on page 1194.
- The end cap length of dashed lines in floor plan view is set in the **Preferences** dialog. See "Line Properties Panel" on page 109.
- An assigned line weight of 0 draws a line weight of 1 pixel, the thinnest line weight a printer allows. How thick this is varies from printer to printer. See "Printers and Plotters" on page 1181.

Line Weights and Scaling

When a view is sent to layout, line weights may be affected by the drawing scale selected for the view. This occurs when the layout view's scale is different from the drawing scale of the original view.

For example, assume that you have an object in a view with a line weight of 20, and that the view's drawing scale is 1 mm = 50 mm.

- If you send the view to layout at 1 mm = 25 mm scale, twice the original scale, the resulting printed line weight for this object will increase to 40 instead of 20.
- If you send the view to layout at 1 mm = 100 mm scale, half the original scale, the resulting printed line weight for this object will decrease to 10 instead of 20.

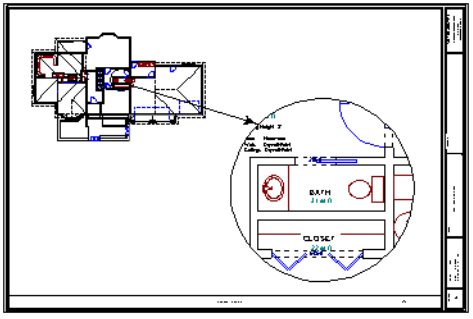
You can specify the drawing scale for any orthogonal view by opening the **Drawing Sheet Setup** dialog while in that view. See "Printing to Scale" on page 1188.

For any layout view, you can specify whether the original line weight is maintained or not in the **Send to Layout** and **Change Scale** dialogs. See "Send To Layout Dialog" on page 1209 and "Rescaling Views" on page 1215.

Note: Under most circumstances, you should select Use Layout Line Scaling when sending views to layout.

Line weight scaling affects both line weights and line styles and can be particularly noticeable with dashed line styles.

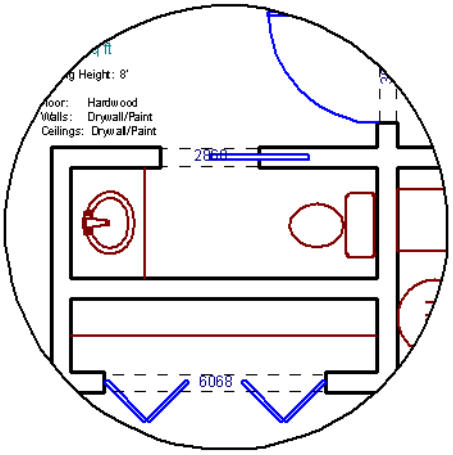
In the following image, the same floor plan view has been sent to layout twice, at two different scales. The view on the left was sent at the same scale as the original view, 1/8" = 1'. The view on the right was sent at 1" = 1', or magnified eight times, to show an area of the plan in greater detail.



Because the view on the right was sent to layout at a scale other than that of the original, it is subject to layout line scaling.

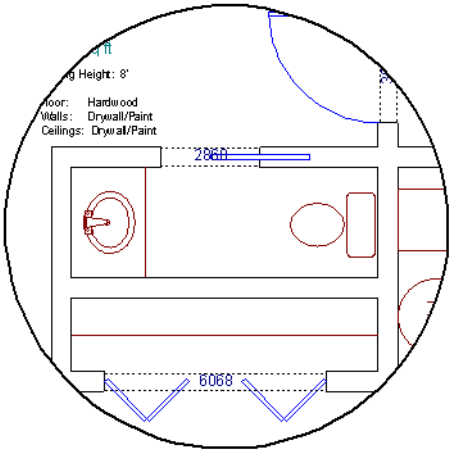
The solid lines representing walls, cabinets and doors are rescaled to be eight times thicker than in the original view.

Similarly, the dashed lines representing the door jambs are rescaled so that the dashes and the spaces between them are eight times larger than in the original view.



with Use Layout Line Scaling disabled

If **Use Layout Line Scaling** is enabled, line weights are no longer scaled and the dashed lines display at the same size as in the original view.



with Use Layout Line Scaling enabled

Because the view in this example is scaled eight times larger in this case, the dashes and line weights look relatively small and fine when **Use Layout Line Scaling** is enabled. Were the view rescaled to be smaller instead, the line weights would look relatively large and thick.

Printers and Line Weight

Line weight and print scaling are subject to the limitations of the printer being used. For example, you will not be able to see the difference between a line that is 1/150th of an inch wide and one that is 1/300th of an inch wide when they are printed using a printer that prints 150 dots per inch (DPI).

That is, a CAD line with a line weight of 1 will look the same as a CAD line with a line weight of 4 when the Line Weight Scale is set at 1 = 1/600th of an inch and you print to a printer capable of 150 DPI.

Setting an object's or group of objects' line weight to zero causes the lines to print as thinly as possible.

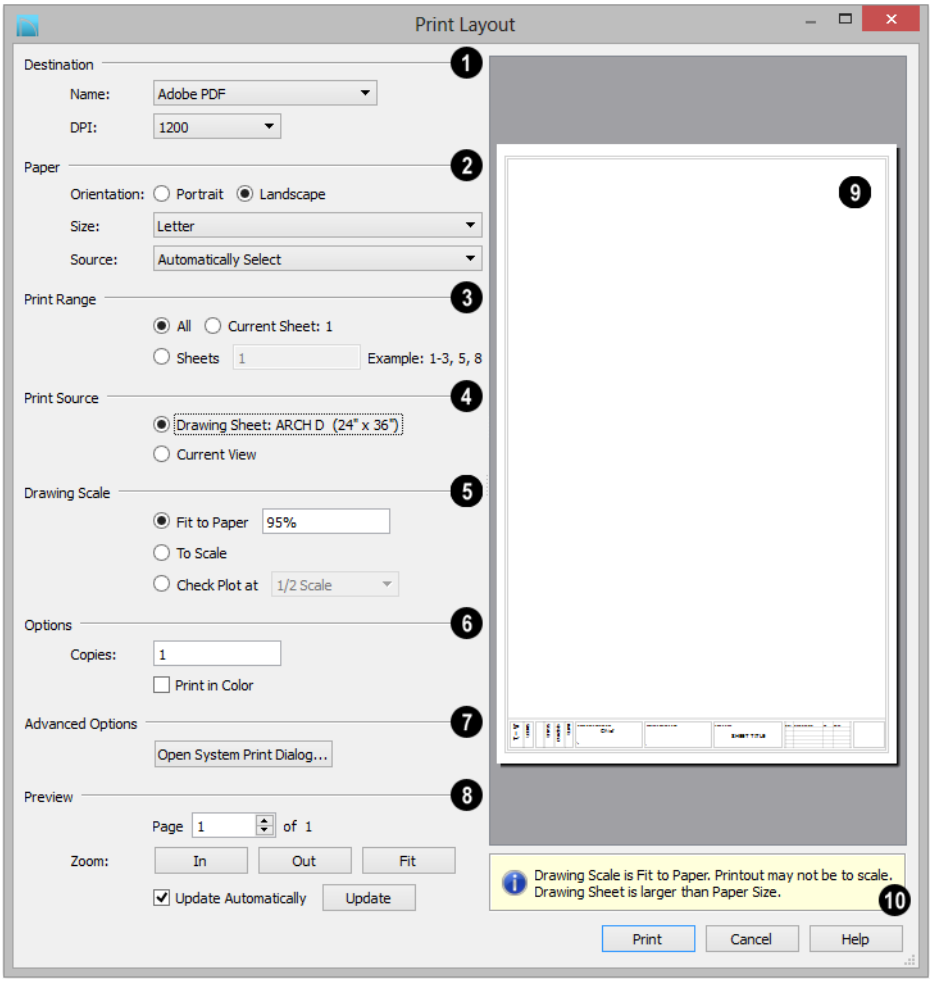
The default Line Weight Scale of 1 = 1/100 mm makes it easy to meet many professional drawing standards and in most cases should not be changed.

Print View Dialog

To print from floor plan view, 3D Vector Views, layout, CAD Details, Time Tracker Logs, and the Materials List, select **File> Print> Print**. The **Print View**, or **Print Layout**, **Print Time Tracker Log,** or **Print Materials List** dialog opens. The settings that are available will vary depending on which version of the dialog is open.

Note: 3D views that are not Vector Views can be printed using Print Image.

If **Remember Print Settings after Printing** is checked in the **Drawing Sheet Setup** dialog, the settings in this dialog will be saved and applied globally to all views of the same type in all Chief Architect files. See “Print View Settings” on page 1182.



1 Select the **Name** of the **Printer** that you would like to use from the drop-down list. To print to **.pdf**, select “Save as PDF” from the list, or choose a **.pdf** writer installed on your system. See “Printing to a PDF File” on page 1190.

- Select the **DPI**, or Dots Per Inch to use when printing, from the drop-down list. The available options may vary depending on the selected printer.

2 Select the **Paper Orientation**, **Size**, and **Source**. The available Size and Source options are controlled by the selected printer’s driver. See “Printer Drivers” on page 1181.

- When possible, the program will automatically set the Size and Orientation to

match those of the Drawing Sheet. See “Drawing Sheet Setup Dialog” on page 1184.

- The Paper Size may be automatically adjusted if the Drawing Scale option is changed, below.

❸ In layout files only, specify the **Print Range**. Only pages that have views or objects drawn directly on them and are not specified as Page Templates will print. Page Templates and empty pages do not print. See “Layout Page Templates” on page 1226.

- Select **All** to print the entire drawing.
- Select **Current Sheet** to print only the currently active layout page.
- Select **Sheets** to specify which layout pages to print, then type the page numbers you wish to print, separated by commas or by a dash. Not available in plan files.

Note: To produce collated multiple copies, specify the sheets in the desired order, separated by commas.

❹ Specify the **Print Source**. Not available in the **Print Materials List** dialog.

- Select **Drawing Sheet** to print the entire sheet even though you may be zoomed in on a portion of the view.
- Select **Current View** to print only that portion of the active view that is currently visible on screen. If you are zoomed out, any blank space outside of the printable objects in the view is ignored.

❺ Specify the **Drawing Scale** of the printed output. Changes to these options may cause the Paper Size to change, above. Not available in the **Print Materials List** dialog or in camera views or overviews. See “Printing to Scale” on page 1188.

- **Fit to Paper** prints the view on one page. The program uses whatever scale is necessary to fit the plan on one page.
- When **Fit to Paper** is selected, specify the percentage of the paper to be used. The default value is 95%.

Note: The Fit to Paper percentage value is global - affecting all views in all files, and is retained between sessions.

- Select **To Scale** to print at the scale specified in the **Drawing Sheet Setup** dialog. See “Drawing Sheet Setup Dialog” on page 1184.
- To print a check plot, select **Check Plot at** and choose a scale adjustment from the drop-down list. See “Check Plots” on page 1189.

❻ **Options** - Only the Copies setting is available in the **Print Materials List** dialog.

- Specify the number of **Copies** you would like to print.
- Check **Print in Color** to print in color or clear the checkbox to print in either grayscale or black and white.
- To print in grayscale, check **Obey Color On/Off Setting** in the **Preferences** dialog before printing, then uncheck **Print in Color**. See “Appearance Panel” on page 90.
- To print in black and white, uncheck **Obey Color On/Off Setting** in the **Preferences** dialog before printing, then uncheck **Print in Color**. Lines and fill colors print as either black or white,

depending on which is closer to the line or fill's actual color.

Most black and white printers print a grey scale approximation of the colors if **Print in Color** is selected.

❼ **Advanced Options** - Click the **Open System Print Dialog** button to close the **Print View** dialog and print using your operating system's Print dialog instead. Not available when No Printer is selected.

❽ Control the appearance of the print job **Preview** on the right side of the dialog.

- Specify the **Page** that displays in the Preview area.
- Click the buttons to **Zoom In**, **Zoom Out**, or **Fit** the selected Page to the extents of the Preview area.
- Uncheck **Update Automatically** to turn off the print job Preview and prevent it from updating as changes are made to the settings in this dialog.
- Click the **Update** button to update the print job Preview to reflect the current settings in this dialog. If Update Automatically is unchecked, clicking Update may force the Preview to be blank.

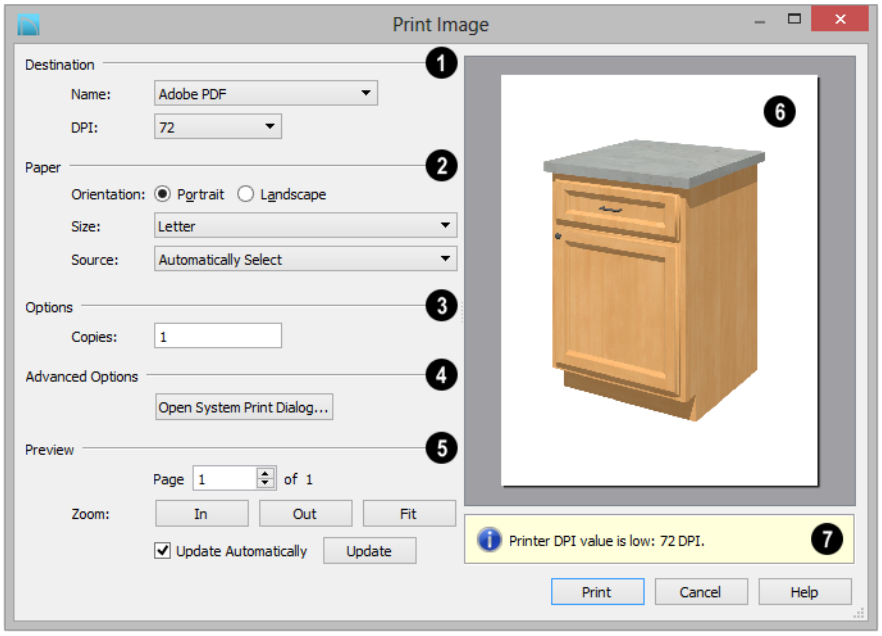
❾ When **Update Automatically** is checked, a preview of the current print job displays here. The drawing sheet displays as a white rectangle, and if multiple sheets are required, you can scroll through them. If the print job is large, a progress dialog may display briefly as the preview draws or updates.

❿ To help prevent unwanted printed output, information messages regarding page size, resolution, and scale may display here, depending on the settings in this dialog.

Print Image Dialog

Any view can be printed by selecting **File> Print Image**. This is the only way to print a Ray Trace or most 3D views. See "Rendering and Ray Tracing" on page 911.

The **Print Image** dialog is similar to the **Print View** dialog; however, the printing process is different. **Print Image** prints individual pixels as opposed to vectors (lines).



1 Select the Name of the **Printer** you wish to use from the drop-down list. To print to **.pdf**, select "Save as PDF" from the list, or choose a **.pdf** writer installed on your system. See "Printing to a PDF File" on page 1190.

- Select the **DPI**,or Dots Per Inch to use when printing, from the drop-down list. The available options may vary depending on the selected printer.

2 Select the **Paper Orientation**, **Size**, and **Source**. The available Size and Source options are controlled by the selected printer's driver. See "Printer Drivers" on page 1181.

3 Specify the number of **Copies** you would like to print.

4 **Advanced Options** - Click the **Open System Print Dialog** button to close the **Print View** dialog and print using your operating system's Print dialog instead. Not available when No Printer is selected.

5 Control the appearance of the print job **Preview** on the right side of the dialog.

- Specify the **Page** that displays in the Preview area.
- Click the buttons to **Zoom In**, **Zoom Out**, or **Fit** the selected Page to the extents of the Preview area.
- Uncheck **Update Automatically** to turn off the print job Preview and prevent it from updating as changes are made to the settings in this dialog.
- Click the **Update** button to update the print job Preview to reflect the current settings in this dialog. If Update Automatically is unchecked, clicking Update may force the Preview to be blank.

❻ When Update Automatically is checked, a preview of the current print job displays here. If the print job is large, a progress dialog may display briefly as the preview draws or updates.

❼ To help prevent unwanted printed output, information messages regarding page size and resolution may display here, depending on the settings in this dialog.

Print Model

The **Model Maker** allows you to print scaled drawings of wall and roof surfaces in your plan that can be assembled into a 3D model. Three types of prints are created: walls, roof planes, and a floor plan wall layout template for each floor.

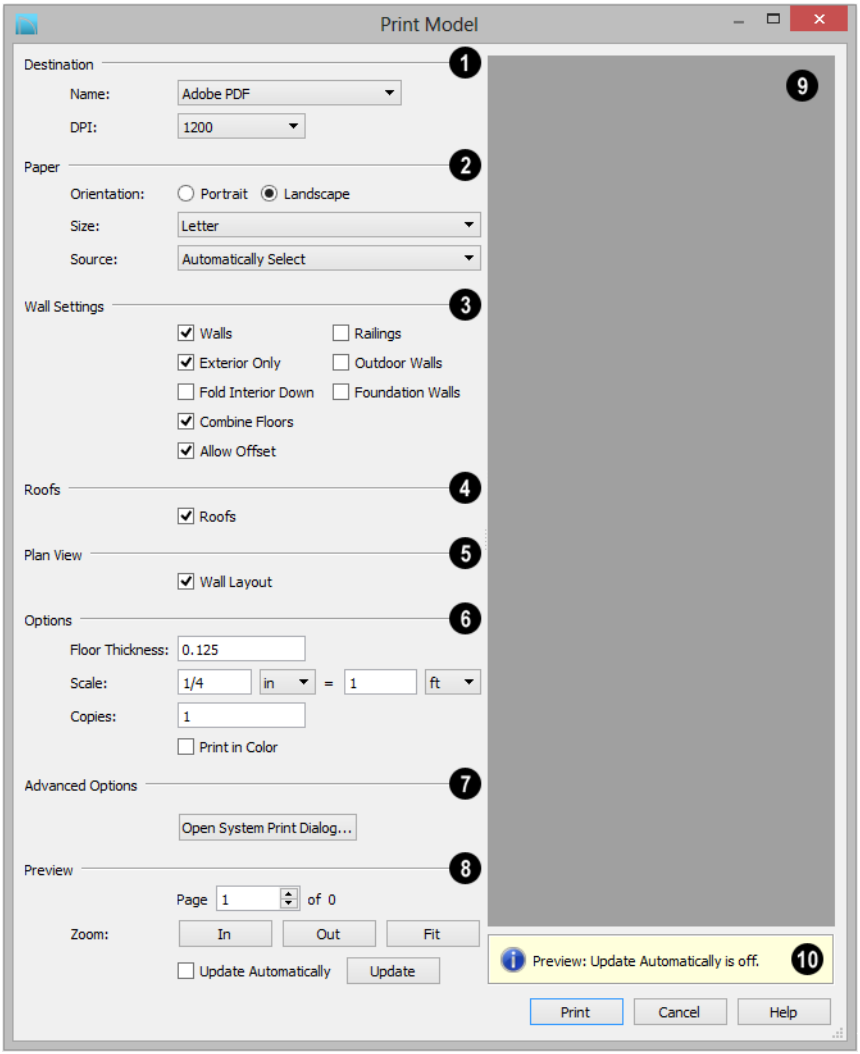
The system arranges as many wall or roof sections as possible onto a single sheet. For larger scale models, a printer with a larger sheet sizes is helpful. If any wall surface, roof surface, or floor plan view covers more than one sheet, it prints by itself on the number of sheets required. Models with large surfaces may require a lot of paper.

Printing the Model

To print the model templates, choose **File> Print> Print Model**  . The **Print Model** dialog opens.

A good way to understand which options best meet your needs is to make a very simple two story plan and try them out.

Print Model Dialog



❶ Select the **Name** of the **Printer** that you would like to use from the drop-down list. To print to **.pdf**, select "Save as PDF" from the list, or choose a **.pdf** writer installed on your system. See "Printing to a PDF File" on page 1190

❷ Select the **Paper Orientation**, **Size**, and **Source**. The available Size and Source options are controlled by the selected printer's driver. See "Printer Drivers" on page 1181.

- Larger page sizes and Landscape orientation are usually best for Print Model.
- Select **All** to print the entire drawing.

❸ **Wall Settings** -

- Uncheck **Walls** to prevent walls from printing. When Walls is unchecked, most of the other Wall Settings are disabled.
- Uncheck **Exterior Only** to print interior wall surfaces in addition to exterior surfaces. Printing interior wall surfaces requires a lot more paper and is typically only desirable when creating a model of the current floor without a roof.
- Check **Fold Interior Down** to print the interior surface of each wall directlly above its corresponding exterior surface and upside down. This allows both walls to be cut in one piece and folded over.
- Check **Combine Floors** to print together the exterior surfaces of walls that are on top of each other. Interior surfaces of those walls still print separately.
- **Allow Offset** modifies the outcome of the **Combine Floors** option. Normally, the main layers of stacked walls must be closely aligned and have the same thickness for walls to combine. Check this box to allow an offset of up to six inches (15 cm) and allow different thicknesses.
- Check **Railings** to print railings along with walls.
- Check **Outdoor Walls** to print Fencing, Retaining Walls, walls that define Exterior type rooms, or that define no room. Printing Outdoor Walls can require a considerable amount of paper.
- Check **Foundation Walls** to print walls specified as Foundation Walls. When this is unchecked, walls on Floor Zero that are not specified as Foundation Walls will print. See “Foundation Walls” on page 264.

❹ Uncheck **Roofs** to prevent roof planes from printing.

❺ Uncheck **Plan View** to prevent the Plan View Wall Layout from printing.

❻ **Options** -

- Specify the **Floor Thickness**, which is the thickness of the material you plan to use for the model’s floor platform.
- Specify the **Scale** to be used when printing the model.
- Specify the number of **Copies** to be printed.
- Check **Print in Color** to print in color.

❼ **Advanced Options** - Click the **Open System Print Dialog** button to close the **Print Model** dialog and print using your operating system’s Print dialog instead. Not available when No Printer is selected.

❽ Control the appearance of the print job **Preview** on the right side of the dialog.

- Specify the **Page** that displays in the Preview area.
- Click the buttons to **Zoom In**, **Zoom Out**, or **Fit** the selected Page to the extents of the Preview area.
- Check **Update Automatically** to have the print job Preview display and update as changes are made to the settings in this dialog. This is not unchecked by default

because updating the Preview in the Print Model dialog can be time-consuming.

- Click the **Update** button to update the print job Preview to reflect the current settings in this dialog. If Update Automatically is unchecked, clicking Update may force the Preview to be blank.

❾ A preview of the current print job displays here. The drawing sheet for each page displays as a white rectangle, and you can scroll through the pages. If the print job is large, a progress dialog may display briefly as the preview draws or updates.

❿ To help prevent unwanted printed output, information messages regarding page size and resolution may display here, depending on the settings in this dialog.

Assembling the Model

Once the templates have been printed, they can be assembled. You need scissors, an adhesive, and a rigid material like cardboard or foamboard that can be easily cut and glued to provide support for the 3D model.

The Model Maker produces templates of wall and roof surfaces in the model, but does not include tabs or other means of connecting them together. If you wish, you can leave extra paper beyond the template edges as you cut them out for use assembling the model.

Wall Layout Template

Begin by laying out the Wall Layout template. If it printed on multiple sheets, they should be combined into one. Make sure that exterior and interior wall surfaces line up where the sheets join together.

Fasten the Wall Layout Template to a sturdy surface to provide support for your walls.

Walls

Walls should be cut and fixed to a rigid backing so that they can stand on their own and support the weight of the roof or floors above them. How they are cut and assembled varies depending on the desired final appearance of the model and how they were printed.

Roofs

Roof planes are joined together when possible before printing. For each roof surface, the fascia and soffit surfaces are attached at the eave.

All flattened roof/fascia/soffit surfaces are placed into a CAD detail named “Model Detail.” This is overwritten and updated each time the roof group is printed for a particular model. If the roof or portions of the roof need to be reprinted, those pieces can be printed from the detail.

Chapter 39:

Layout

The Chief Architect layout facility provides a set of easy to use tools for creating printed construction documents. You can create your own title block and border, then arrange multiple views, details, notes, and more on a single page for printing. Working drawings or blueprints can be created in almost any paper size.

Each layout can contain many pages, and each page can contain multiple views, details, images, CAD objects, text, or contents and revision tables.

For detailed information about printing in Chief Architect, see “Printing and Plotting” on page 1179.

Chapter Contents

Layout Defaults

To access the layout defaults for the current layout file, select **Edit> Default Settings**. The options in the **Default Settings** dialog are similar to those found in this same dialog in a plan file, although there

are fewer choices in the list. See “Default Settings” on page 72.

Drawing Sheet Setup

The settings in the **Drawing Sheet Setup** dialog are file-specific and are particularly important considerations in layout files. See “Drawing Sheet Setup Dialog” on page 1184.

Layout Page Display Options

Select **Tools> Display Settings> Display Options** to open the **Layout Page Display Options** dialog.

This dialog is similar to the **Layers Display Options** dialog, but controls only the display of objects drawn on the layout page, such as CAD objects, text, dimensions, and imported objects. The display of layout view boxes is also controlled by the Layout Page Display Options - but not the objects within those views.

For information about how to use this dialog, see “Layer Display Options Dialog” on page 148.

For information about controlling the display of objects in views sent to layout, see “Displaying Layout Views” on page 1213.

Page Templates

In addition to the default settings available in layout files, you can create one or more Page Templates. Page Templates let you create features like a title block and border and then apply those features to any of the pages of your layout that you wish. See “Layout Page Templates” on page 1226.

Layout File Templates

You can customize layout default settings and Page Templates for future layouts and create a template. See “Template Files” on page 82.

The Layout Tools

There are a variety of tools available to send views to layout and edit them, as well as manage layout pages and links.

Many of the tools available in layout are described in the Printing chapter. See “The Printing Tools” on page 1183.

Sending Views to Layout

Select **File> Send to Layout** to open the **Send to Layout** dialog and send the current view to the specified layout page. See “Sending Views to Layout” on page 1208.

In floor plan view, select a saved cross section/elevation view symbol and click the **Send Camera’s View to Layout** edit button. See “Saving and Printing 3D Views” on page 900.

Select **Tools> Layout> Referenced Plan Files** to see a list of the files that are referenced by the layout. See “Referenced Plan Files Dialog” on page 1222.

Editing Layout Views

A selected layout view can be edited much like other box-based objects. See “Editing Box-Based Objects” on page 203. In

addition, a variety of edit tools allow you to control the appearance of each view.

 Select a layout view and click the **Open View** edit button to open the view that was originally sent to layout. This tool is only available for dynamic views. See “Editing Dynamic Views” on page 1215.

 Select a layout view and click the **Rescale Layout** edit button to open the **Change Scale** dialog and apply a different scale. See “Rescaling Views” on page 1215.

 Select a layout view and click the **Relink File** edit button to open the **Choose Layout File Reference** dialog and relink the selected layout view. See “Relinking Layout Views” on page 1223.

 Select a layout view and click the **Layout Box Layers** edit button to open the **Layer Display Options** dialog for the selected view. See “Displaying Layout Views” on page 1213.

Note: You can also modify the layers of the layout file itself. See “Layout Page Display Options” on page 1204.

 Select **Tools> Layout> Edit Layout** to allow the lines of a Vector View sent to layout to be edited individually. See “Editing Layout Lines” on page 1216.

Managing Layout Pages

 Select **Tools> Layout> Edit Page Information** to open the **Layout Page Information** dialog. See “Layout Page Information” on page 1226.

 Select **Tools> Layout> Insert Page Before** to add a new layout page, moving the current page and all following pages up one page, as long as there is nothing on page 1000.

 Select **Tools> Layout> Insert Page After** to add a new layout page, leaving the current page where it is but moving all following pages up one page, as long as there is nothing on page 1000.

 Select **Tools> Layout> Delete Page** to delete the current layout page, moving all following pages down one page, as long as nothing is on the current page.

 Select **Tools> Layout> Exchange With Next Page** to switch the current layout page with the following page. Not available on Layout Page 1000.

 Select **Tools> Layout> Exchange With Previous Page** to switch the current layout page with the page preceding it. Not available on Layout Page 0.

 You can also specify the page that an object or group of objects displays on in its specification dialog. See “Line Style Panel” on page 1053.

 Select **Tools> Layout> Layout Page Table** to place a Layout Page Table. See “Layout Page Tables” on page 1229.

 Select **Tools> Layout> Layout Revision Table** to place a Revision Table. See “Revision Tables” on page 1229.

Viewing Layout Files

 Use **Tools> Layout> Page**

Up, **Page Down**, and **Change Layout Page** to navigate the layout document. See “The Current Page” on page 1224.

Select **Window> Swap Views** to switch between the current view and the view that was current before it. See “Working in Multiple Views” on page 861.

Click the **Show Layout** button to switch to a layout file that is currently open.

Creating a Layout File

To open an existing layout file, select **File> Open Layout**. Browse to a directory and select the layout file to open. See “Opening and Importing Files” on page 59.

Only one layout can be open at a time. When a layout file is open, it is listed at the bottom of the Window menu as an open view. Layout files are also listed in the Project Browser. See “Project Browser” on page 1093.

In order to create a layout file, you must open a new file and then save it.

Choose **File> New Layout** to create a blank layout file. A layout file is created with the name **untitled.layout**. New layout files open to the first regular, non-Template page and use the default and layer settings associated with your layout template. See “Template Files” on page 82.

If a layout file is not open when you try to send a view to layout, a warning message will ask you if you want to create a new layout file. See “Sending Views to Layout” on page 1208.

Select **File> Save** to save the layout file. It is important that you save the layout in the same directory as the plan file from which views will be or have been sent to the layout pages. See “File Management” on page 49.

Although it is possible to use multiple plan files with a layout, it is generally best to associate only one plan file with a layout and to use the same file name for both. If more than one plan file is used, all should be saved in the same directory as the layout file.

When you save your layout, take a moment to also save the plan file associated with it.

When a view is sent to layout, the plan and layout files become linked. If you rename or move either file, this link will be broken and the view will not display. See “Managing Layout Links” on page 1221.

CAD and Text in Layout

CAD objects, text objects, as well as dimensions can be incorporated into your layout by both including them in your views sent to layout and by drawing them on the layout page.

On the Layout Page

CAD, text, and dimensions can be drawn directly on any layout page, allowing you to create a title block, border, as well as notes and other annotations. A variety of Layout Info text macros with information about page numbers, revisions, and more can be inserted into text objects on layout pages. See “Text Macros” on page 1033.

CAD, text, and dimensions created in layout can be selected, edited, and deleted just as they can in other views. See “Editing Text” on page 1015 and “CAD Objects” on page 1039.

To move a text or CAD object to another page, change the **Page** number in its specification dialog. See “Line Style Panel” on page 1220.

Any text or CAD objects that you would like to display on multiple pages of your layout file - for example, a title block and border - should be drawn on a page specified as a Page Template. See “Layout Page Templates” on page 1226.

In Views Sent to Layout

CAD, text, and dimensions in views sent to layout are scaled just like other objects in the view. If you want text in a layout view to print at a particular size, specify its size based on the scaling you will use when you send the view to layout. See “Character Size” on page 1000.

If you rotate a view on the layout page, any text in that view will rotate as well, provided that its Text Style is using the **Rotate with Plan** setting. See “Text Styles” on page 1030.

If you wish to use Global Text Macros that provide information about a view, such as its drawing scale or the plan’s file name, make sure that the text object is in the view sent to layout - not on the layout page.

A number of macros with information about the layout view can also be added to a layout view’s label as Object Specific Macros. See “Layout Box Borders and Labels” on page 1213.

Pictures, Metafiles, and PDFs in Layout

Picture files, metafiles, and PDF files can be included in views sent to layout or imported directly onto a layout page. See “Displaying Pictures, Metafiles, and PDF Boxes” on page 1118.

Like CAD and text objects, imported pictures, metafiles, and PDFs can be included on Page Templates. See “Layout Page Templates” on page 1226.

Views can also be sent to layout as pictures. In fact, rendered and Ray Trace views sent to layout are always treated as imported pictures embedded in the file. See “Send To Layout Dialog” on page 1209.

A picture, metafile, or PDF file imported onto the layout page can be selected and edited using its edit handles, edit tools and specification dialog. See “Editing Pictures, Metafiles, and PDF Boxes” on page 1118.

Embedded pictures and pdf files increase layout file size. Limit the number of large and/or multiple pictures.

Sending Views to Layout

Layout files can contain many different views and details sent to it from one or more plan files. To send the active view from a plan file to layout, select **File> Send to Layout**.

You can also send one or more saved, closed cross section/elevation views to layout by selecting the camera symbol and clicking the **Send Camera's View to Layout** edit button. See "Saving and Printing 3D Views" on page 900.

When a view is sent to layout, the program sends it to the layout file that is currently open. While more than one plan file can be open at once, only one layout file can be open at a time.

If no layout file is open, the program searches for a layout file with the same file name as the plan that the view is being sent from. If it cannot find such a layout file, it will ask if you want to create a new layout and send the view to it.

To send a view to layout

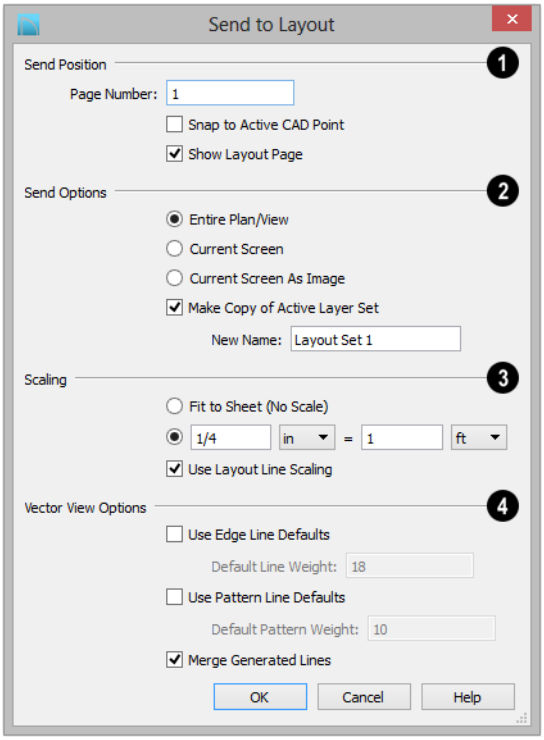
1. Prepare the view so that objects that should be seen are visible and those that should not are suppressed. See "Layer Display Options Dialog" on page 148.

   Remember that if the Reference Display is turned on when a view is sent to layout, it becomes a static part of the view and cannot be turned off later. See "Reference Floor Display" on page 434.

If there are layer settings that you use often, it may be helpful to define custom layer sets for your layout files. See "Layer Sets" on page 145.

2. Select **File> Send to Layout**. In the **Send to Layout** dialog, the available options vary depending on the type of view being sent to layout.
3. Click **OK** to send the view to the specified layout page. Depending on the type of view and size of the model, you may see a progress indicator in the Status Bar. See "The Status Bar" on page 39.

Send To Layout Dialog



1 Specify the desired **Send Position** for the view. These options are available for all types of views.

- **Send to Layout Page #** - Enter a page number to send the view to.
- Check **Snap to Active CAD Point** to snap the view you are sending to layout to the active CAD Point. See “Point Tools” on page 1044.
- Check **Show Layout Page** to go to the selected layout page when you click OK.

2 Which **Send Options** are available depends on the type of view being sent to layout.

- Select **Entire Plan/View** to send to layout the extent of the plan that is visible when you click **Fill Window** . This option is available for Vector Views, Wall Details, and cross section/elevation views.
- Select **Current Screen** to send only what is shown on screen to layout. This option is available for Vector Views and Wall Details.
- Select **Current Screen As Image** to send only what is shown on screen to layout as an embedded image. See “Picture File Box Specification Dialog” on page 1110. This option is available for all views, and

is the only option available for rendered and Ray Trace views.

- Uncheck **Make Copy of Active Layer Set** to reference the currently active layer set in the layout view. When this option is checked, a copy of the currently active layer set is created for use by the layout view. You can specify a **New Name** for a copied layer set if you wish. The copied layout set is saved with the plan file that the view is sent from. Your choice is maintained between sessions. See "Layout Layer Sets" on page 154.

❸ Select a radio button to specify the method of **Scaling** for the view sent to layout.

- Select **Fit to Sheet (No Scale)** to send the view to layout at approximately half the size of the layout drawing sheet. Once on the layout page, the view can be resized.
- Specify the **exact scale** for the view in layout. The view can be rescaled later from layout if necessary. Both Imperial and metric units of measurement are available and can be selected independently.
- When views are sent to layout at different scales, line weights and line styles are subject to the same scaling. See "Line Weights and Scaling" on page 1192. In most cases this is not desirable. When **Use Layout Line Scaling** is checked, the lines in views sent to layout appear the same as lines drawn directly on layout. This option is not available for rendered views.

❹ The **Vector View Options** are only available when a 3D view using the Vector View Rendering Technique is sent to layout. See "Rendered and Vector Views" on page 868. These settings are preserved between sessions.

- Check **Use Edge Line Defaults** and specify a **Default Line Weight** to override all layer specific and object specific line weight settings when the view is sent to layout. If unchecked, the layout view respects the **Surface Edge Lines** settings in the **3D View Defaults** dialog. See "3D View Defaults Dialog" on page 873.
- Check **Use Pattern Line Defaults** and specify a **Default Pattern Weight** to override the Line Weight setting in the **Define Material** dialog. See "General Panel" on page 842.
- Uncheck **Merge Generated Lines** to prevent the merging of colinear lines. Horizontal and vertical lines still merge.

  If **Merge Generated Lines** is selected and a cross section/elevation view is sent to layout, the program merges any lines that are superimposed or parallel with each other so that the layout has only one line rather than several. This makes the final view easier to edit in layout if necessary, but may slow down the process of sending 3D views containing non-vertical or horizontal lines to layout.

Keeping Layout Views Current

It is not uncommon for changes to be made to a plan after views have been sent to layout. Some views will update automatically when changes are made that are visible in the view.

Depending on the type of view, some may update automatically and other must be updated manually. If a plan changes after views of the model are sent to layout, some of the views may become out of date.

Just some elements in a view window do not print, they are not included when a view is sent to layout: for example, the Reference Grid and camera symbols in floor plan view.

Camera callouts are included in floor plan views sent to layout when the "Cameras" layer is turned on in the view.

Dynamic and Static Views

A dynamic view references the view saved with the original plan. Any changes made to the original plan update the dynamic layout view.

For information about controlling the display of dynamic views in layout, see "Displaying Layout Views" on page 1213.

A static view does not reference the original plan and does not update when the plan changes. Static views are like a snapshot taken at a specific time; subsequent changes do not appear in that snapshot. Changes made in the original plan must be resent to layout manually.

Floor Plan Views and CAD Details

Floor plan views and CAD Details sent to layout are dynamic: any changes made to these views in the plan are automatically reflected in layout.

- All editing done in floor plan view or a CAD Detail is automatically reflected on the layout page.
- The display of all layers in these views is under your control. See "Layout Layer Sets" on page 154.

A few elements are not dynamic. Once a floor plan view is sent to layout, these are not affected by changes in the plan:

- The default **Display in Plan View** setting for pony walls becomes a permanent part of the layout view. See "Pony Walls" on page 266.
- The floor level shown in a view sent to layout does not change if you move to a different floor in the plan. See "Multiple Floors" on page 425.
- The **Reference Display** setting in a view sent to layout is unaffected if the Reference Display is turned on or off in the plan. See "Reference Floor Display" on page 434.
- The **Rotate Plan View** angle becomes a permanent part of the layout view. See "Rotate Plan View" on page 233.
- The **Active Defaults** that are in use when a floor plan view is sent to layout are retained with the view and are not affected when you switch to different defaults in the plan. See "Using Active Defaults" on page 79.

Although changes in the plan do not affect a layout view's floor level, its Reference Display setting, or its Active Defaults, you can specify all of these in the view's **Layout**

Box Specification dialog. See “Plan View Panel” on page 1219.

Cross Sections/Elevations

Views created using the **Cross Section/ Elevation**, **Wall Elevation**, and **Backclipped Cross Section** tools are dynamic, but their behavior in layout is different from other dynamic views.

- CAD objects, text, and dimensions can be added to cross section/elevation views. If the view has been sent to layout, they are automatically shown in the layout view provided that their layer is set to display in the view’s layer set. See “Layout Layer Sets” on page 154.
- CAD objects added in a cross section/elevation view can only be edited in the cross section/elevation view.
- Double-clicking a cross section/elevation view in layout using the **Select Objects** tool activates the original view, allowing you to modify the model or add CAD objects.
- The lines that define cross section/elevation views in layout are automatically generated copies that are no longer linked to the 3D model. Once in layout, these lines can be edited using the **Edit Layout** tool. See “Editing Layout Views” on page 1214.

Updating Cross Sections/ Elevations

If a cross section/elevation view is sent to layout,and that camera view is later closed while the layout sheet is open, you will be asked to choose whether to update the view on the layout page.

- If the layout view is up-to-date with the 3D model or if you do not want your changes to be seen in the layout view, select **No**.
- To update the view on the layout page choose **OK**. Any changes that you might have made to the layout view will be lost. For this reason, you should only make changes made to a layout view using the **Edit Layout** tool after the model has been finalized.

Static Views

With the exception of **Cross Section/ Elevation**, **Backclipped Cross Section**, and **Wall Elevation** views, all camera views, overviews, and Ray Trace views sent to layout are static. They are treated as imported images embedded in the layout file. See “Picture File Box Specification Dialog” on page 1110.

Any changes made to the 3D model have no effect on static views. To update these views in layout, delete the old view and send a new one. See “Dynamic and Static Views” on page 1211.

The lines that define Vector Views in layout are automatically generated copies that are no longer linked to the 3D model. Once in layout, these lines can be edited using the **Edit Layout** button. See “Editing Layout Lines” on page 1216.

Displaying Layout Views

Select **Window> Show Layout** to make an open layout file the current view.

Layout View Layers

When a view is sent to layout, the active layer set is used. Some view types give you the option of duplicating and renaming the active layer set before sending the view to layout. See “Sending Views to Layout” on page 1208.

Whether or not the layer settings in a view can be edited after it has been sent to layout depends on the view’s type. See “Dynamic and Static Views” on page 1211.

- The layer set used by a dynamic or semi-dynamic view can be modified using the **Layout Box Layers** edit tool.
- A different layer set can also be selected for dynamic and semi-dynamic views using the **Layout Box Layers** edit tool.
- In addition, dynamic and semi-dynamic views’ layer settings can be modified by opening the original view. See “Opening Layout Views” on page 1220.
- Static views cannot be changed. Similarly, even in dynamic views, some features are static and cannot be altered.

The layer set referenced by a dynamic layout view is saved with the plan rather than the layout file.

Do not delete layer sets that are used in layouts.

To use the Layout Box Layers tool

1. Select a layout view.
2. Click the **Layout Box Layers** edit button to open the **Layer Display Options** dialog for the selected view. See “Layer Display Options Dialog” on page 148.
   - If this edit button is not available, the view is not dynamic.
   - The layer set for the layout view displays at the top of the dialog.
   - The settings for the currently selected layer display below.
3. You can make changes to settings of the current layer set.

   Changes made to this layer set affect all other views that use it, not necessarily the selected layout view alone.
4. Alternatively, you can select a different layer set for the layout view from the **Layer Set** drop-down list.
5. Be sure to **Save** your changes in the plan file before closing the layout.

Layout Box Borders and Labels

A border will display around each layout box when the “Layout Box Borders” layer is set to display in the **Layout Page Display Options** dialog. See “Layout Page Display Options” on page 1204.

Layout boxes can also display labels when the “Layout Box Labels” layer is set to display. See “Object Labels” on page 1241.

Automatic layout box labels display basic information about the original view in the plan. For example, floor plan view sent to layout from Floor 1 will have an automatic label that says, “1st Floor”. A camera view sent to layout will have a label that states the camera’s name. Layout box labels have their own edit handles and can be customized to include text as well as Object Specific Text Macros. See “Text Macros” on page 1033.

Missing Layout Views

If a view on the layout page can be selected but cannot be seen, its link to the plan from which it was sent may have been broken. See “Managing Layout Links” on page 1221.

Editing Layout Views

To edit a layout view, first select its layout box using the **Select Objects** tool. Once selected, the view box can be edited using its edit handles, edit toolbar or specification dialog. See “Layout Box Specification Dialog” on page 1217.

Using the Edit Handles

Layout view boxes can be edited like CAD boxes. See “Editing Box-Based Objects” on page 203.

Floor plan views and CAD Details can be rotated. Both the layout box and the view inside it rotate. Cross section/elevation and 3D views sent to layout cannot be rotated.

In the Specification Dialog

Layout view boxes can be customized in their specification dialog. See “Layout Box Specification Dialog” on page 1217.

Using the Edit Tools

A selected layout view or views can be edited in a variety of ways using the buttons on the edit toolbar. See “The Edit Toolbar” on page 35.

Using Dimensions

Like other CAD box-based objects, layout views can be moved and resized using dimensions. See “Moving Objects Using Dimensions” on page 989.

Moving Views to a Different Page

To move a view from one layout page to another, select the view, click the **Open Object** edit button, and change the **Page** on the Line Style panel of the **Layout Box Specification** dialog. See “Layout Box Specification Dialog” on page 1217.

Copying Views

Just like many objects, views sent to layout can be copied and pasted onto different layout pages or even into different layout files.

As a general rule, though, if multiple copies of a view are needed, it is best to send the view to layout as many times as necessary because each view can then be controlled independently.

Bear in mind, too, that if a layout has views copied from a different layout file and is later moved to a different location on your computer, the link to the original plan file may be broken. See “Keeping Layout Views Current” on page 1210.

Editing Dynamic Views

Select a dynamic view and click the **Open View** edit button to open the original view that was sent to layout. You can also double-click a dynamic view in layout to open the original view. See “Opening Layout Views” on page 1220.

Resizing Scaled Views

Scaled views retain their scale regardless of how you resize the border. You can resize the border proportionally from a corner handle or select one of the handles on an edge to change the size in one direction only. The image may be cropped if the border is resized small enough.

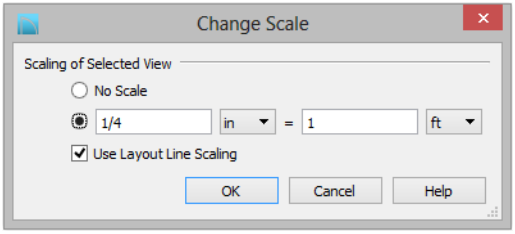
Resizing Non-Scaled Views

If the view was sent to layout using the **Fit to Sheet** setting, or if a view is set to **Fit to Drawing Sheet** in the **Change Scale** dialog, resizing may have one of several results:

- Drag a corner handle in or out to resize both the border and the image proportionally.
- If you drag a side handle in or out, the image stays the same size, but the border changes. If you make the border smaller, it may crop the image; if you make it larger, you may show more of the image.

Rescaling Views

To change the scale of a floor plan, CAD Detail, cross section/elevation, or wall elevation sent to layout, select the view and click the **Rescale Layout View** edit button. The **Change Scale** dialog opens.



1. Choose **No Scale** to remove any specific scale factor associated with the selected view.

2. Select the second option to specify a scale for the view. When its scale is changed, the layout view will resize.

In most cases, you should specify a scale for floor plan views, CAD Details, and cross sections/elevation views. Typical scales are ¼ in = 1ft and 1 m = 50 m.

3. When a view is sent to layout at a scale other than that of the original view, line weights and line styles are affected. In many cases, this is not desirable. Check **Use Layout Line Scaling** to make lines in the selected view appear the same as lines of the same weight drawn on the layout page. See “Line Weights and Scaling” on page 1192.

Editing Layout Lines

Individual edge and pattern lines in any Vector View sent to layout can be selected, edited, and drawn using the **Edit Layout Lines** tool. Changes made using this tool have no effect on the 3D model. See “Rendered and Vector Views” on page 868.

CAD lines in Vector Views sent to layout cannot be edited with the **Edit Layout Lines** tool. Only lines generated by the program can be edited using this tool.

The full set of CAD editing tools is not available when using Edit Layout Lines. It is often more efficient to edit lines in a Vector View by sending it to a CAD Detail for editing first. See “CAD Detail from View” on page 1086.

Selecting Layout Lines

To select a line in a layout view, click the **Edit Layout Lines** button and click on the line. You can select additional lines in the same layout view using the marquee select or group select methods. See “Selecting Objects” on page 180.

Adding New Layout Lines

Add a line to a layout Vector View by clicking the **Edit Layout Lines** button, selecting a layout view, and drawing a new line within the layout box. Once drawn, this line can be edited like any other layout line and maintains its position in relation to the layout view it was drawn in.

Editing Layout Lines

When a layout line is selected, you can use the edit handles to change its size, angle, and position, as with standard CAD lines. A selected layout line can also be deleted like a standard CAD line; however, many of the edit tools that are available for standard CAD objects are not availble for layout lines.

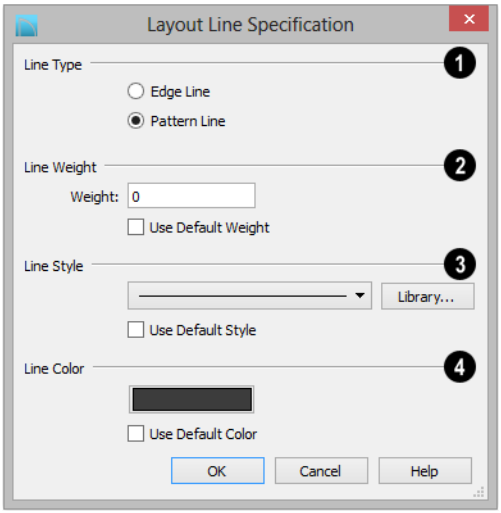
Angle Snaps, **Object Snaps**, and **Grid Snaps** are all available in layout. See “Snap Settings” on page 158.

Layout line properties can be changed in the **Layout Line Specification** dialog.

Layout Line Specification Dialog

Use the **Edit Layout Lines** tool to select one or more lines in a Vector View sent to layout, then click the **Open Object** edit button to open the **Layout Line Specification** dialog.

The dialog lets you to change the properties of the selected line(s) without changing the properties of all lines in the view.



1 Specify the selected line or lines' **Line Type**.

- Select **Edge Line** to specify the selected line(s) as defining the edges of the surface of 3D objects.
- Select **Pattern Line** to specify the selected line(s) as patterns lines for materials such as brick, siding, and shingles.
- When multiple lines are selected, **No Change** may be available.

2 Specify the **Line Weight** of the Selected Line(s). See "Line Weights" on page 1191.

- Type the desired Weight, or thickness, of the selected line(s) in the text field.
- Check **Use Default** to use the default value for the selected Line Type. The default can be set in the **Layout Box Specification** dialog. See "General Panel" on page 1218.

3 Specify the selected line or lines' **Line Style**. See "Line Styles" on page 1076.

- Select a line style from the drop-down list.
- Check **Use Default Style** to use the default style for the selected Line Type. The default can be set in the **Layout Box Specification** dialog.

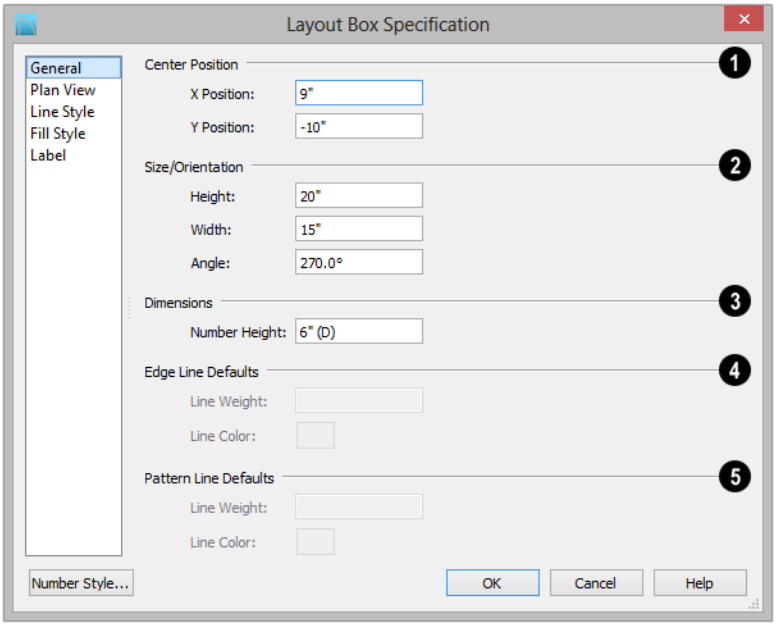
4 Specify the selected line or lines' **Line Color**.

- Click the **Color** bar to select a line color. See "Color Chooser/Select Color Dialog" on page 853.
- Check **Use Default Color** to use the default color for the selected Line Type. The default can be set in the **Layout Box Specification** dialog.

Layout Box Specification Dialog

Select a layout view and click the **Open Object** edit button to open the **Layout Box Specification** dialog.

General Panel



1 Specify the **Center Point** of the selected view's bounding box. See "3D Drafting" on page 29.

- **X Position** - The location of the layout box relative to the absolute origin.
- **Y Position** - The location of the layout box relative to the absolute origin.

2 Specify the **Size/Orientation** of the selected view's bounding box.

- **Angle** - The current angle of the layout box relative to a horizontal line pointing towards the right hand side of the screen.

3 Specify the **Number Height** for **Dimensions** in the selected view. Type a (D) to use the default height for the selected view. See "Dynamic Defaults" on page 74.

This setting is only available for views sent to layout from floor plan view and CAD Details. It affects the size of dimension numbers in the layout view but not in the original view in the plan file.

> The Number Height setting is included for legacy files and is not the recommended method of specifying dimension size. See "Dimension Labels" on page 983.

4 Specify the **Edge Line Defaults** for the selected cross section/elevation view. The initial values are defined in the **Send to Layout** dialog. See "Send To Layout Dialog" on page 1209.

- Specify the default **Line Weight**, or thickness, for all edge lines in the view.

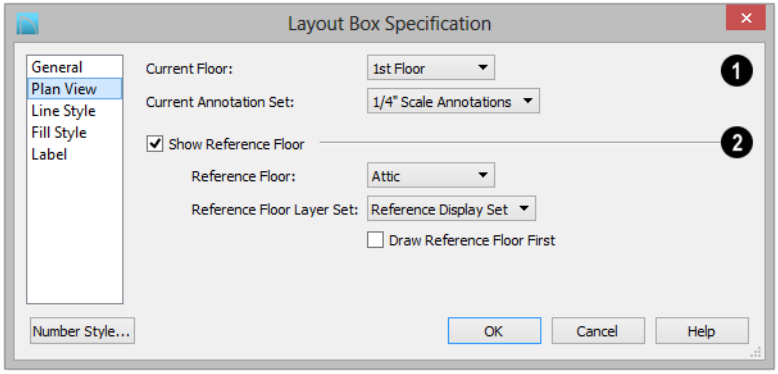
- Specify the default **Line Color** for all edge lines in the view.

5 Specify the **Pattern Line Defaults** for the selected cross section/elevation view. The initial values are defined in the **Send to Layout** dialog.

- Specify the default **Line Weight**, or thickness, for all pattern lines in the view.
- Specify the default **Line Color** for all pattern lines in the view.

Plan View Panel

The Plan View panel is only available when the selected view is a floor plan view. See "Floor Plan Views and CAD Details" on page 1211.



1 Specify the floor and Annotation Set associated with the selected view.

- Select the **Current Floor** shown in the layout view from the drop-down list.
- Select the **Current Annotation Set** from the drop-down list. The options available are limited to the Annotation Sets saved in the view's plan file.
  The Current Annotation Set does not affect the layout view's appearance, but will determine what Annotation Set is active if you use the **Open View** edit tool to return to the original view. See "Annotation Sets" on page 1220.

Note: "Active Defaults" will be included in the Current Annotation Set list if Make Copy of Active Layer Set was checked when the view was sent to layout, or if Active Defaults were in use when it was sent to layout.

2 Check **Show Reference Floor** to include the Reference Floor in the selected view and enable the settings below. See "Reference Floor Display" on page 434.

- Select which floor to use as the **Reference Floor** from the drop-down list.
- Select the **Reference Layer Set** to use from the drop-down list.
- Check **Draw Reference Floor First** to draw the Reference Floor before the

drawing the objects on the floor shown in the view. When this is unchecked, the Reference Floor draws last and appears in front of the objects on the current floor.

Line Style Panel

The settings on the Line Style panel let you to set the properties of the selected layout box's border and to specify what layout page it is located on.

For more information, see "Line Style Panel" on page 1053.

Fill Style Panel

For information about the Fill Style panel, see "Fill Style Panel" on page 1067.

Label Panel

Layout box labels display in layout when the "Layout Box Labels" layer is turned on and use the Text Style assigned to that layer. See "Layout Box Borders and Labels" on page 1213.

For more information about the settings on this panel, see "Label Panel" on page 1243.

Opening Layout Views

Dynamic and semi-dynamic views sent to layout refer to an original view in a plan. From the layout page, you can access that original view by selecting a layout box, then clicking the **Open View** edit button. The original view can also be opened by double-clicking the layout view using the **Select Objects**  tool.

Changes made in this view update in the original layout view. Be aware that depending on the changes you make, other views may also be affected.

Layer Sets

Notice the name of the current layer set that displays in the **Active Layer Set Control** drop-down list. Changes made to this layer set affect not only the current view, but also the associated layout view and any other views that use this layer set. See "Layer Sets" on page 145.

It is important to remember that when a plan view is accessed by opening a dynamic layout view, that view uses the same layer set as the layout view.

Annotation Sets

Floor plan views, cross section/elevation views, and CAD Details sent to layout each have a set of Active Defaults associated with it. When you send one of these view types to layout, these defaults become associated with the layout view; and when you open the original view of one of these types of layout views, its defaults will become active automatically. See "Multiple Saved Defaults" on page 75.

You can specify which defaults are associated with a floor plan view sent to layout by specifying the view's **Current Annotation Set** in the **Layout Box Specification** dialog See "Plan View Panel" on page 1219.

Please note that the Current Annotation Set associated with a layout view always uses the layer set assigned to the layout view, regardless of how the Annotation Set itself may be defined.

Managing Layout Links

Chief Architect allows you to review plan files linked to a current layout, change existing links from one plan file to another, and reestablish links to plan files that have been moved or renamed.

Protecting Layout Links

Careful file management is needed to avoid missing files and disrupted layout links. See "File Management" on page 49.

The following guidelines can help prevent layout links from being broken:

- Save plan files in the same folder as the layout, or in a sub-folder in that folder.
- Legacy plan files referenced by a layout must have the **.plan** file extension. Plans from version 9.5 and prior with the **.pl** file extension cannot link to **.layout** files.
- Custom graphics included in a plan or layout should be embedded in the file or saved in the same folder as the layout.
- Plan files used to save CAD details or other information should be copied and saved in the same folder as the layout.
- Plan files should never be renamed. If a new name is desired, make a copy of the file and rename the copy. Changes made in the copy do not affect views sent to layout from the original plan.
- Avoid sending cross section/elevations to layout more than once. Changes made to the view can affect layout views in unintended ways.
- Layout files should never be moved. If a layout file must be moved, the entire folder it is saved in should be moved or copied and then moved.
- Use **File> Backup Entire Plan**  to create an independent copy of the original layout. Avoid use of "Save As." See "Backup Entire Plan" on page 67.
- Do not delete any layer sets that are used by a view that was sent to layout. See "Layer Sets" on page 145.
- If you relink a layout view to a new plan, be sure to save the plan file so the layer sets are updated.

Finding Missing Files

When a layout file is opened, the program performs a breadth-first search for dynamically linked views. This means that it:

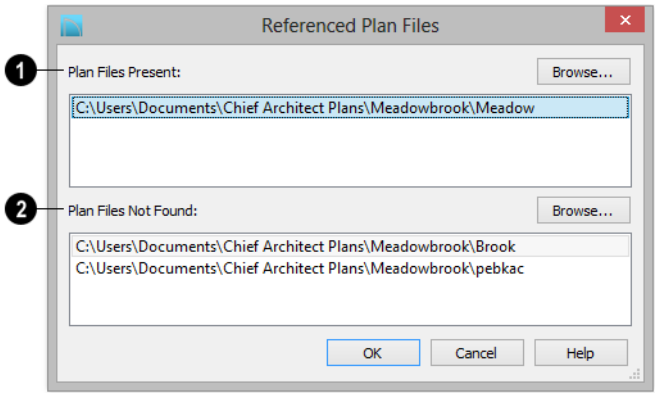
- Looks first in the same folder as the layout.
- Looks next in the folders located closest to the layout's folder.
- If a missing file is not found, it expands its search further from the location of the layout file until the files with the linked views are located.
- If a missing file is not found, a second breadth-first search will be performed,

searching all zipped files found in the first search.

If a file remains missing after the program performs a search of your system, a Warning message will indicate that the program could not successfully open all of the layout's associated plan files. When you click OK, the **Referenced Plan Files** dialog will open, allowing you to relink the layout to its missing associated files.

You can also open this dialog at any time by selecting **Tools> Layout> Referenced Plan Files** while a layout file is open.

Referenced Plan Files Dialog



1. The **Plan Files Present** section lists all files with intact links to the layout.

2. The **Plan Files Not Found** section lists the names of files with disrupted links to the layout. Any files listed here have been moved, renamed, or deleted and cannot be found by the program. Intervention is required to find these files and reestablish their links to the layout.

Select a missing file and click the **Browse** button just above the **Plan Files Not Found** field to open the **Browse For Missing File** dialog, which is a typical **Open** dialog. See "Opening and Importing Files" on page 59.

- Locate the missing file in your system's directory structure. When the missing file is selected, click **Open** to link it to the layout.
- You can also redirect an intact link to from a File Present in Layout to a different file in the same manner.

Be sure to choose **File> Save** in the layout file when the missing files have been located to save their links to the layout file.

Results of Missing Files

If all missing files are correctly redefined, the layout opens when you click **OK**.

If an error message displays, one or more of the missing files could not be replaced by the redefined file. Click **OK** to continue. The

layout opens, but with the following characteristics:

1. Any floor plan views or CAD Details associated with the missing file(s) are blank. Only the border displays if the "Layout Box Borders" layer is set to display. See "Layout Page Display Options" on page 1204.
2. Any elevations or cross sections associated with the missing file(s) show the automatically generated lines, but any added CAD objects are absent.

Relinking Layout Views

You can change the file that a dynamic layout view is linked to by selecting the view and clicking the **Relink File** edit button to open the **Choose Layout File Reference** dialog. This dialog is a typical Open File dialog: select the file that you want to link to and click **Open**. See "Opening and Importing Files" on page 59.

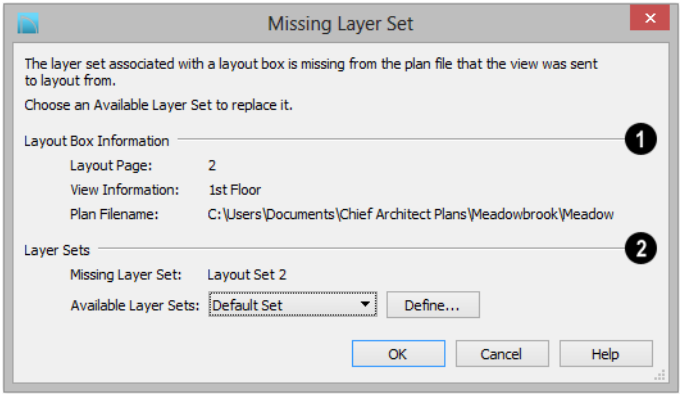
In the Windows version of the software, this dialog opens to the linked file's specified directory and populates the Filename field with that files's name.

If you want to relink all references to this file, use the **Referenced Plan Files** dialog.

Missing Layer Sets

The layer set associated with each view in a layout is saved with the plan file from which the view was sent. Just as it is important to not move, rename, or delete the plan file, it is important that you not rename or delete a layer set used by a layout view. See "Opening and Importing Files" on page 59.

If a layer set used by a layout view cannot be found when the layout is opened, the **Missing Layer Set** dialog will display.



1 The **Layout Box Information** describes the layout view that is missing a layer set, indicating:

- The **Layout Page** where the view in question is located;

- View Information, which describes the contents of the view in question,
- The **Plan Filename** of the plan file that the layer set is missing from.

❷ The **Layer Sets** options allow you to replace the missing layer set.

- The name of the **Missing Layer Set** displays for reference.
- Select a replacement layer set from the **Available Layer Sets** drop-down list.
- Click the **Define** button to open the **Layout Page Display Options** dialog, where you can make changes to the selected layer set.

Layout Page Management

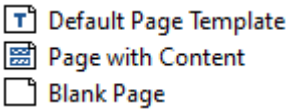
There are a variety of tools that let you navigate and organize the pages of a layout file.

In the Project Browser

All pages in a layout file that are in use are listed in the Project Browser, including all pages with content and Page Templates. See “Project Browser” on page 1093.

Typically, blank layout pages are not listed in the Project Browser; however, if a new page is inserted using the contextual menu in the Project Browser, that new, blank page will be listed..

The three types of pages can be distinguished by the icon to the left of their names:



The contextual menu for a layout page in the Project Browser allows you to view it, edit its Layout Page information, move it relative to other pages, or delete it. See “Contextual Menus” on page 36.

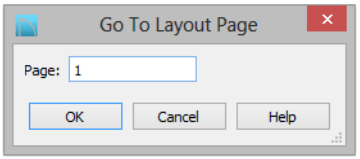
The Current Page

The current layout page is indicated at the center of the Layout Page Up/Down buttons. When a layout file is first created, the current page is page one.

The current layout page is the default target of any view sent to layout. If sent to the wrong page, a view may be moved from one page to another. To do this, select the view you want to move, then click the **Open Object** edit button to open the **Layout Box Specification** dialog. You can change the page number on the Line Style panel. See “Layout Box Specification Dialog” on page 1217.

To navigate between layout pages

- Click the arrow buttons on either side of the **Layout Page** button. 
- Click the **Current Page** number between the arrows to open the **Go To Layout Page** dialog. Enter a page number and click **OK**.



- Select **Page Up** or **Page Down** from the **Tools> Layout>** menu.
- Press Shift + N (up one page) or Shift + M (down one page) on the keyboard.
- Double-click on a page in the Project Browser.

Note: Layout pages do not print if they are blank, even if a border and title block are present.

Adding and Deleting Pages

To begin work on a new page, simply send a view to that page, or navigate to it and begin drawing.

To insert a layout page in front of or behind the current page, select **Tools> Layout> Insert Page Before** or **Insert Page After**. Any pages that follow the new page move up one, provided that nothing is located on page 1000.

You can also right-click on a page in the Project Browser and select either **Insert Page Before** or **Insert Page After** from the contextual menu.

To remove the current page from the layout file, select **Tools> Layout> Delete Page**. The current page and all information on it - including any views - will be completely removed. You can also right-click on a layout page in the Project Browser and select **Delete Page**.

Page Templates assigned to other pages cannot be deleted, and neither can page zero. See “Layout Page Zero” on page 1226.

Exchanging Pages

Select **Tools> Layout> Exchange With Next Page** to switch the current layout page with the following page. Not available on Layout Page 1000.

Select **Tools> Layout> Exchange With Previous Page** to switch the current layout page with the page preceding it. Not available on Layout Page 0.

Layout Page Information

The **Edit Page Information** tool lets you specify any layout page as a Page Template or add information about it which can then be included in layout and revision tables.

Layout Page Numbering

By default, layout pages begin with zero, which is the default Page Template, and proceed in ascending order to page 1000. If this does not meet your needs, you can create your own numbering convention using the **Label** setting in the **Layout Page Information** dialog. See “Layout Page Information” on page 1226.

To do this, begin by typing a prefix of your choice followed by a pound (#) sign in the Label field - for example, “A#”. The program will replace the # with a numeral 1 on the first page with that particular prefix in its Label, and will increase the number by one on every page that follows if it too has the identical prefix in its Label.

Custom page numbering can be added to any page - including Page Templates. Regular pages do not inherit this information from their specified Template, however: it must be added to each page individually.

Layout Page Templates

Layout Page Templates allow you to create a title block and border in one place and then assign them for use on any other layout pages that you wish. Multiple Page Templates can be created in the same layout file. Note that if a layout page is specified as a Page Template, it will not print as part of a print range. Page Templates can be printed as the Current Sheet, however. See "Print View Dialog" on page 1194.

Add anything to a Page Template that you want on some or all of your printed layout pages, such as:

- Title Block. See "Text, Callouts, and Markers" on page 997.
- Borders. See "CAD Objects" on page 1039.
- Text Macros. See"Text Macros" on page 1033.
- Imported images. See "Images" on page 1102.

Note: The printable area varies from printer to printer. For best results, inset layout borders 1/2" to 3/4" from the paper edge.

You can assign a Page Template to any layout page, or specify any page as a Page Template, in the **Layout Page Information** dialog.

For more information about creating a title block and border for your layout template, see "Creating a Border and Title Block" on page 198 of the User's Guide.

Layout Page Zero

In version X5 and prior, Layout Page Zero was the only available Page Template. In version X6, it functions in much the same way by default: it is specified as a Page Template with the title "Default Page Template", and it is assigned to all pages.

Because of its special purpose, page zero cannot be deleted.

Layout Page Information

The **Edit Page Information** tool opens the **Layout Page Information** dialog, which you can use to add title, revision, and other information to the current layout page. This information can then be used to create layout and revision tables, as well as used in text macros.

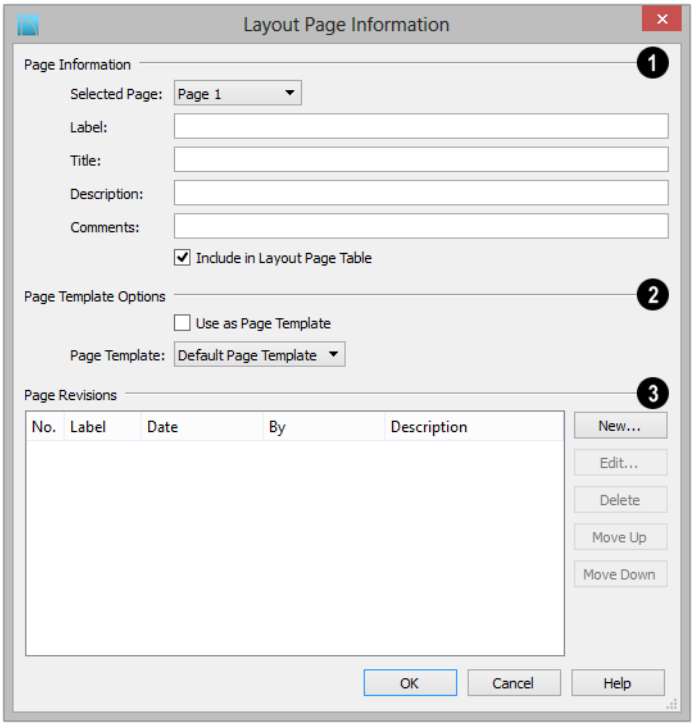
You can also use this tool to specify the current page as a Template, or to assign a Template to the current page.

The **Layout Page Information** dialog can be opened in several ways:

- Select **Tools> Layout> Edit Page Information**  .

- Click the **Edit Page Information** toolbar button.
- Right-click on a layout page in the Project Browser and select **Edit Page Information** from the contextual menu.

Layout Page Information Dialog



1 The **Page Information** options let you add information to layout pages that can be shown in a Layout Page Table or added to text using a macro. The Label and Title will also display in the Project Browser.

- Choose the **Selected Page**, which is the page selected for editing in this dialog, from the drop-down list. Not available when the dialog is opened via the Project Browser contextual menu.
- Specify the selected page's **Label**. If a cross section/elevation view is sent to this layout page, this Label can display in the camera's callout label in floor plan view. See "Camera Labels and Callouts" on page 887.

If you type a pound sign # in the Label field, it will be replaced by the current layout page number on the layout sheet. See "Layout Page Numbering" on page 1225.

- Specify the selected page's **Title**.
- Specify the selected page's **Description**.

- Specify the selected page's **Comments**.
- Check **Include in Layout Table** to include the above information about the selected page in a Layout Table. If Use as Page Template is checked, this box will be unchecked automatically.

❷ The **Page Template Options** let you associate the selected layout page with a template, or specify it as a template. See "Layout Page Templates" on page 1226.

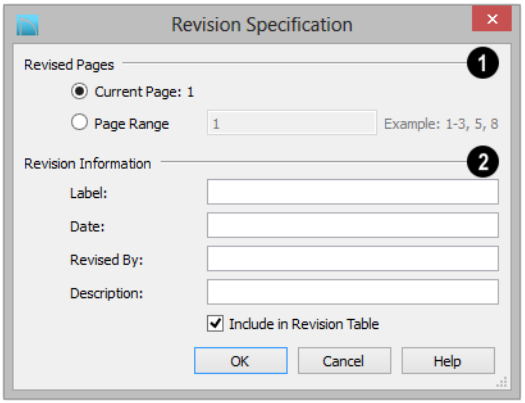
- Check **Use as Page Template** to specify the selected page as a template that can be assigned to other pages, but not printed. This box cannot be unchecked if the current page is the Page Template assigned to other pages.
- Assign a **Page Template** to the selected page by choosing one from the drop-down list. Not available when Use as Page Template is checked.

❸ The **Page Revisions** settings let you manage the revisions associated with the selected page. Revisions can be shown in a Revision Table or added to text using a macro. See "Revision Tables" on page 1229.

- A table listing any revisions associated with the selected page displays for reference. Click on a line item in the table to select it.
- Click the **New** button to open the **Layout Revision Specification** dialog and add a new revision to the selected page.
- Click the **Edit** button to open the **Layout Revision Specification** dialog and edit the selected revision.
- Click the **Delete** button to remove the selected revision from the table.
- Click the **Move Up** or **Move Down** button to adjust the position of the selected revision in the table accordingly.

Revision Specification Dialog

Select **Tools> Layout> Add Layout Revision** to open the **Revision Specification** dialog. You can also click the **New** or **Edit** button in the **Layout Page Information** dialog to open this dialog.



❶ **Revised Pages** - Specify which pages the selected revision applies to.

❷ **Revision Information** -

- Specify the revision's **Label**.
- Specify the **Date** that the revision was made. The program populates this field with the current date automatically.
- Specify who the revision was **Revised By**. The program populates this field with your Designer Information by default. See "Designer Information" on page 1095.
- Specify a **Description** of the revision.

- Check **Include in Revision Table** to include this revision in a Layout Table for the selected page.

Layout Page and Revision Tables

Title, revision, and other information can be added to each layout page and used to create tables of contents and revision schedules.

Layout Tables are similar to schedules and can be edited much the same way that schedules can. See “Editing Schedules” on page 1233.

Layout Page Tables

Select **Tools> Layout> Layout Page Table**, then click on a layout page to place a Layout Page Table that that location. Layout Page Tables list all pages in the current file that have Layout Page Information specified, are set to be included in Layout Page Tables, and have data on them. See “Layout Page Information” on page 1226.

If you place a Layout Page Table on a Page Template, it will display on every page in the current layout that uses that template and will list all pages that have data and are set to be included in Layout Page Tables.

Revision Tables

Select **Tools> Layout> Layout Revision Table**, then click on a layout page to place a Layout Revision Table that that location. Layout Revision Tables list all revisions associated with the current page.

Unlike Layout Page Tables, Layout Revision Tables are page-specific. If you place a Layout Revision Table on a Page Template, it will display on every page that uses that template, but it will only list revisions associated with the current page. See “Layout Page Templates” on page 1226.

Printing Layout Files

Printing layout files is similar to printing a view in a plan file. Select **File> Print> Print** to open the **Print** dialog. See “Print View Dialog” on page 1194.

As in plan views, printing options for layouts are set in the **Drawing Sheet Setup** dialog. These options apply to all pages of the layout file. See “Drawing Sheet Setup Dialog” on page 1184.

If a page does not have any data on it, it will not print. Only pages with one or more views sent to them or Text, CAD, or Dimensions drawn on them are printed.

Pages specified as Page Templates do not print unless the template is the current page and you specifically choose the **Current Page** Print Range option. See Print View Dialog.

Printing to Scale

A layout file's drawing scale is specified in the **Drawing Sheet Setup** dialog. While you can specify any drawing scale that you wish, in nearly all circumstances, you will want the scale to be **1 in = 1 in** or **1 mm = 1 mm** for all layout files.

The views sent to your layout pages have already been assigned a scale, and if you select a scale other than one to one for the layout, these views will be scaled a second time when printed.

> Layout views will print at their specified scales only when the drawing scale for the layout file is 1 in = 1 in or 1 mm = 1 mm.

To see or change the current scale of a layout view, select the view and click the **Rescale Layout View** edit button. See "Rescaling Views" on page 1215.

When a view is sent to layout at a scale other than that used by the original view, line weights may be affected. See "Line Weights and Scaling" on page 1192.

Printing Services

If you plan to use a printing service, you may want to install a PDF writer. See "Printing to a PDF File" on page 1190.

You can also print to file using the driver for the printer that the service will use. See "Printing to File" on page 1181.

Find out what paper size the print service uses and select it in the **Drawing Sheet Setup** dialog. See "Drawing Sheet Setup Dialog" on page 1184.

Check Plots

When a large drawing sheet size has been specified, you can print a check plot at a reduced scale so that it can be printed on a smaller printer. This allows you to make final checks before printing to the larger size. See "Check Plots" on page 1189.

Exporting Layout Files

Layout pages can be exported to **.dxf/ .dwg** files much like any other vector-based view.

The main difference is in the scale of the output, which is in scaled paper units rather than model units. If a 50" line in a plan would be scaled to 1" inch when printed, it is exported as a 1" line instead of its length before prior to scaling. See "Exporting 2D DXF/DWG Files" on page 1144.

Chapter 40:

Schedules and Object Labels

A schedule is similar to a simple Text object with grid lines separating rows and columns; however, schedules are dynamically linked to objects in your plan and update as changes are made to those objects.

Schedules are available for doors, windows, cabinets, fixtures, furniture, electrical items, plants, and rooms. Each schedule can contain information for one or all floors of your plan.

Schedules update automatically whenever an object is created, deleted, moved, or altered.

A variety of objects in Chief Architect have labels that display information about them in floor plan view. Some of those objects also have schedules associated with them and may display schedule numbers.

Chapter Contents

Schedule Defaults

The initial settings for each type of schedule can be set in its **Schedule Defaults** dialog. Default Settings are accessed by selecting **Edit> Default Settings**. Click the "+" next to **Schedules** to display the schedule sub-headings. Select a subheading and click the **Edit** button to open the **Schedule Defaults** dialog associated with your selection. See "Default Settings" on page 72.

Schedule defaults can also be accessed by double-clicking the **Schedule Tools** parent button or any of the child tools.

When a schedule is created, its initial characteristics are determined by the settings in the **Schedule Defaults** dialog for its schedule type. Default settings for callout schedule labels are also set here.

Each **Schedule Defaults** dialog looks the same as its corresponding **Schedule Specification** dialog. See "Schedule Specification Dialog" on page 1236.

The Schedule Tools

In floor plan view, a cross section/elevation view, or a CAD Detail window, select **Tools> Schedules** to access the Schedule Tools. Select a Schedule Tool, then click anywhere in the view to place a schedule of the selected type at that location. You can continue clicking to place additional copies of the schedule. See "Click-to-Create" on page 165.

While you can place schedules in floor plan view, you may find it helpful to place them in one or more CAD Detail windows instead. Saving schedules in organized CAD Details allows you to send them to layout without including extra data or needing to resize the layout view box. See "CAD Details" on page 1085.

Plan Schedules

Select **Tools> Schedules> Door**, then click to create a Door Schedule.

Select **Tools> Schedules> Window**, then click to create a Window Schedule.

Select **Tools> Schedules> Cabinet**, then click to create a Cabinet Schedule.

Select **Tools> Schedules> Fixture**, then click to create a Fixture Schedule.

Select **Tools> Schedules> Furniture**, then click to create a Furniture Schedule.

Select **Tools> Schedules> Electrical**, then click to create an Electrical Schedule.

Select **Tools> Schedules> Room Finish**, then click to create Room Finish Schedule.

Select **Tools> Schedules> Plant**, then click to create a Plant Schedule.

Layout Schedules

In addition to the Schedule Tools available in plan files, there are two that can be used in layout. See "Layout Page and Revision Tables" on page 1229.

Select **Tools> Layout> Layout Page Schedule**, then click to create a Layout Page Schedule.

Select **Tools> Layout> Layout Revision Schedule**, then click to create a Layout Revision Schedule.

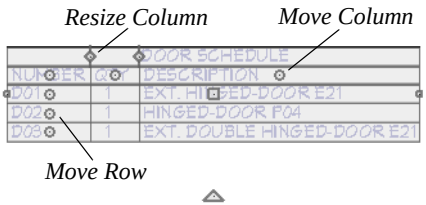
Editing Schedules

Schedules can be edited using the edit handles, the edit toolbar buttons, or the **Schedule Specification** dialog.

Using the Edit Handles

A selected schedule has edit handles similar ot those of a CAD box. See “Editing Box-Based Objects” on page 203.

In addition, schedules have edit handles that let you control the order of the rows and columns, as well as column width:



- **Resize Column** edit handles are located in the Title row, centered on the grid lines that divide the columns, and can be dragged left or right.
- **Move Column** edit handles are located in the Heading row, centered in each cell, and can be dragged left or right. See “Adding Custom Columns” on page 1235.
- **Move Row** edit handles are located in the first column, centered in each cell, and can be dragged up or down. See “Editing Schedule Order” on page 1234.

The behavior of edit handles may depend on the currently active Edit Behavior. See “Edit Behaviors” on page 176.

In the Specification Dialog

The appearance and other attributes of schedules can be modified in the **Schedule Specification** dialog. See “Schedule Specification Dialog” on page 1236.

You can control how objects are listed by specifying which Columns to Include. For example, if you were to uncheck “Common Names” and “Scientific Names” in the **Plant Schedule Specification** dialog, and then check “Flower Color”, the resulting schedule would list all red flowers in one line item, regardless of their species. See “Columns and Objects to Include” on page 1234.

Using the Edit Tools

A selected schedule or schedules can be edited in a variety of ways using the buttons on the edit toolbar. See “The Edit Toolbar” on page 35.

Converting Schedules to Text

Click the **Schedule to Text** edit button to convert the selected schedule to a tabbed text object. You can then edit the schedule as text.

When a schedule is converted to text, it no longer updates automatically. In addition, shaped labels displaying as specified in the schedule’s specification dialog will no longer be present.

You can copy the text from the Text Specification dialog and paste it into other applications.

Schedule Numbering

By default, schedule numbering is dependent on the order in which objects are placed in the plan, as well as the floor they are on.

- Any objects present in your plan before a schedule is created will be listed first in ascending alphanumeric order, according to their Label information.
- A new, unique objects placed in the plan after the schedule is created will be added to the bottom of the schedule in the order that they are placed, regardless of its Label information.

When an object is edited, its schedule number may or may not change:

- If an object with a Quantity of 1 in the schedule is edited, its position in the schedule will not change.
- If a group of objects listed on the same row in a schedule are edited simultaneously, their position will not change.
- If an object listed on the same row in a schedule with other similar objects is edited so that it is no longer similar enough to share the same row, it will move to the bottom of the schedule. See "Columns and Quantity" on page 1235.

Editing Schedule Order

If a schedule's order does not meet your needs, you can change it in either of two ways:

- Using the schedule's Move Row edit handles. See "Using the Edit Handles" on page 1233.
- Using an object's **Move Up in Schedule** and **Move Down in Schedule** edit tools.

When an item in a schedule is moved to a different row, its schedule Number will change, as will that of any other item whose position is affected by that move.

When a given object is included in only one schedule, its position in that schedule can be modified using the **Move Up in Schedule** and **Move Down in Schedule** edit tools.

Renumber Schedule

To remove any gaps in numbering that might have been created when objects were edited or deleted, select the schedule and click the **Renumber Schedule** edit button.

Columns and Objects to Include

Every schedule has a selection of **Columns to Include** and **Objects to Include** on the Schedule panel of its **Schedule Defaults** and **Specification** dialogs. The columns that are available depend on the type of schedule selected. See "General Panel" on page 1237.

Information in the **Description**, **Code**, **Manufacturer**, and **Comments** columns is drawn from an object's **Components** dialog. See "Components Dialog" on page 1265.

Some objects have several components, but the schedule refers to only one. To find the

correct row, look at the **Description** column. Often but not always, the first item in the ID column is the one the schedule refers to; for doors, this is D1, for windows, W1, for cabinets, C1, and so on.

Most schedules also have a selection of **Objects to Include**, as well. For example, you can specify whether to include Plumbing, Appliances, and HVAC in a Fixture Schedule. Objects to include can be used to create a variety of special purpose schedules. See “Working with Multiple Schedules” on page 1236.

Columns and Quantity

It is important to remember that by default, the number of columns you choose to include in a schedule influences the number of separate line items that will be listed in the schedule.

For example, if you have three 30” wide doors, and do not include the Size and Description columns, the three doors will be listed in the same line item - even if one is a hinged door, one a slider and one a pocket door.

If you prefer, you can uncheck **Group Similar Objects** in the **Schedule Specification** dialog to place every object in its own row, regardless of any shared attributes. See “General Panel” on page 1237.

Area Totals

If a Door, Window, or Room Finish Schedule includes an Area column, an additional row will display at the bottom of the schedule for total area calculations.

Adding Custom Columns

With the exception of Room Finish Schedules, schedules can be customized by adding user-defined columns.

For example, you could create a column for locksets to be included in door schedules. The information in this column can also be included in Materials Lists. See “Materials Lists” on page 1247.

In this example, a custom column for lock sets is created for a door schedule; however, the same steps apply to any object that can be included in a schedule with the exception of rooms.

To create a custom schedule column

1. Select a door in your plan and click the **Components** edit button.
2. In lower left corner of the **Components** dialog, click the **Edit Sub Categories** button. See “Components Dialog” on page 1265.
3. In the **Preferences** dialog, select the “Doors” category and create a new “LKS” Materials List subcategory. See “Categories Panel” on page 120.
4. Click OK to return to the **Components** dialog, then click the **Add** button to add a new “accessory” to the list.
5. Select the new accessory and click in the **Sub Category** column. Choose the new subcategory from the drop-down list, then replace “Accessory” with a brief description in the **Description** column. Click OK.

6. Next, include the new subcategory in the **Door Defaults** dialog. See “Schedule Defaults” on page 1231.
7. Create a schedule and note that the custom column is present and includes the Components information for the door that you edited.

If a door schedule is already present, the new column is available but will not display. You can include this new column in the schedule’s specification dialog. See “General Panel” on page 1237.

If you would like to use your door with custom Components information in other plans, you can add it to the library. See “Adding Library Content” on page 807.

Working with Multiple Schedules

You can create multiple versions of any type of schedule for a variety of purposes. For example:

- Multiple Fixture Schedules can be set up for use as Plumbing, Appliance or HVAC schedules.
- Separate Electrical Schedules can be created for light fixtures and other electrical items.
- Separate Cabinet Schedules can be set up for each floor of a plan.
- Special Door or Window Schedules can be prepared for Energy Ratings, Fire Doors or other information.

If you intend to use schedule callout labels, it is best to avoid including a given object in more than one schedule. If you choose to do so, the object will display a separate callout label for each schedule it is included in.

If you create multiple schedules of the same type, bear in mind that it is possible for different objects in those schedules to be assigned the same callout number. To avoid this, consider specifying different callout prefixes and/or callout shapes.

For more information about customizing schedules, refer to the Chief Architect Knowledge Base at chiefarchitect.com.

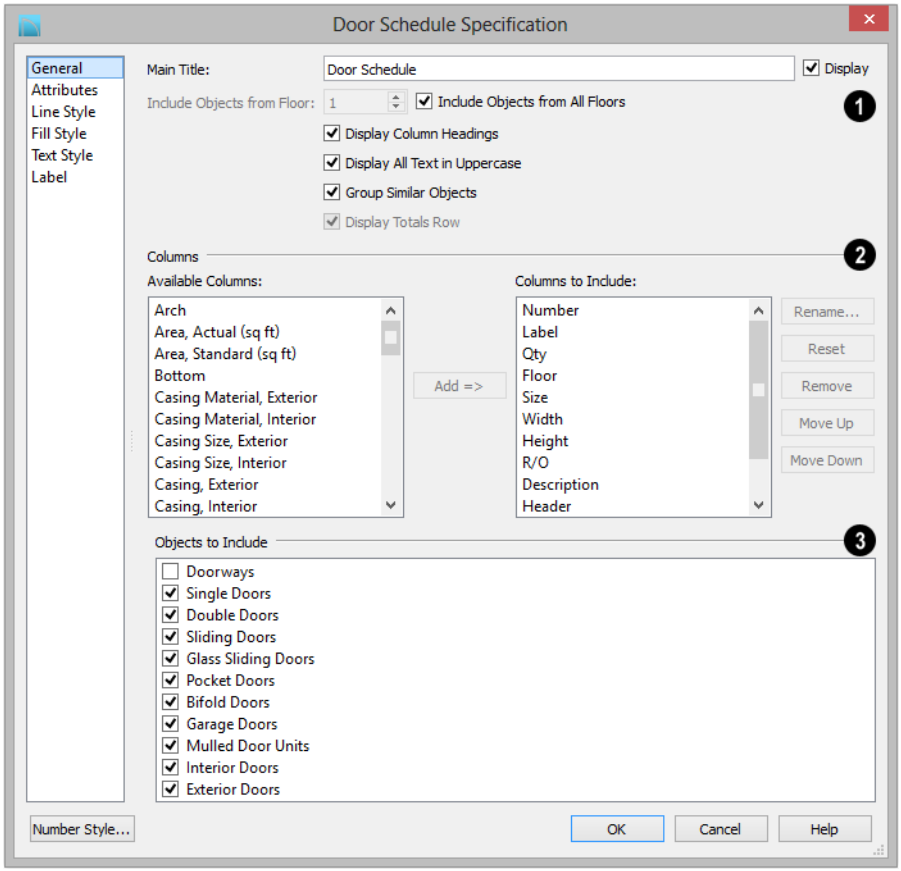
Schedule Specification Dialog

Schedules and the object labels associated with them can be edited in the **Schedule Specification** dialog. To open this dialog, either select a schedule and click the **Open Object** edit button or double-click the schedule using the **Select Objects**  tool.

The **Schedule Specification** dialog is similar to the specification dialogs for layout tables. See “Layout Page and Revision Tables” on page 1229.

The options in these dialogs are also similar to those found in their corresponding **Schedule Defaults** dialogs.

General Panel



1

- Specify a **Main Title** for the selected schedule.
- Check **Display** to include the Main Title at the top of the schedule.
- **Include Objects From Floor** - To create a schedule of objects from a single floor, uncheck **Include Objects from All Floors** and then specify the floor. The default for all schedules except for room and plant schedules is to **Include Objects from All Floors**. Not available in the **Layout Table Specification** dialog.
- If Include Objects on All Floors is unchecked in the **Schedule Defaults** dialog, schedules will be set to include objects on the floor that the schedule is created on by default.
- If the selected schedule is a layout table, specify the **Minimum Rows** that it displays, regardless of its actual content.

- Uncheck **Display Column Headings** to hide the selected schedule's Heading row. When this is checked, each column has a heading at the top.
- Uncheck **Display All Text in Uppercase** to capitalize only the first letters of words and to use the capitalization specified for custom Labels and Room Names. When this is checked, all letters are capitalized.
- Uncheck **Group Similar Objects** to list all objects in their own row, even when they share all attributes. When this is unchecked, objects that share the same attributes are counted in a single row. See "Columns and Quantity" on page 1235.
- Uncheck **Display Totals Row** to suppress the bottom row stating the total area for all objects in the selected schedule. Only available when one or more "Area" columns are included in the selected Door, Window, or Room Schedule.

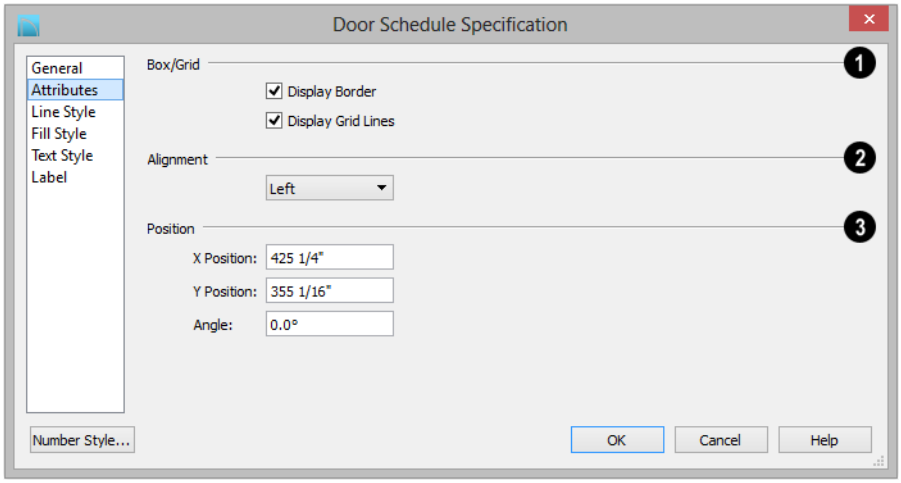
❷ Specify which **Columns** are included in the selected schedule. The columns that are available will vary depending on the type of schedule selected. See "Columns and Objects to Include" on page 1234.

- An alphabetical list of all **Available Columns** for the selected schedule type displays on the left.
- Select one or more names in the list, then click the **Add** button to add them to the Columns to Include list on the right. See "Shift and Ctrl Select" on page 183.
- You can also double-click on an item in the list to add it to the Columns to Include list on the right.
- A list of the **Columns to Include** in the selected schedule displays on the right. The top-to bottom order in this list corresponds to the columns' left-to-right order in the schedule. At least one column must be included to create a schedule.
- Select or double-click on an item in the list and click the **Rename** button to specify a new name.
- Click the **Reset** button to restore the default names for all Columns to Include in the current schedule.
- Select one or more items in the list, then click the **Remove** button to remove those items from the list.
- Select one item in the list and click the **Move Up** button to adjust its position upward in the list.
- Select one item in the list and click the **Move Down** button to adjust its position downward in the list.

❸ **Objects to Include** - Check the box beside each type of object you want to include in the selected schedule. For a description of these options, see "Columns and Objects to Include" on page 1234.

You can create multiple unique schedules using the Columns to Include and Objects to Include as filters. See "Working with Multiple Schedules" on page 1236.

Attributes Panel



1 Specify the appearance of the selected schedule's **Box/Grid**.

- Check **Display Border** to display lines around the outside of the schedule.
- Check **Display Grid Lines** to display lines around the rows and columns of schedule, forming boxes around each item, or cell.

2 Specify the **Alignment** of the selected schedule's text within its columns by choosing an option from the drop-down list.

3 Define the **Position** of the selected schedule. Not available in the **Schedule Defaults** dialogs.

- Specify the **X** and **Y Positions** of the schedule's center point.
- Specify the schedule's **Angle**.

Line Style Panel

The Line Style panel lis found in the specification dialogs for many different objects. For more information, see "Line Style Panel" on page 1053.

Fill Style Panel

For information about the settings on this panel, see "Fill Style Panel" on page 1067.

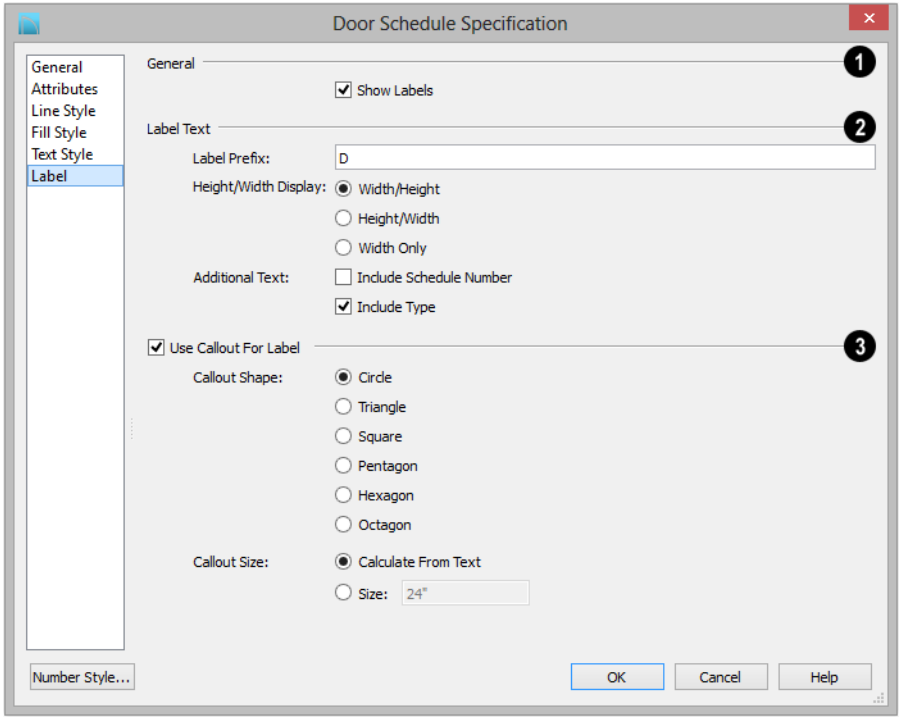
Text Style Panel

The settings on this panel control the appearance of the selected schedule's text. For more information, see "Text Style Panel" on page 1031.

Label Panel

The Label panel of the **Schedule Specification** dialog controls the type, size and appearance of the labels that display in floor plan view.

This panel is not available in the **Room Finish Schedule Specification** dialog.



1 **General** - Check **Show Labels** to display object labels in floor plan view. This also turns on the appropriate layer for the objects' labels in the **Layer Display Options** dialog. See "Layer Display Options Dialog" on page 148.

You can suppress the label for an individual door or window by checking **Suppress Label** in the specification dialog for that object. See "Label Panel" on page 1243.

2 Additional **Label Text** options are available here.

- **Label Prefix** - Specify the leading characters used in callout labels or when Include Schedule # is checked.

The **Height/Width Display** options control the format of Automatic Labels as well as the Labels and Size columns of the schedule, and are only available for Door and Window Schedules.

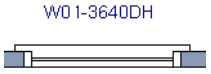
- Select **Width/Height** for automatic labels that use a numeric format in which the width in inches (mm) is followed by the height.
- Select **Height/Width** for automatic labels that use a numeric format in which the height in inches (mm) is followed by the width.

- Select **Width Only** for automatic labels that use a numeric format in which only the width in inches (mm) is indicated.

The **Additional Text** options affect the format of Automatic Labels only.

- Check **Include Schedule Number** to include the object's schedule number at the beginning of its Automatic Label text and in the Label and Size columns of the schedule.
- In a window schedule, check **Include Type** to include the abbreviation for each window's type in its Automatic Label. For example, 3050DH describes a 3050 double hung window. Also affects the Label column of the schedule.

Include Type



Include Type and Include Schedule #

- In a door schedule, check **Include Type** to include the hinge side and whether each door is interior or exterior in the Size column of the Door Schedule. Also affects the Label column of the schedule, but does not affect door labels.
- In an electrical schedule, check **Include Type** to include abbreviations indicating how light are used at the end of Automatic Labels. See "Displaying Lights" on page 916.

An alternative to displaying Type information in the Label and/or Size columns is to include the Type column in a schedule. See "Columns and Objects to Include" on page 1234.

3 When **Use Callout For Label** is checked, the callout shape and size can be specified below. When this option is unchecked, Automatic or user specified labels are used. See "Label Panel" on page 1243.

- Select a **Callout Shape**. There are six shapes to choose from.

When callout labels are used, the schedule numbers are included in the labels. Like other object labels, callout labels use the Text Style assigned to the layer they are on. See "Text Styles" on page 1030.

Specify the label **Callout Size**:

- Select **Calculate from Text** for callout labels that are sized to accomodate the text within them.
- Select **Size** and then type the radius in inches (mm). This radius will be used regardless of the size of the label text.

Object Labels

Object labels can display in floor plan and cross section/elevation views for a variety of different object types based on one of several parameters:

- Automatic Labels provide basic information about the object, such as its type, size, or name.
- You can create a custom label for an object in its specification dialog using text and/or a Text Macro. See “Label Panel” on page 1243.
- Objects associated with a schedule can display a shaped callout label with each object’s schedule number. See “Schedule Specification Dialog” on page 1236.

The Automatic and custom labels for a variety of objects have their own edit handles that display when their object is selected, and can be both moved and rotated. Schedule callout labels can be moved but not rotated. See “Edit Handles” on page 32.

Automatic Labels

Most objects that can display labels have an Automatic Label created by the program that states basic information about it.

- Native objects such as doors, windows, and cabinets dynamically derive their automatic label from their size and type. See “Native Objects vs Symbols” on page 821.
- Symbol objects such as fixtures and furnishings derive their automatic label from the **Symbol Name** specified in the **Symbol Specification** dialog. See “3D Panel” on page 1160.

When **Automatic Labels** is selected in the object’s specification dialog, this is usually the label that will be used; however:

- If a user-defined label is specified in the object’s defaults dialog, that label will be used instead of the Automatic Label.
- If the object is included in a schedule and callout labels are specified in that schedule, a callout label will be used.
- Fixtures and appliances inserted into cabinets do not have labels of their own unless they are associated with a schedule set to use shaped callout labels.

Displaying Labels

The display of object labels in floor plan and cross section/elevation views can be controlled by layer in the **Layer Display Options** dialog. Label layer names begin with the object type, followed by the word Label: for example, cabinet labels are located on the “Cabinets, Labels” layer. See “Layer Display Options Dialog” on page 148.

You can choose to suppress the label for an individual object on the Label panel of its specification dialog.

You can also turn the display of labels for a particular object type on or off in the **Schedule Specification** dialog for that object type. See “Label Panel” on page 1239.

Object labels use the Text Style assigned to each label’s layer. For example, cabinet labels use the “Cabinets, Labels” layer’s Text Style. See “Text Styles” on page 1030.

The minimum on screen display size of labels can be specified in the **Preferences** dialog. See “Appearance Panel” on page 90.

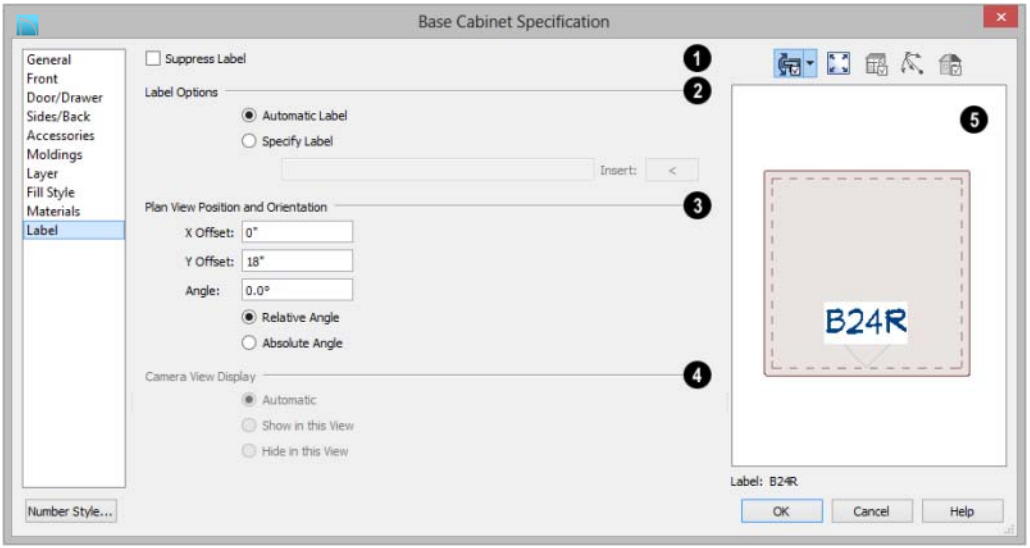
With the exception of those for rooms, roofs, and cameras, labels can also be included in the Materials List, Master List and in the **Components** dialog. Items in the Labels column of the Materials List are editable; however, any changes will not be applied to

the objects' labels. See "Materials List Columns" on page 1258.

Label Panel

The Label panel is found in the specification and defaults dialogs for a variety of different objects.

Note: If you choose a callout shape in the Schedule Specification dialog, the settings here are overridden and the schedule label is used instead. See "Label Panel" on page 1239.



1 Most objects have a **Suppress Label** option. Check this box to prevent the selected object's label from displaying in floor plan view.

Bay, Box and Bow Windows and Mulled Window units have several settings for controlling **Multiple Component** labels. See "Window Labels" on page 394.

- Select **Suppress All Labels** to display no label in floor plan view. Individual components are counted in schedules and in the Materials List.
- Select **Show Component Labels** to produce labels for each component in floor plan view. Individual components are counted in schedules and in the Materials List.
- Select **Show Single Label for Entire Unit** to produce one label for the unit and suppress component labels. When this

option is selected, the settings that follow on the Label panel become enabled.

These settings also affect how Bay, Box and Bow Windows and Mulled Window units are counted in schedules and the Materials List. See “Window Labels” on page 394 and “Displaying Mulled Units” on page 390.

❷ The **Label Options** control what information is contained in the label. Not available for cameras. See “Displaying 3D Views” on page 885.

- Select **Automatic Labels** to use the default label for the selected object. See “Automatic Labels” on page 1242.
- Select **Specify Label** to replace the selected object’s Automatic Label with whatever you type in the text field below.

  When Specify Label is chosen, the selected object’s Automatic Label initially populates the text field
- Click the **Insert** arrow to insert a Global, User Defined or Object Specific Text Macro into the custom label. See “Text Macros” on page 1033.
- To use the selected object’s Component Code as its label, type %component_code%. See “Components Dialog” on page 1265.

❸ Specify the **Plan View Position and Orientation**, relative to the object it describes, in floor plan view or in the currently active cross section/elevation view. The defaults for these settings only affect floor plan view - in cross section/elevation views, labels are always initially placed at 0, 0, 0°. See “Default Settings” on page 72.

- Specify the **X Offset** value, moves the label side to side relative to the midpoint of the object’s front face.
- Specify the **Y Offset** value, which moves the label forward or backward relative to the object’s front face .
- Specify the **Angle**, which rotates the label either relative to the angle of its object’s front face or to an absolute angle.
- Select **Relative Angle** to measure the label’s Angle relative to its object’s front face.
- Select **Absolute Angle** to measure the label’s Angle relative to an imaginary horizontal line drawn in the positive X direction from the origin. See “3D Drafting” on page 29.

Regardless of which way the selected object is facing, in floor plan view the **X Offset** will move the label parallel with the object’s front face. The **Y Offset** value will move the label perpendicular to the object’s front.

In cross section/elevation views, the **Offset X** will move the label side to side and the **Offset Y** will move it up or down.

❹ The **Camera View Display** settings are only active if you open an object’s specification dialog in a cross section/elevation view, and only affect the display of the selected object’s label in the current view. Not available for selected cameras.

- Select **Automatic** to display the object’s label when the surface at its center point is visible in the view.
- Select **Show in this View** to display the object’s label regardless of whether its center point is visible.

- Select **Hide in this View** to suppress the object's label regardless of whether its center point is visible.

❺ In most specification dialogs, a preview of the selected object displays here. In the preview pane, labels can be seen in Plan View only. See "Dialog Preview Panes" on page 38.

Chapter 41:

Materials Lists

Chief Architect can calculate a Materials List in three ways: **From All Floors**, **From Area**, or **From Room**. In addition, a polyline or multiple polylines can be used to define areas in a plan a Materials List can be generated from.

Materials Lists can be created, edited, and printed directly from the program. They can also be exported as text, **.xml**, or **.html** files for use in other programs.

The Materials List is based on certain assumptions that may not match your building style. Chief Architect makes no representation as to the accuracy or reliability of the Materials List generated by Chief Architect. Always compare the Materials List with a manual take-off before providing a quote or ordering materials for a job.

Chapter Contents

The Materials List Tools

Select **Tools> Materials List** to access the Materials List tools.

A Materials List is like a snapshot of the current plan at the time that the list is made. Any changes made to the model after a Materials List is generated are not included in that list. Create a new Materials List if you would like it to include these changes.

It is not necessary to wait until the plan is complete to generate a Materials List. In fact, you can create a series of Materials Lists reflecting costs at various stages of a project.

For comparison, generate Materials Lists with and without a proposed plan modification.

When you close a Materials List window, the program will ask if you want to save the Materials List. Type a name and click **Yes** to save the list or click **No** to close the list without saving it. See “Saving and Managing Materials Lists” on page 1260.

Calculate from All Floors

Select **Tools> Materials List> Calculate From All Floors** to generate a Materials List for the entire model.

Materials lists calculated from all floors can be lengthy, and only a portion of the list may display on your screen at one time. Use the scroll bars to scroll through the complete list. Move the pointer to cells in the list and click to make changes.

Calculate From Area

In floor plan view only, select **Tools> Materials List> Calculate from Area** to produce a Materials List for the portion of a plan on a single floor that is included within a temporary rectangular Materials List Polyline.

Calculate From Room

To create the Materials List for a room, select the room, then select **Tools> Materials List> Calculate From Room**.

Calculate From Room  is also available on a selected room’s edit toolbar. See “Editing Rooms” on page 327.

A Materials List calculated from a room is created for only the contents of that room: wall materials are not included.

Materials List Polyline

You can also produce a Materials List for a defined area of a plan in floor plan viw using a **Materials List Polyline**. Materials List Polylines are advantageous because they can be edited to any shape, saved, and used as many times as needed. There are also several ways to create them. See “Materials List Polylines” on page 1259.

Master List

Select **Tools> Materials List> Master List** to open the Master List, a list of previously used materials and any added

information such as price or manufacturer. See “The Master List” on page 1263.

Materials List Management

Select **Tools> Materials List> Materials List Management** to open a list of saved Materials Lists associated with the current plan. See “Saving and Managing Materials Lists” on page 1260.

Materials List Preferences

A number of settings that affect the appearance and contents of Materials Lists are found in the **Preferences** dialog. See “Preferences Dialog” on page 88.

- The Materials List panel lets you specify which Categories are initially included in new Materials Lists.
- The Report Style panel lets you specify which columns are initially included in new Materials Lists, as well as modify the appearance of all Materials Lists.
- The Master List panel lets you specify the current Master List file and the columns used in it.
- The Categories panel lets you create Sub-Categories for all of the main Categories.

Creating an Accurate Materials List

In order to take full advantage of Chief Architect’s Materials List capabilities, there are several things to keep in mind.

- The accuracy of your Materials List is directly related to the accuracy of your model. Floor and ceiling heights, wall lengths, and structural settings all directly affect Materials List calculations.
- It takes more than just making your drawing look right to generate an accurate Materials List. If, for example, you use CAD lines to draw an item on a floor plan, that item will not be included in the Materials List. A better way would be to use a symbol or structural element. See “Architectural vs CAD Objects” on page 158.
- If you use custom materials, make sure their material definitions are set up correctly. See “Creating Materials” on page 833.
- Bear in mind that using generic objects like geometric shapes from the library to represent objects that aren’t available in Chief Architect can result in items being calculated in the Materials List in a manner that you might not expect.

Framing in the Materials List

You can specify whether framing materials are calculated by lineal foot, as a cut list, or as a buy list in the **Structural Member Reporting** dialog.

For more information about how framing appears in the Materials List, see “Framing and the Materials List” on page 593.

Structural Member Reporting

The **Structural Member Reporting** dialog allows you to specify the method used to calculate framing members in the Materials List.

To open the **Structural Member Reporting** dialog, select **Edit> Default Settings**  , then select "Structural Member Reporting" from the tree list and click the **Edit** button. See "Default Settings vs Preferences" on page 72.

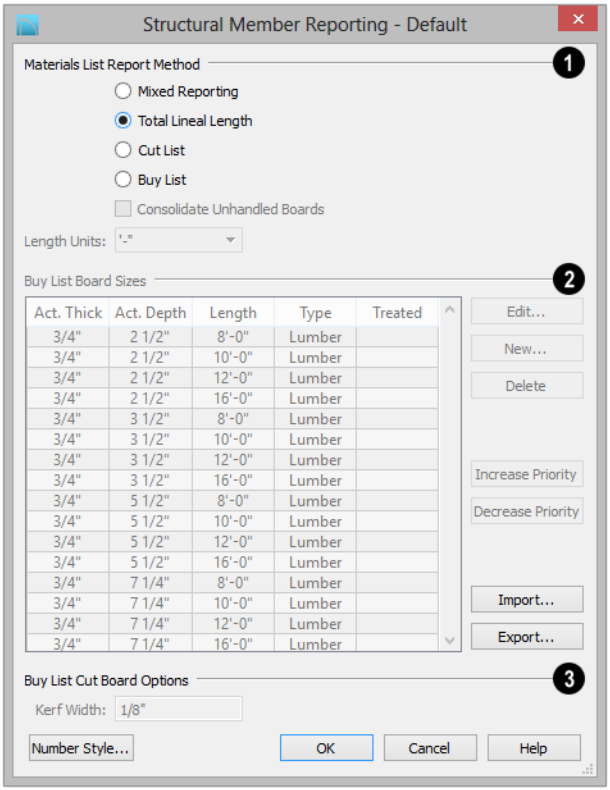
You can also open this dialog by clicking the **Structural Member Reporting**  button, which can be added to your toolbars. See "To add a button to a toolbar" on page 132.

You can create a list of the framing member sizes that you wish to purchase, and if an item in The Materials List is the same length as or shorter than one of these defined lengths, it will be described using the defined length rather than its actual length. An effective Buy List will include all types of framing materials that you typically use, as well as each of the different lengths that you expect to purchase. An example is installed with the program, which you can use as-is or copy and modify to suit your needs.

Structural Member Reporting can support multiple saved defaults. In order to open this dialog, you must first open its **Saved Defaults** dialog and choose an available saved defaults setup. When the dialog is open, the name of the Saved Default being edited will display in the title bar at the top of the dialog box. See "Multiple Saved Defaults" on page 75.

The saved default that is currently in use is also specified in the **Saved Structural Member Reporting Defaults** dialog. When a materials list is created, the **Current Default** listed in the drop-down will be used. To use a different saved default, simply select it from the drop-down list, click OK, and generate a new materials list.

Structural Member Reporting Dialog



1 Choose a **Materials List Report Method**. The selected method will affect subsequently created Materials Lists, but not any that may already exist.

- Select **Mixed Reporting** to calculate framing materials using a combination of lineal lengths and piece counts.
- Select **Total Lineal Length** to calculate the framing materials of the different structural components of the plan in linear feet.
- Select **Cut List** to calculate the framing materials of the different structural components of the plan by counting the individual pieces present in the model.
- Select **Buy List** to calculate the framing materials of the different structural components of the plan by counting individual pieces and matching them to items in the list of **Boards to buy**, below.
- Check **Consolidate Unhandled Boards** to handle short board segments by combining them so they can be cut from lengths found in the **Buy List Board Sizes** list.

- Specify which **Length Units** you want to use from the drop-down list. The selected unit(s) are used in the Structural Member Reporting dialog as well as in the Materials List when either **Cut List** or **Buy List** is the selected method of reporting. Not available when **Mixed Reporting** or **Total Lineal Length** is selected.

❷ The **Buy List Board Sizes** table is only active when **Buy List** is selected above.

- Click on a line item to select it.
- Double-click on a line item to open its **Board Specification** dialog.
- Click the **Edit** button to open the **Board Specification** dialog for the selected line item in the table. Only available when a line item in the table is selected.
- Click the **New** button to open the **Board Specification** dialog for a new line item in the table.
- Click the **Delete** button to remove the selected line item from the table. Only available when a line item is selected.

Items in the **Boards to buy** table are listed in order of priority. If an item in a Materials List could be cut out of more than one item in this table, the program will select the item with the highest priority. Specify the **Priority** of the selected line item in the table.

- Click the **Increase Priority** button to move the selected item one line up in the table. Only available when a line item is selected and it is not first in the list.
- Click the **Decrease Priority** button to move the selected item one line down in the table. Only available when a line item is selected and it is not last in the list.

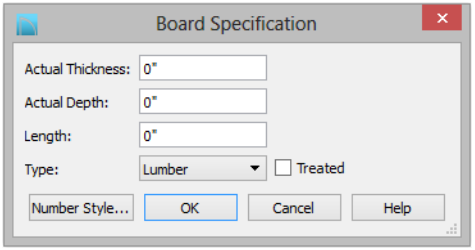
Buy List tables can be saved as **.json** files and shared between plans.

- Click the **Import** button to import a saved Buy List table into the currently active Structural Member Reporting saved default.
- Click the **Export** button to save the Buy List table as a **.json** file which can be imported into other plans.

❸ Specify the **Kerf Width**, which is the width of the material lost to the saw blade when a framing member is cut.

Board Specification Dialog

Click either the **New** or the **Edit** button in the **Structural Member Reporting** dialog to open the **Board Specification** dialog, where you can define a line item for the **Boards to buy** table. You also double-click on a line item in the table to modify it.



- Specify the **Actual Thickness** - as opposed to the nominal thickness - of the selected item in the Buy List table.
- Specify the **Actual Depth** - as opposed to the nominal depth - of the selected item in the Buy List table.
- Specify the **Length** of the selected item in the Buy List table.
- Select the **Type** of structural member from the drop-down list. See “Framing Member Types” on page 593.
- Check **Treated** if the selected item is a treated lumber product.
- Click **OK** to close the dialog and add the information specified here to a line item in the Buy List table.

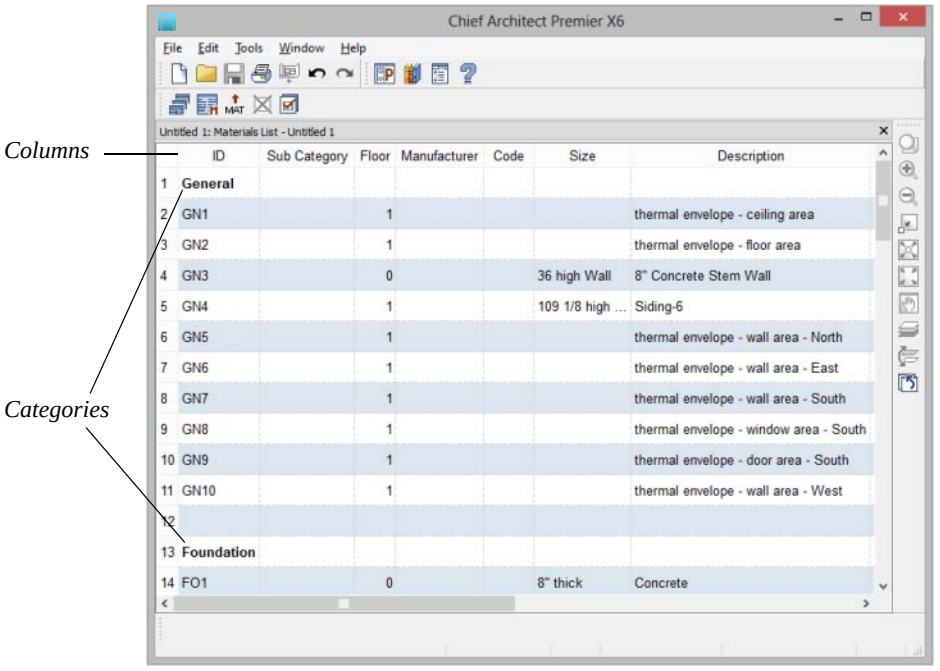
Organizing Materials Lists

There are two basic ways to control what items are calculated in the Materials List:

- By specifying which layers in the plan are included in the list.
- By specifying which categories and sub-categories are used.

In addition, you can control how much information about each item is included by specifying which columns to display.

There are some parts of a model that cannot be excluded from the Materials List. Floor and ceiling platforms are prime examples. If you need to generate a Materials List for only part of a plan, such as an addition, consider making a copy of the plan file. In the copy, delete the as-built portion of the plan and then generate a Materials List.



Materials Lists and Layers

You can control which objects are included in the Materials List by layer in the **Layer Display Options** dialog. The inclusion of objects in the Materials List is controlled using the **Mat** column: an "M" in this column indicates that objects in a layer are included in the Materials List. Click in the cell to add or remove the "M." See "Layer Display Options Dialog" on page 148.

Categories

The line items in the Materials and Master Lists are organized into a set of predefined categories, such as Electrical and Framing, which display in the **ID** column.

You can specify which category each item belongs to in the Materials List and Master List. In addition, many objects can be assigned to a category prior to generating a Materials List in the **Components** dialog. See "Components Dialog" on page 1265.

To specify a line item's category

1. Create a Materials List, open the Master List, or open the **Components** dialog for a particular object.
2. Click in the cell in the ID column for a line item.
3. Select the desired category from the drop-down list that becomes available.

The categories that are available cannot be altered; however, you can specify which

categories are included in the Materials List in either of two ways:

- Globally, in the **Preferences** dialog. See “Materials List Panel” on page 117.
- For individual lists in the **Materials List Display Options** dialog. See “Materials List Display Options Dialog” on page 1255.

Subcategories

You can create any number of subcategories for each Materials List category in the **Preferences** dialog. See “Categories Panel” on page 120.

Items can be assigned to a subcategory in the Materials List and, for many items, in their object’s **Components** dialog in the same manner that they can be assigned to a category.

Subcategories can be useful when creating schedules. See “Adding Custom Columns” on page 1235.

Materials List Columns

There are two ways to specify which columns are included in the Materials List as well as the order in which they display:

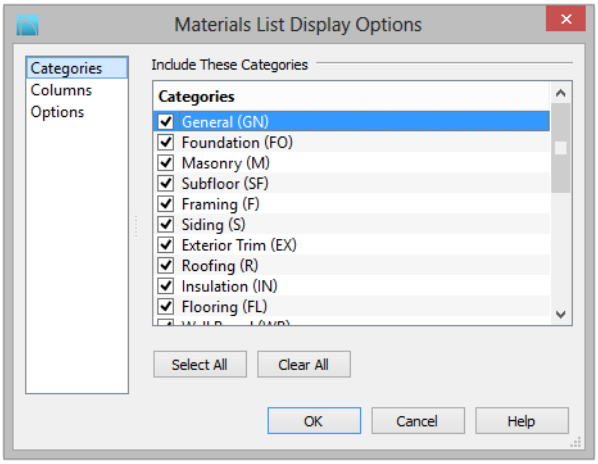
- Globally, in the **Preferences** dialog. See “Report Style Panel” on page 118.
- For individual lists in the **Materials List Display Options** dialog.

Materials List Display Options Dialog

When a Materials List or the Master List is open, select **Tools> Display Options** to open the **Materials List Display Options** dialog for the current list.

The **Master List Display Options** dialog is similar to this dialog, but only the Columns panel is available. See “The Master List” on page 1263.

Categories Panel

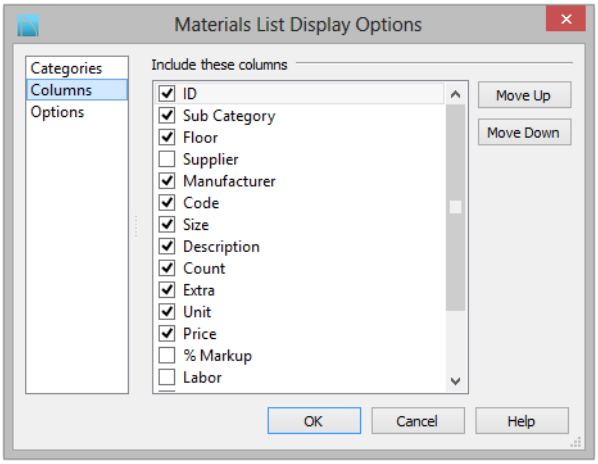


The Categories listed here appear in the ID column of the Materials List in the order they are presented here.

- Check the box beside the name of each category that you want to display in the currently active Materials List.
- Click the **Select All** button to display all categories in the active Materials List.
- Click the **Clear All** button to suppress the display of all categories in the active Materials List.
- Multiple rows can also be selected together using Shift and Ctrl keys. See “Shift and Ctrl Select” on page 183.

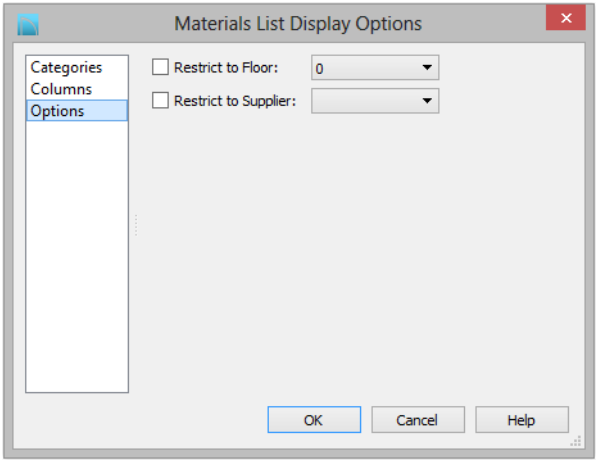
Note: The information in a suppressed category is still part of the Materials List. If the Materials List is exported, suppressed categories are exported, as well.

Columns Panel



- Check the box beside each column you want to include in the Materials List. To suppress a column's display, remove the checkmark next to its name. Columns appear in the Materials List in the order that they display in this list.
- **Move Up** - Click on a column name, then click this button to move that item up one place in the list.
- **Move Down** - Click this button to move the selected column down in the list.

Options Panel



- Check **Restrict to Floor** to limit the current Materials List to objects on a single floor, then select that floor number from the drop-down list. When unchecked, the Materials List includes all floors.
- If you plan to buy materials from multiple suppliers, you can create a Materials List for each. Check **Restrict to Supplier**, then choose a supplier from the drop-down list. The resulting materials list will include only materials to be purchased from that supplier.

Suppliers can be added to this list in the **Components** dialog for various objects. See "Components Dialog" on page 1265.

Materials List Columns

The columns in the Materials List, the **Components** dialog, and the Master List are very similar, but not all columns appear in all places.

A table of all of thes e columns and their capabilities is available in the program's Help. See "Getting Help" on page 46.

Editing Materials Lists

Materials lists can be edited in a variety of ways. You can adjust the width of a column by clicking and dragging the bar on the right side of the column name.

Adding Information

You can enter information in the Price, Supplier, Code, Comment and Manufacturer columns for each item.

Adding price or other information for any item is straightforward. Simply click in the cell and type the desired information. When the information is correct, you can add it to the Master List. See "Adding to the Master List" on page 1263.

You can switch between several existing suppliers or manufacturers for a given item by double-clicking on the right side of the cell in an appropriate column. A drop-down arrow displays to the left of the cell. Click it to view a list of suppliers or manufacturers for that item and select one.

When a Materials List is calculated, you can have the program search the Master List for Price, Supplier, and Code information for each item by selecting **Tools> Update From Master**. The information used is marked as "Default" in the Master List. See "Materials List Columns" on page 1258.

Changing Information

Although the information in some columns cannot be saved to the Master List, you can change the information in any column in an individual Materials List. As with added information, click in a cell to select the existing text, then type in the desired text.

To move an item in a Materials List to a new category, select the cell in the **ID** column and choose a new category from the drop-down

list that becomes available. You can also select a subcategory by clicking in the cell in the **Sub Category** column. See “Categories” on page 1254.

Total Cost

Total Cost is calculated using the Count, Unit, Price, %Markup, Labor and Equipment columns to calculate the cost. The formula used is:

(**Count** + **Extra**) * **Price** * (1 + (**% Markup**/100)) + ((**Count** + **Extra**) * **Labor**) + ((**Count** + **Extra**) * **Equipment**)

If a column does not appear, 0 is used for the value of that column with the exception of Count and Price, which are always used in the calculation even if they are not shown.

Copying Information

Portions of a Materials List can be copied and then pasted into a **Text** object or into a word processing program or spreadsheet program using the standard Windows Copy (Ctrl + C), Cut (Ctrl + X), and Paste (Ctrl + V) commands. See “Copying and Pasting Text” on page 1019.

Changing the Font

The font used for Materials Lists, the Master List and the **Components** dialog can be specified in the **Preferences** dialog. See “Font Panel” on page 93.

The size of this font can also be specified in the **Preferences** dialog. See “Report Style Panel” on page 118.

Materials List Polylines

A **Materials List Polyline** lets you create a Materials List that only includes objects within its area on the current floor.

To create a Materials List Polyline

1. In floor plan view, select **Tools> Materials List> Materials List Polyline** and draw a rectangular polyline.
2. Select the Materials List Polyline and edit its position and shape as needed. Materials List Polylines can be edited like other closed polylines. See “Editing Closed-Polyline Based Objects” on page 198.
3. With the Materials List Polyline selected, click the **Calculate Materials List** edit button. A Materials List is created for objects within the polyline on the current floor.

- Objects such as cabinets, windows, doors, and studs are included in the Materials List only if their center point is within the Materials List Polyline.
- Larger objects such as walls, floor and ceiling platforms, and joists can be partially selected by a Materials List Polyline, so that only portions of them are included in the Materials List.
- A few objects, such as joists, are counted as pieces in a full Materials List but must be counted in linear lengths when partially selected by a Materials List Polyline. For example, if a 16-foot joist crosses a 4 foot square

Materials List Polyline, the Materials List will count 4 linear feet of joist material. This can be useful for additions and/or remodels.

You can also convert a closed CAD polyline into a Materials List Polyline using the **Convert Polyline** edit tool. See “Convert Polyline” on page 235.

Categories

The categories included in a Materials List created using a Materials List Polyline can be specified prior to the generation of the list in the **Materials List Polyline Specification** dialog.

To specify Materials List Polyline categories

1. Select the Materials List Polyline and click the **Open Object** edit button.
2. On the Categories panel of the **Materials List Polyline Specification** dialog, specify which categories you want to include in the materials calculation. This panel is identical to the panel of the same name in the **Materials List Display Options** dialog. See “Categories Panel” on page 1256.

Saving and Managing Materials Lists

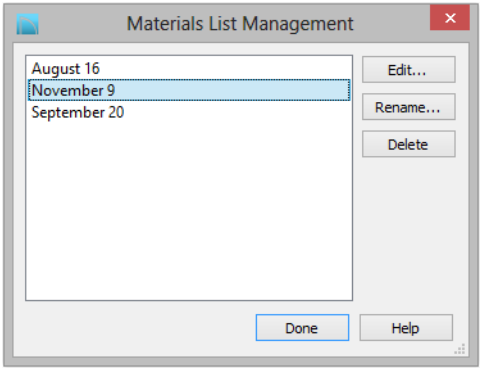
To save an open Materials List, select **File> Close**. The **Save Materials List** dialog will open, giving you the option to name the list and save it or to close it without saving.

Once a Materials List has been saved, it is listed in the **Materials List Management** dialog.

Saved Materials Lists can also be accessed, renamed, and deleted in the Project Browser. See “Project Browser” on page 1093.

Materials List Management Dialog

Select **Tools> Materials List> Materials List Management** to open the **Materials List Management** dialog,.



Click on the name of a saved Materials List in the list on the left to select it.

- **Edit** - Open the selected Materials List. You can also double-click an item in the list.
- **Rename** - Open the **Rename Materials List** dialog and type a new name for the list.

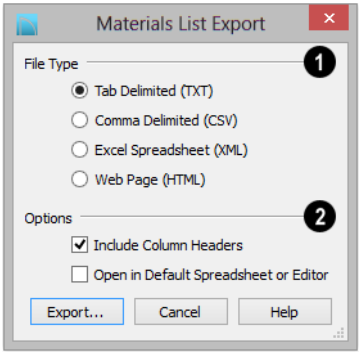
- **Delete** - Delete the selected Materials List.

Printing and Exporting the Materials List

To print a Materials List, select **File> Print** while the Materials List window is active. See “Print View Dialog” on page 1194.

A Materials List can also be exported into a one of several different file formats that can be opened by various programs. In a Materials List window, or in the Master List, select **File> Export Materials List** to open the **Materials List Export** dialog.

Materials List Export Dialog



1 Specify the **File Type** that you would like to export to.

- Select **Tab Delimited (TXT)** to create a text file with a tab between each field entry in the Materials List, and a carriage return between each row.
- Select **Comma Delimited (CSV)** to create a text file with a comma between each field entry in the Materials List and a carriage return between each row.
- Select **Excel (XML)** to create a file that can be opened by Microsoft Excel.
- Select **HTML** to create an html file that you can view with a web browser.

2 Additional export options are available here.

- Uncheck **Include Column Headers** to prevent column headings from appearing in the first row of the text file.
- Check **Run Default Spreadsheet or Editor** to open the exported file with the program specified on your computer when you finish exporting.

When you click OK, the **Write Materials Export File** dialog will open. This is a typical File Save dialog. See “Exporting Files” on page 56.

Estimating Software

You can export a Materials List to a word processor or spreadsheet program to arrange it in your estimating format. You can also export the Materials List to a number of commercial estimating programs in whose databases you can keep your current pricing, labor costs, and markups and generate reports based on this data.

Before purchasing an estimating software program, be sure that the program supports

the direct import of Chief Architect Materials Lists.

Any questions regarding estimating software packages and how they interact with Chief Architect should be directed toward the company providing the estimating software. Chief Architect is unable to provide any technical support for third party programs.

Conditioned Area Totals

Conditioned Area is the space within a building that is heated and/or air conditioned, and a Thermal Envelope is a three dimensional boundary built around the Conditioned Space that separates it from the unconditioned space around it. Thermal Envelopes are composed of floor platforms, ceiling platforms, walls, doors, and windows.

When a Materials List is created, Chief Architect calculates the total areas of the components that make up a structure's Thermal Envelope and lists them in the General category of the Materials List. See "Categories" on page 1254.

Doors are always categorized as doors rather than as windows. This is the case even when a door is specified as a Glass Door or when it is part of a mulled unit.

Chief Architect does not check plans for compliance with building or energy codes; however, you can export relevant thermal envelope data from a plan file for use in REScheck™. See "Export to REScheck" on page 1157.

Conditioned Area

With the exception of Unspecified rooms, rooms that are assigned an interior Room Type are included in the Conditioned Area by default. "Open Below" rooms are also included; however, other hybrid Room Types as well as exterior Room Types are not. See "Room Types" on page 329.

You can, however, specify that any room be included in or excluded from the Conditioned Area, in the **Room Specification** dialog. See "General Panel" on page 347.

Building Orientation

Walls, doors, and windows are categorized as north-, south-, east-, or west-facing for the purposes of conditioned area totals. These directions are based on the orientation of the plan's **North Pointer**  . If no North Pointer is used, north is assumed to be straight up on screen in floor plan view. See "North Pointer" on page 921.

- If a wall is oriented at 45º or less to north in a plan, it will be categorized as a "North" wall. Any doors and windows in this wall will also be categorized as "North".
- Similarly, walls, doors, and windows oriented within 45º of south, east, or west will be classified as "South", "East" or "West", respectively.

The orientation of a curved wall is based on the direction of its chord. See "Drawing Arcs - Arc Creation Modes" on page 1056.

The Master List

The **Master List** saves price, supplier, manufacturer, and other information about items in your Materials Lists and allows you to apply that information to items in future Materials Lists. Select **Tools> Materials List> Master List** to open the Master List.

Chief Architect allows you to have more than one Master List. Only one can be active, however, and only the active list is updated with new information. You can specify which Master List is active in the **Preferences** dialog. See “Materials List Panel” on page 117.

Adding to the Master List

You can edit line items in a Materials List and then add them to the Master List for future use.

To use Update to Master

1. Create a Materials List and change or add information in any editable column of a line item.
2. Select the line item by clicking on its line number on the left side of the list. When selected, then entire line becomes highlighted.
3. Select multiple adjacent rows by holding down the Shift key while clicking.
4. Select **Tools> Update to Master**. The information in the selected line is saved in the Master List.

Once Master List information exists for a particular item, you do not need to enter it again until you want to update it.

Update from Master

Similarly, items in a Materials List can be updated to include information in the Master List.

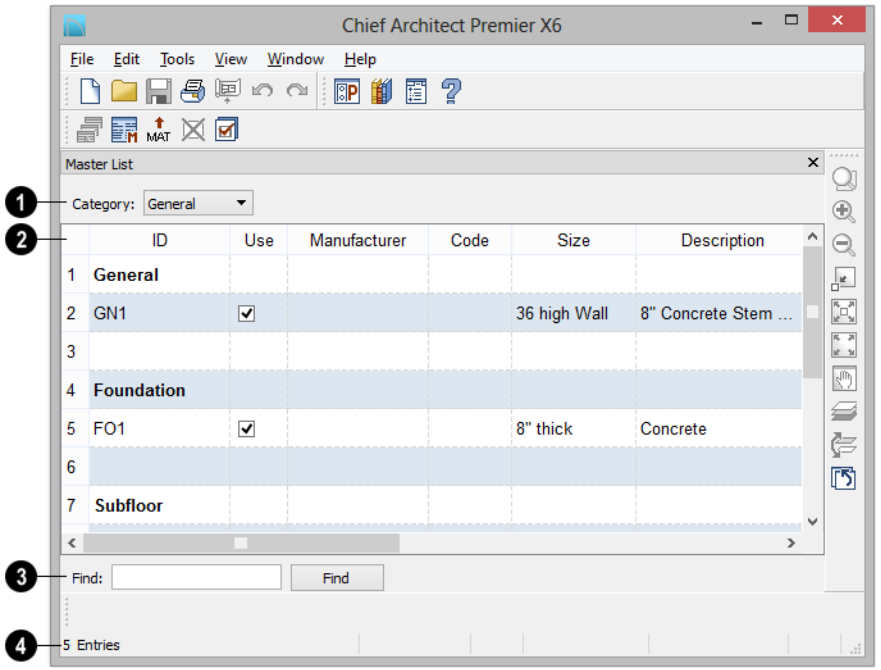
To use Update from Master

1. When a Materials List is active, click on a row number to select the row.
2. Select **Tools> Update from Master** to have the program search the Master List for a record for the selected line item. If an identical record is available, its information is included in the Materials List.

- Multiple rows can be selected by clicking on one row number, then holding down the Shift key and clicking on additional row numbers.
- Select all rows by clicking the cell at the top left corner of the Materials List, above the row numbers.

If the Master List contains more than one record for an item, the program references the last one entered. You can override this by defining one specific entry as the default. This is achieved by clicking on the check box in the Def column.

The **Master List** is almost identical to a Materials List, but has a few additional controls to help with viewing.



1 The **Category** drop-down list at the top left corner of the window lets you select one particular category for display, or all categories.

2 As with individual Materials Lists, you can specify which **Columns** display in the list. See “Materials List Display Options Dialog” on page 1255.

3 Use the **Find** field near the bottom of the window to search for text in the Master List.

The search starts from the currently selected cell and moves to the right, then moves down to the next row starting at the left column, and so on, until it finds an instance of the text you entered.

4 The **Status Bar** at the bottom indicates how many entries are listed.

Editing the Master List

In the Master List, existing line items can be modified or deleted. For information about the editability of columns in the Master List, see “Materials List Columns” on page 1258.

Often, the Master List will include items that you may not want to include in all Materials Lists.

- Checkboxes in the **Use** column indicate whether each item is included in the Materials List. If **Use** is unchecked, the item is not included. This is useful in cases where several line items will be purchased as a single unit.

- This **Quantity** column is used to specify how many of an item must be found before information from the Master List is applied to it in a Materials List. If at least this many of the item are found, price, supplier, and other information is used. **Quantity** is useful for applying a quantity discount.
- When more than one line item is available for a specific component or accessory, the **Default** column indicates which item is to be used. Click this column to specify this item as the default. This is useful when a line item has been updated to the Master List more than once with different price, supplier or other information.

To delete a row from the Master List, click on the row number at the far left. The entire row highlights. Select **Edit> Delete**, click the **Delete** button, or press the Delete key on your keyboard.

You should regularly back up your Master List (mmaster.mat) or lists. See “Backing Up Your Files” on page 56.

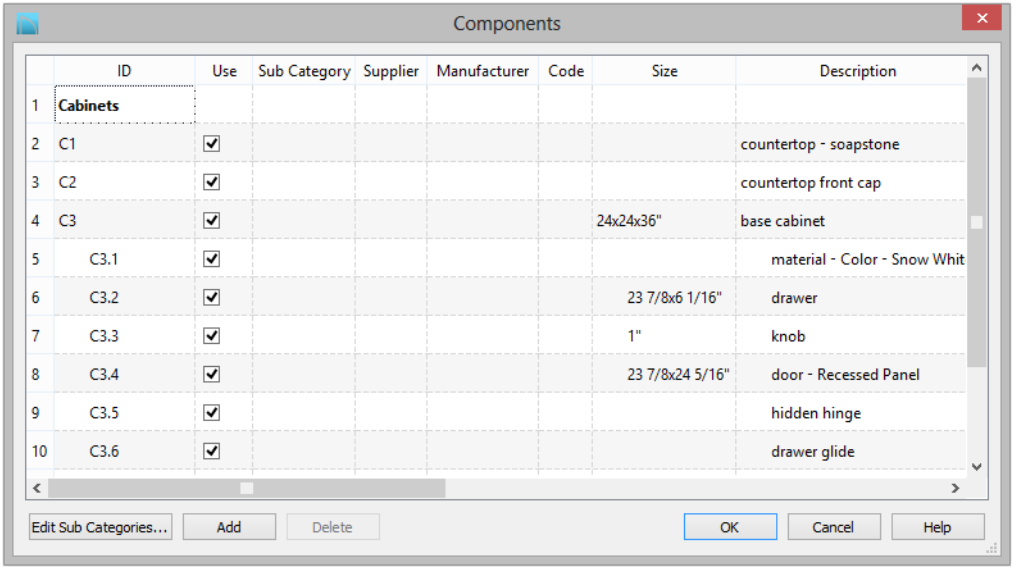
Components Dialog

Many architectural objects in the program, from walls to cabinets to images, have components and accessories associated with them that are calculated in the Materials List as well as listed in schedules.

In addition to editing and adding information for objects and their accessories in the Materials and Master Lists, you can edit and add information directly to these objects in the **Components** dialog.

Select an object, then click the **Components** edit button to open the **Components** dialog for that object.

You can also define the Components for a variety of items saved in the Library Browser. To do this, right-click on an architectural object in the User Catalog and select **Components** from the contextual menu. When a library item is placed into a plan, its Components information goes along with it. See “Editing Library Objects” on page 820.



The information in the **Components** dialog is the same as the Materials List line item(s) for the selected object and can be edited in much the same way. See “Editing Materials Lists” on page 1258.

The Description may also be used if the selected object is included in a schedule. See “Schedules and Object Labels” on page 1231.

Price, Supplier, Manufacturer, Comments, Code and Type information can be added and saved with the object itself. When that object is copied, even into a different plan, this information is transferred, as well, and will be calculated in the Materials List and listed in schedules.

In addition to their components, cabinets also have subcomponents such as their doors, drawers and hardware. Subcomponent information in the ID, Size and Description columns is indented to help distinguish it from regular component information.

If the selected object has a label, information in the Code column can be displayed in the label. In the object’s specification dialog, select Specify Label and type the text macro %component_code%. See “Label Panel” on page 1243.

Accessories

In the **Components** dialog, you can add additional Materials List entries to a selected object. These user-created entries are called **Accessories**.

Note: Accessory quantities can only be edited when one object is selected. If multiple objects are group selected, accessory quantities are locked.

To create a new accessory

1. Select an object and click the **Components** edit button to open the **Components** dialog.
2. Click the **Add** button and a new line is added to the spreadsheet.
3. The new entry is given an item name of **Accessory#**. You can give it any name you wish.
4. All other columns for accessory items except **ID** can also be edited.
5. To remove an accessory, click any part of its row and click the **Delete** edit button.

To create a new cabinet sub-accessory

1. Select an object and click the **Components** edit button to open the **Components** dialog.
2. Click in any cell in the row of the component with the Description that matches the cabinet type: base, wall or utility cabinet.
3. Click the **Add** button. A new line is added to the spreadsheet and its ID, Size and Description information is indented to denote that it is a sub-accessory.

Chapter 42:

Ruby Console

Ruby is a popular, open-source programming language that can be used for a wide variety of purposes.

In Chief Architect, the Ruby Console allows you to create custom text macros which can be used to produce object labels for specific needs.

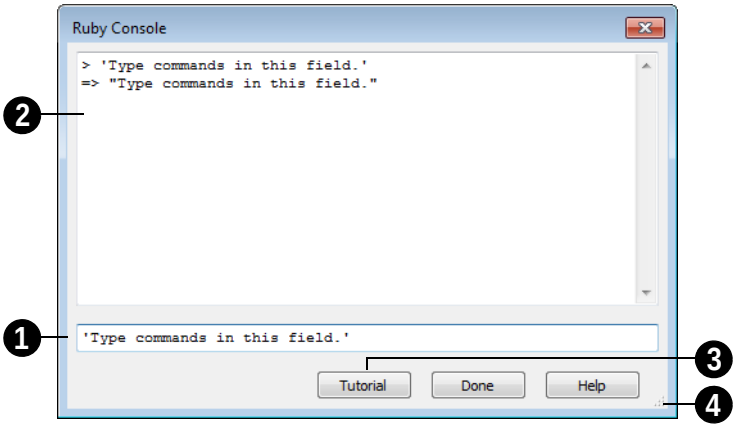
Ruby is considered to be easy to use by its many users - not all of whom are software developers. If you'd like to learn more, visit: http://www.ruby-lang.org/.

Chapter Contents

The Ruby Console

Select **Tools> Ruby Console** to open the **Ruby Console** window. The Ruby Console can be open while you work using other tools in the program.

The Ruby Console interface is simple: at the bottom of the window is an Input field where you can type commands, and the results of your commands display in the Output field above.



1 Type expressions, or commands, in the Input field at the bottom of the window.

- Press Enter on your keyboard to enter your expressions and see the results.

2 The results of your expressions display in the larger Output field, above.

- **>** at the beginning of a line indicates that what follows is your expression.
- **=>** at the beginning of a line indicates that what follows is a result.
- As you type multiple expressions, they and the new results are added below the previous ones.
- Use the scroll bar on the right to scroll up and down the results field.

3 Click the **Tutorial** button to view an interactive written tutorial presented in the Ruby Console. See “Viewing the Interactive Tutorial” on page 1271.

4 Click the size grip and drag to resize the Ruby Console window.

Useful Expressions

The following are a few commonly used expressions that you can use to obtain the attributes of one or more selected objects.

Macro	Description
owner	Returns the selected publisher
selected	Returns an array of multiple selected publishers
referenced	Returns the publishers
.names	Preceded by owner, selected, or referenced, this returns an array of named values for the selected publisher(s).
.<variable _name>	Preceded by owner, selected, or referenced, this returns the value of the named value bounded by the brackets for the selected publishers(s).
puts	Returns a list instead of an array.
$	Indicates a global variable rather than a local variable.

Viewing the Interactive Tutorial

An introductory tutorial is included with Chief Architect and can be run in the **Ruby Console**. To run it, select **Tools> Ruby Console**  , then click the **Tutorial** button at the bottom of the dialog or simply type **show** in the Input field.

If you have previously run the tutorial during the current program session, the tutorial will open to the last topic shown. If you have not run the tutorial this session, its Table of Contents will open.

To view the tutorial's Table of Contents at any time, type **toc** in the Input field.

Working with Named Values

The Ruby Console can be used to access information about a variety of objects in Chief Architect: information which can then be used to create custom text macros and object labels. See "Text Macros" on page 1033.

This information is in the form of Named Values. In the Ruby Console, these values appear as the names of various attributes of the object such as its height or the presence of a special feature. Named Values use all lower case characters and separate words using an underscore _ instead of a space.

Objects for which these Named Values are available in the Ruby Console are referred to as NVPublishers, or just publishers.

Named Values and Context

A Named Value only makes sense in context: that is, when its publisher and its publisher's purpose are identified. There are two types of publisher:

- **Owner Objects** are literally those that 'own' the Named Values - the values describe that object. Macros created using Owner Object Named Pairs can be inserted into an objects's label. See "Object Labels" on page 1241.
- A **Referenced Object**, on the other hand, is a text object with an arrow pointing to the object described by the Named Values. Macros created using Referenced Object Named Values can be inserted into text objects.

Note: The named values for rooms cannot be used to create Referenced Object macros. They only work as Owner Object macros. A number of macros that describe rooms are available as Global Macros, which do work when placed in a Text object located inside of a room.

To view a publisher's named values

1. Select **Tools> Ruby Console**  .
2. Select an object in your plan - for example a base cabinet. This is an Owner Object.
3. Type **owner.names** in the Input text field of the Ruby Console and press the Enter key.
4. An array of Named Values will display in the Output field. These values are all attributes of the selected object.
5. To view the array as a list, type **puts owner.names** and press Enter.

You can request the Named Values for a Referenced Object just as you can for an Owner Object: select the Referenced Object and open the Ruby Console. Then, instead of typing owner.names in the **Ruby Console**, type **referenced.names** (or **puts referenced.names**).

Named Values and Defaults

A number of Named Values for various objects end in '_is_default'. These Named Values will return either 'true' or 'false', depending on whether the object in question is set to use the dynamic default for that attribute. See "Dynamic Defaults" on page 74.

Appendix A

Additional Resources

Chief Architect offers a variety of resources to help you become familiar with the many features it offers.

- Reference Manual
- User's Guide
- Chief Architect Web Site
- ChiefTalk Online User Forum
- Technical Support

Reference Manual

The Chief Architect Reference Manual is a comprehensive source of information for Chief Architect X6. Chapters are organized by subject, beginning with the fundamental concepts and progressing to the more advanced features. The Reference Manual is presented in .pdf file format and includes a Table of Contents and Index. This manual is available online by selecting **Help> View Reference Manual** from the program menu.

The Reference Manual is also available for optional purchase in printed form.For more information, visit chiefarchitect.com.

User's Guide

Written for new Chief Architect users, but a helpful reference for users of all experience levels as well, the User's Guide features a series of tutorials designed to introduce the basics of using the program.

The Chief Architect User's Guide is organized by topic and walks you through the process of creating a complete model, from the first wall to the interior design and landscaping.

This guide is available online by selecting **Help> View User's Guide** from the program menu.

Like the Reference Manual, the User's Guide is available for optional purchase in printed form at chiefarchitect.com.

Online Help Videos

Another resource designed to illustrate Chief Architect's powerful tools is the set of tutorial videos available on our web site. These videos are available to users who participate in the Support and Software Assurance program.

To view the online videos, select **Help> View Online Help Videos** from the program menu or visit video.chiefarchitect.com/videos.

Chief Architect Web Site

If you have questions that the Reference Manual and online Help feature have not answered, feel free to turn to the our web site.

A database of common technical support questions and answers related to supported versions of Chief Architect is available through a searchable interface.

Select **Help> Visit Chief Architect Web Site** from the menu to launch your default internet browser to chiefarchitect.com.

Online Personal Training

With a Personal Trainer, it's fast and easy to meet your personal training needs from the comfort of your own computer.

While connected to the Internet, you converse by telephone with a trainer and draw in Chief Architect. You can observe each other as you draw, taking turns controlling the screen. The action can be very close to real time, depending on your Internet connection.

To learn more about Personal Training, visit the Chief Architect Web site at chiefarchitect.com.

Training Seminars

Chief Architect regularly offers live online training seminars to meet the needs of beginners, proficient users, and everyone in between. On site seminars are also held from time to time at locations in both the U.S. and

Canada, delivering two full days of hands-on work with Chief Architect.

For information about upcoming seminars, visit chiefarchitect.com.

Online Chief Architect Gallery

A collection of plan sets, detail drawings and renderings is available for viewing and download on our web site.

Select **File> Download Sample Plans**  to launch your internet browser to chiefarchitect.com.

NKBA® Kitchen and Bathroom Guidelines

A copy of the National Kitchen and Bath® Association's Kitchen and Bath Planning Guidelines and Access Standards is available on our web site to participants in the Support and Software Assurance program.

Select **Tools> Checks> View the NKBA® Kitchen & Bathroom Guidelines** to launch your internet browser to chiefarchitect.com.

ChiefTalk Online User Forum

The ChiefTalk Bulletin Board offers several ongoing discussions about a variety of topics related to the use of Chief Architect. It's rich with useful tips and available free of charge to all registered Chief Architect users.

- Discussions are initiated and carried out by users.
- The tone is professional and friendly.
- Experienced users share knowledge with each other and beginners.
- Chief Architect Staff members post announcements, advice and technical information.

To visit the ChiefTalk forum, select **Help> ChiefTalk** or go to: ChiefTalk.com.

Technical Support

Chief Architect takes pride in offering world class technical support services that can be accessed by telephone or on our web site. Select Help> Technical Support from the program menu to visit: chiefarchitect.com.

Before contacting Technical Support, take a moment to see if the answer to your question is found in the Reference Manual, tutorial videos, or in our on-line Knowledge Base at chiefarchitect.com.

When you contact us, Technical Support will refer you to these resources if the answer can be found there.

So that our Technical Support specialists can assist you as efficiently as possible, please refer to “Technical Support Services” on page 1277 for additional trouble-shooting suggestions and information that will be needed before placing your call.

Appendix B

Technical Support Services

Chief Architect is committed to providing world-class technical support to complement our professional products.

The primary function of technical support is to make sure our software is functioning correctly and to help you quickly resolve problems that prevent its normal use. Our technical support professionals are eager to work with you to make certain our software is functioning as designed.

We have also assembled a team of certified trainers offering instruction in the use of our software. Training is available via online seminars, online personal training, and on-site classroom seminars.

Reference and Training Resources

Chief Architect offers a variety of reference and training options in addition to the resources that come standard with the program. Many of these resources are available for free or at a significant discount to Support and Software Assurance program members.

Online Knowledge Base

The Chief Architect online **Knowledge Base** contains a variety of articles describing how to resolve common technical problems and achieve specific design goals.

The Knowledge Base is found in the Technical Support section of the Web site and can be referred to again and again at your convenience at chiefarchitect.com .

Video Training

Chief Architect has developed a collection of training videos that contain in-depth training on a wide range of topics from beginning to advanced experience levels. These videos are available on our Web site, chiefarchitect.com for users who participate in the Support and Software Assurance program.

Live Seminars

Chief Architect regularly conducts live, online training seminars on a variety of topics. Learn the basics of using Chief Architect the right way by joining a Jump Start class, then progress through topics of interest, such as Construction Documents, Kitchens and Baths, and Terrain. A list of upcoming seminars is available online at chiefarchitect.com.

Throughout the year, Chief Architect also conducts training seminars in various locations around the United States and Canada. Information about these seminars is also posted at chiefarchitect.com.

Interactive Training

If you have questions about how to use Chief Architect, consider contacting our Training Department for a Personal Training session.

Personal Training is an excellent way to learn how to use the program, providing one-on-one interaction with a certified Chief Architect trainer via the internet. Discuss topics that interest you and learn how to accomplish your specific design goals.

User Forum

Our ChiefTalk User Forum is a great place to discuss and exchange ideas with other Chief Architect users. Here you can post questions, read discussions from other users, and post suggestions to improve our product. In addition to our regular users, from time to time our support and engineering teams monitor the forum and provide input and discussion on current topics. This resource is available free of charge at ChiefTalk.com.

Troubleshooting Common Technical Issues

Chief Architect strives to make certain our software works correctly; however, from time to time issues arise that prevent its normal operation.

Installation Issues

The following are common reasons for installation failure of Chief Architect and other software:

- Anti-virus software is enabled and interfering with installation. Anti-virus software is the most common cause of installation failures for any type of software. Refer to your anti-virus software's documentation for details on how to disable the software and re-enable it once installation is complete.
- The recommended minimum system requirements are not met. See "System Requirements" on page 7.

- The computer has a CD drive but not a DVD drive. A standard CD drive will not read DVD discs.
- The DVD has fingerprints, scratches, or other defects. Sometimes a small fingerprint can prevent the program from installing. Clean the disk with soft cotton cloth. Be sure to use soft cotton rather than paper products on disks to avoid scratching.

> ⚠ If you see visible cracking on a CD or DVD, do not insert it in your CD/DVD drive. Cracked disks can fly apart and cause damage to your drive.

- You do not have sufficient rights to install the software. Verify that you have administrative rights and the administrative password during the installation process. If you are on a corporate network, consult your network administrator for assistance.

Refer to the on-line **Knowledge Base** for solutions to common installation problems. If the answer to your question is not found there, contact our Technical Support department for assistance.

Hardware Lock Not Recognized

If you are using Hardware Lock Security and your hardware lock is not recognized on startup, launch the **Hardware Lock Troubleshooter**. The Troubleshooter can diagnose and provide solutions to most common problems with hardware locks.

The Hardware Lock Troubleshooter can also be launched manually by selecting **Help > Hardware Lock Troubleshooter**.

Troubleshooting Printing Problems

Printing problems fall into two main categories: those that prevent the printer from working in any program and problems printing from Chief Architect. To determine if the problem is specific to Chief Architect, try the following:

1. Begin by clicking on the Windows **Start** button, and select **Printers**.
2. Right-click the printer that is not functioning properly in the **Printers** folder.
3. Click **Properties** from the menu that appears.
4. On the **General** tab, click the **Print Test Page** button.

If the printer does not produce a test page, the problem is not one that Chief Architect Technical Support can solve. Follow these suggestions:

- Check the connection between the computer and the printer.
- Check your printer documentation for troubleshooting printer problems.
- Contact your printer's manufacturer or check their Web site for support information.

Your printer manufacturer is the best resource for solving problems of this type. Chief Architect Technical Support is not able

to help diagnose and solve problems that prevent printing from any program.

It is a good idea to keep the Owner's Manual for your printer or plotter close at hand. Write inside the Owner's Manual the various phone numbers for technical support for that printer or plotter – for the original manufacturer and for your local dealer.

Printers and plotters vary widely in how they function. Sometimes a faulty cable can be a problem. Other times, a plotter may require that the paper be loaded in a different orientation. Often, solving a printing problem is as simple as downloading and installing an updated printer driver. See "Printer Drivers" on page 1181.

If you can print from Chief Architect but are not satisfied with the output, refer to "Printing and Plotting" on page 1179 for information on how to set up and use the printing functions in the program. Legacy users should bear in mind that each release has new features and enhancements, so techniques that were used in prior versions may not work in the current version.

Make sure that you use **Print Preview**  before printing. Print Preview displays the printed paper, or drawing sheet, as a white rectangle on screen, and shows how the sheet is scaled and positioned relative to your drawing. If the drawing is not on the drawing sheet on-screen, it will not be on the sheet when you print. See "Print Preview" on page 1187.

Make sure that your scaling is correct for the paper size. If the plan is much smaller or much larger than the drawing sheet, you may need to change your Scale. See "Printing to Scale" on page 1188.

64 Bit Versions of Windows

Some printers may not function correctly on 64 bit Windows operating systems. If you are experiencing a printing problem while using a 64 bit version of Windows, please contact the printer's manufacturer to verify that you have the correct driver installed.

Printing to a legacy parallel printer port on a Windows 64 bit machine may not work correctly when using a hardware lock. USB printers should not be affected. If you run into difficulty with this type of setup, you may want to consider Software Lock Security.

Clearing Printer Information

Some information specific to individual printers and plotters, such as available printer paper sizes, is saved with each plan and layout file.

If you are encountering problems when printing, or unexpected options in the **Page Setup** dialog, select **File> Print> Clear Printer Info** to clear the printer-specific information stored with the plan or layout file.

After using **Clear Printer Info**, select **File> Print> Page Setup**  . Make sure the settings in the **Page Setup** dialog are correct, and then click OK and **Save**  the file.

Slow Printing from Layout

The most common reason for unusually slow printing from layout is the presence of a

rotated view. To avoid this issue, rotate the view prior to sending it to layout, or change the orientation of the paper in layout so you do not need to rotate the view. See “Layout” on page 1203.

Online Knowledge Base

For answers to frequently asked questions regarding printing and other topics, select **Help> Visit Chief Architect Web Site** and browse the Technical Support section of our Web site, chiefarchitect.com. Our Technical Support specialists post new articles periodically to help resolve problems you may encounter.

Error Messages

Most common error messages have a known cause and simple resolution. When you encounter an error or warning message in Chief Architect, you can click the **Check Knowledge Base** button in the message box to launch your default internet browser to the Chief Architect Knowledge Base on our Web site, chiefarchitect.com.

If an article discussing the message is available it will display, providing information about the message and how best to avoid it.

It is important that abnormal errors be reported to Chief Architect Technical Support so that we can identify and resolve any problems.

The content of an error message is useful in diagnosing its cause. If you encounter an error message, read it carefully and write down the error number and the exact text of the error message.

Press the Print Screen key on your keyboard to capture a picture of the error message. Open a new word processing document or e-mail message and choose Edit> Paste to paste a copy of the error message into the document for later reference.

If you encounter the error more than once, make a note of your steps prior to receiving the message.

Before you report an error, check the Knowledge Base to see if the error is already documented by typing the error message or part of the error message into the search form.

Finally, check to see if there are program updates available. These updates are provided free for the current version of Chief Architect and contain enhancements and other changes that allow the program to perform at an optimum level. Select **Help> Download Program Updates** from the Chief Architect menu and follow the instructions on our Web site, chiefarchitect.com.

Error Reporting

When an error occurs, you may have the option in the message box to send the report to Chief Architect.

No personal information is sent. When you click **Send**, your default internet browser launches and a Web page appears on screen This message confirms that the report was sent successfully and may give you further instructions on how to proceed.

Contacting Technical Support

Chief Architect provides free online and telephone support to users participating in the **Support and Software Assurance** program. Users who have not purchased SSA receive installation support for 30 days after purchase. If you would like to sign up for Support and Software Assurance, please contact the Chief Architect Sales Department.

Before contacting Technical Support, take a moment to see if the answer to your question is found in the Reference Manual, Help index, or in our on-line Knowledge Base. When you contact us, Technical Support will refer you to these resources if the answer can be found there.

Chief Architect's world-class technical support is available Monday through Friday from 6 AM to 5 PM Pacific Standard Time and can be reached at (208) 292-3399 or via our Web site, chiefarchitect.com.

There are several things you can do to ensure a speedy answer to your question when you contact Technical Support.

- Before contacting Technical Support, select **Help> About Chief Architect** and make a note of the first characters of your Product Key and the exact version of Chief Architect you are using. Technical support is available to the owners of software licenses. When you contact Technical Support, be prepared to verify that you are the owner of the software license.
- Before contacting Technical Support, check to see if there are program updates available for download. Our engineering team periodically creates updates to the program to resolve functionality or program issues that were unknown at the time of release. These updates are provided free of charge for the current released version and can be accessed by selecting **Help> Download Program Updates** from the menu.
- When you first encounter a problem or error message, copy the exact wording of the message or a detailed description of the problem. This helps us isolate the problem and provide you with a solution as quickly as possible.
- When placing a call to Technical Support, be at the computer or work station that is experiencing the problem and have Chief Architect running. If you do not have access to the problem computer at the time of the call, the technician may be unable to reproduce the issue and/or suggest a remedy that can be implemented and verified immediately.
- Be prepared to reproduce the problem when you contact us. If the problem can-

not be reproduced, there is a reduced chance that we will be able to resolve the problem on your first phone call.

Priority Support

Chief Architect X6 users who participate in the **Support and Software Assurance** program should use the Priority Support telephone number provided in their SSA documentation. The Priority Support number bypasses the regular phone queues to give you the fastest possible answers to your questions.

Online Information

Chief Architect has a variety of support resources available on our Web site. These include our **Technical Support Knowledge Base**, the **How do I…? Solution Finder**, downloadable program updates, and ways to contact our Technical Support department. To access these resources, visit: chiefarchitect.com .

Our support team is happy to assist you in finding the best resource to answer your questions, and can resolve most issues in just a few minutes. In order to allow us to quickly answer your calls, we ask that you limit yourself to one question per support call.

Online Support

Questions can be answered online by the Technical Support department. To submit a technical inquiry online, visit the Technical Support section of our Web site and use the Online Support Center.

This route ensures that your question is delivered to the first available support professional. Requesting assistance of an individual specialist is not recommended, since that person may not be available to answer your question in a timely manner.

Telephone Support

Our Technical Support team is committed to answering your questions as quickly as possible and in the order received. Your call is important to us; however, there are times when we get more calls than expected and you may have to wait a few minutes before speaking to a technician.

Program Paths Dialog

Some technical issues can be caused by problems with support files used by Chief Architect. In the event of such an issue, Chief Architect Technical Support may direct you to the **Program Paths** dialog. This dialog displays a list of files utilized by the software along with the pathname of each.

To avoid unintended problems that could prevent you from using the software, it is strongly recommended that you make no changes to any of the files in this list except with the direct assistance of Technical Support.

Appendix C

What's New in Chief Architect X6

Welcome to Chief Architect X6. This appendix has been written to help our upgrading customers make a smooth transition from earlier versions of Chief Architect to Chief Architect X6.

Chapter Contents

Before You Begin

There are many new features in Chief Architect X6, and many existing features have changed. These changes affect the way Chief Architect functions, so it is very important to be familiar with them.

- "Getting Started Check List" on page 1286
- "For Files Created in Version X5 and Prior" on page 1289
- "For Files Created in Version X4 and Prior" on page 1289
- "For Files Created in Version X4 and Prior" on page 1289
- "For Files Created in Version X3 and Prior" on page 1290
- "For Files Created in Version X2 and Prior" on page 1291

Be sure to read this section before opening any plans created in earlier versions of Chief Architect.

Chief Architect X6 can open the **.plan**, **.layout**, **.PL1**, and **.LA1** files from prior versions. Before opening any files created in earlier versions of Chief Architect, it is important to be aware of changes made in the newest version and the effect they may have on your legacy plan and layout files. For details, see “For Files Created in Version X3 and Prior” on page 1290, “For Files Created in Version X2 and Prior” on page 1291.

As in all software, every new program version introduces changes to its functionality as well as to the user interface. If you choose to bring a project forward, be sure to take a few moments to look it over in the new version and confirm that the new functionality does not require you to make any modifications. Particularly if you have an approaching deadline, you may find it best to finish the current project in the version of the software in which you began it.

Getting Started Check List

The following checklist suggests steps you should take before migrating your files to Chief Architect X6. More information about each of these steps can be found after the checklist.

- ☐ 1. Check for and Install Program Updates
- ☐ 2. Migrate Legacy Library Files
- ☐ 3. Migrate Custom Graphics Files
- ☐ 4. Review the New Features List
- ☐ 5. Review Your Preferences Settings
- ☐ 6. Create new custom Template Plan and Layout files
- ☐ 7. Set up Custom Toolbar Configurations
- ☐ 8. Backup Entire Plan
- ☐ 9. Check chiefarchitect.com for more information

1. Check for and Install Program Updates

Program updates contain improvements to the original release version and we recommend using the most current version available. By default, Chief Architect checks for program updates every day when you launch the program. For information about changing this, see “General Panel” on page 96. Please note that program updates are available for download, which means that you need internet access to acquire them.

You can check for updates at any time:

- Select **Help> Download Program Updates** from the menu.
- Visit the Program Updates page on the Chief Architect Web site at chiefarchitect.com.

2. Migrate Legacy Library Files

Library content from previous program versions cannot be installed or copied into the Chief Architect X6 library. If you upgraded from version X1 or later and have custom library content on your computer from that program version, the program installer will locate it and ask if you

want to migrate it into the Chief Architect X6 library. See “Migrating Library Catalogs” on page 13.

You can import library files from versions X1 through X5 at any time by selecting **Library> Import Library (.calib, .calibz)** from the program menu. In addition, library files from versions 10 and prior can be imported by selecting **Library> Convert Legacy (.alb) Library Files** from the program menu. See “Importing Library Catalogs” on page 806.

3. Migrate Custom Graphics Files

If you have custom graphics files, including textures, images or backdrops, that you were using in a previous program version, you can copy them manually using your operating system for use in Chief Architect X6. See “Chief Architect Data” on page 51.

- Copy custom texture files to the Chief Architect X6 Textures folder located in the Chief Architect X6 Data folder.
- Copy custom image files to your Chief Architect X6 Images folder located in the Chief Architect X6 Data folder.
- Copy custom backdrop files to your Chief Architect X6 Backdrops folder located in the Chief Architect X6 Data folder.

In Chief Architect X5 through X1, custom graphics were saved in the Chief Architect Data folder, as they are in version X6. In version 10 and prior, they were located in the program’s installation directory, in folders that began with “My”. Custom backdrops, for example, were saved in “My Backdrops”.

Texture and image files are not listed in the Library Browser. These files can be assigned to material and image objects, however, which are stored in the library so it is important to retain them. There are several tools available for adding materials and images to the library. For more information, see “Images” on page 1102 and “Creating Materials” on page 833.

4. **Review the New Features List**

There are a number of important reasons why you should familiarize yourself with the new and improved features in Chief Architect X6:

- New and improved features allow you to produce drawings more efficiently, so it is to your advantage to use them.
- Some changes to existing functionality may affect your accustomed drawing style and thus your productivity if you are not aware of them.
- New features may affect your choice of settings in your template files, as well as your preferred Preferences settings.

See “New and Improved Features by Chapter” on page 1293.

5. **Review Your Preferences Settings**

Any changes that you made to the Preferences settings in your previous version do not migrate into Chief Architect X6. You should review all the settings in the **Preferences** dialog to make sure that they are set to suit your drawing needs. For more information, see “Preferences Dialog” on page 88.

6. **Create new custom Template Plan and Layout files**

Chief Architect X6 installs a selection of template plan and layout files that have been set up to take advantage of the program’s updated tools and features. See “Template Files” on page 82. For best results, it is recommended that you either:

- Use the installed templates when creating new plans and layout files in Chief Architect X6
- Use the installed templates as the basis for creating new custom templates.

If you choose to continue using custom template files that you created in a previous program version, it is very important that you take the time to carefully review all the default settings in the file, making sure that they will continue to suit your needs in X6. First, make copies of your custom templates in the Chief Architect X6 The Templates directory is located in the Chief Architect X6 Data folder. Next, open each template as you would a regular plan or layout file, by selecting **File> Open**, and then save any changes you make by selecting **File> Save**.

If you do choose to continue using a legacy template plan, it is best to also use a legacy layout template from the same program version, as well. As with a template plan, take the time to go through the layout template’s defaults and make sure they are suited for use in X6 and that their line weight scales do not conflict with those in your template plans. See “Line Weights and Scaling” on page 1192.

7. **Set up Custom Toolbar Configurations**

It is possible to migrate toolbar configuration files from previous versions to Chief Architect X6; however, it is not recommended because it is likely that you will be missing new tools available in version X6.

Instead, we recommend that you set up your custom toolbars the way you would like them in Chief Architect X6. You may find it most effective to customize your toolbars as you get used to working in the new program version, rather than beforehand. See “Toolbar Configurations” on page 131.

8. Backup Entire Plan

Before migrating a legacy file created in Chief Architect X5 or prior, it is a good idea to open the plan in the program version in which is was created and use the Backup Entire Plan tool (Export Entire Plan in version X3 and prior) to export the plan with all associated support files, including textures, backdrops and images. See “Backup Entire Plan” on page 67.

9. Check chiefarchitect.com for more information

If you have additional questions about the changes in Chief Architect, up to date information is available in the Support section of our web site. You can also post questions on the ChiefTalk web forum at ChiefTalk.com.

For Files Created in Version X5 and Prior

In addition to the above recommendations, if you wish to open files created in Chief Architect Version X5 or prior, bear in mind the following before you open legacy files in Chief Architect X6.

☐ 1. **Named Values for Doors and Windows**

In Version X6, the Named Values door_style_name, door_type_name, and window_type_name were shortened to style_name and type_name. Any object labels or text macros using these Named Values in legacy plans opened in Version X6 will need to be replaced. See “Working with Named Values” on page 1271.

For Files Created in Version X4 and Prior

In addition to the above recommendations, if you wish to open files created in Chief Architect Version X4 or prior, bear in mind the following before you open legacy files in Chief Architect X6.

☐ 1. **Roof Overhangs and Framing**

In Chief Architect X4 and prior, roof overhangs were measured to the outside of the subfascia, whereas in Version X5, they are measured to the outside of the fascia or shadow boards, if present. In legacy plans opened in Version X5, this will not affect the appearance of roof planes in floor plan view because in X4 and prior, roof plane polylines represented the projected framing area whereas in Version X5 they represent the total projected area. But, the position of the fascia and subfascia will shift, as will the length of the rafters. See “Eave and Gable Overhangs” on page 478.

☐ 2. **Door Swing Direction and Materials**

In Chief Architect X4 and prior, exterior doors that swing outward display interior material on exterior side of door. This was corrected in Version X6. Doors modified to work around the old behavior could be affected in legacy plans opened in Version X5. See “Changing Door Swings” on page 363.

☐ **3. Door Swing Direction and Louvers**

Improvements to door louver direction may affect louvers in all doors with the exception of bifold doors. See “Changing Door Swings” on page 363.

☐ **4. Wrapped Door/Window Lintels and Window Sills**

In Chief Architect X4 and prior, wrapped lintels and sills extended out further than those that were not wrapped. In legacy plans opened in Version X6, the extents of wrapped lintels and sills will be adjusted so that they equal their **Extend** setting. See “Door Casing” on page 362 and “Window Casing and Sills” on page 396.

☐ **5. Cabinet Feet**

The offsets for cabinet foot millwork symbols in Version X4 and prior were set per millwork symbol to insert into cabinets effectively. In Version X6, the offset is set in the **Cabinet Specification** dialogs. When legacy plans are opened in Version X5, cabinet foot offsets are set to 0 and transferred to their containing cabinet, if one exists. Any customized or independently placed cabinet feet will be affected. See “Pilasters, Feet, and Moldings” on page 674.

☐ **6. Object Labels in Cross Section/Elevation Views**

If a “Label” layer is turned on in a cross section/elevation view and objects of that type are visible in the view, then those objects’ labels will display in that view when the plan is opened in Version X6. See “Object Labels” on page 1241.

☐ **7. Transparent Materials**

In Chief Architect X4, materials assigned to the Transparent Material Class for ray tracing were visible in rendered views even when their Index of Refraction was set to 1.0. When legacy plans are opened in Version X6, Transparent materials with an Index of Refraction of 1.0 are transferred to the General Material class and assigned a Transparency value of 100%. This will not affect these materials’ appearance in ray trace views, but will make them completely invisible in rendered views. See “Properties Panel” on page 848.

☐ **8. Invisible Beams**

The legacy **Invisible Beam** checkbox was removed from the **Wall Specification** dialog. When legacy plans are opened in Version X6, any **Invisible Beam** walls will be converted to Invisible Walls. See “General Panel” on page 302.

For Files Created in Version X3 and Prior

In addition to the above recommendations, if you wish to open files created in Chief Architect Version X3 or prior, bear in mind the following before you open legacy files in Chief Architect X6.

☐ 1. **Text Styles**

The appearance of a number of objects that include text - including object labels, the North Pointer, Sun Angles, Joist Direction Lines, the Up/Down arrows for stairs and ramps - can now be controlled using Text Style. Their appearance may be altered somewhat in legacy plans opened in Chief Architect X6. See “Text Styles” on page 1030.

☐ **2. Light Sources**

The illumination created by light fixtures and Added Lights was improved in Chief Architect X6. Lighting in legacy plans may appear noticeably brighter when viewed in version X6. See “Light Data Panel” on page 632.

For Files Created in Version X2 and Prior

If you wish to open files created in Chief Architect Version X2 or prior, bear in mind the following file management changes and structural enhancements before you open legacy files in Chief Architect X6.

☐ 1. **Material textures, images, and backdrops**

Chief Architect X2 and prior installed with a catalog of library content, including a selection of material textures, images, and backdrops. This library catalog is no longer installed with the program because it is now available for download on-demand, so it will be possible to open a legacy plan in version X6 and encounter numerous missing file warnings. To avoid this, we recommend using the **Export Entire Plan** feature in the original program version to create a folder that includes the plan and all associated textures, images, and backdrops before opening this file in X6. This tool is renamed Backup Entire Plan in version X6. See “Backup Entire Plan” on page 67.

☐ 2. **Floor and ceiling finish thicknesses**

In Chief Architect X2 and prior, floor and ceiling finish layers were not modeled in 3D, and objects such as railings, stairs, landings, cabinets, fixtures, and furnishings measured their Floor to Bottom height from the subfloor. These objects now measure their Floor to Bottom height from the floor finish surface by default, so it is possible that you may notice height changes for these objects - particularly in saved, annotated cross section/elevation views. See “Floor and Ceiling Platform Definitions” on page 337.

☐ 3. **Riser heights and landing thicknesses**

The default Best Fit Riser Height for stairs that do not reach the next level has been updated from 9” (225 mm) in version X2 and prior to 6 3/4” (169 mm) in Chief Architect X6. This may affect the riser heights of stairs, as well as the thicknesses of landings attached to those stairs. See “Staircase Specification Dialog” on page 547.

☐ 4. **Auto Adjust Height**

The Follow Terrain option in some specification dialogs was replaced by the Auto Adjust Height checkbox. If a cabinet, fireplace, fixture, furniture, or other library symbol had Follow Terrain unchecked in version X2 or prior and was located in a room with a floor height other than the default for the current floor, then the object’s Floor to Bottom Height will change to equal that room’s floor height. The object’s position in the model will not change, however. See “Terrain Height vs Floor Height” on page 697 of the Reference Manual.

☐ 5. **Adjustable Thickness Walls**

In Chief Architect X2 and prior, generic, single-layer wall types were available for use. When a legacy plan file is opened in version X6 and these wall types are detected, they are replaced by an updated, non-generic wall type. Framed walls and Railings will also acquire 1/2" (13 mm) thick layers of sheetrock on each side. Railings that define a Deck room with Advanced Deck Framing Built will not acquire sheetrock layers. See "Legacy Wall Types" on page 297.

☐ 6. **Stairwells defined by railings**

Interior railings that used a generic, single-layer wall type drawn in older program versions will acquire layers of sheetrock when the plan is opened in version X6. This can affect the appearance of staircases where they join to a floor platform. To address this issue, select the railing and move it 1/2" (13 mm) away from the top edge of the staircase. See "Creating a Stairwell Manually" on page 545.

☐ 7. **Deck rooms**

In legacy plans opened in Chief Architect X6, Deck rooms with Advanced Deck Framing built retain the framing but have Automatic Deck Framing turned off by default. Decks with no Advanced Deck Framing built are converted to Balcony rooms. See "Decks" on page 334.

☐ 8. **Material definitions and light sources**

Settings in the **Define Material** dialog that affect materials' appearance of brightness have been modified. The **Ambient** setting was removed, and the **Diffuse** setting for materials in legacy plans will be set to 100% when opened in version X6.

The Quality setting for light sources set to use Soft Shadows in ray tracing was also modified. Lights using Soft Shadows in legacy plans will be set to use Medium quality. The Light Diameter of light sources in legacy plans is capped at 4" (100 mm). See "Texture Panel" on page 846 and "Light Data Panel" on page 632.

☐ 9. **Structural Member Reporting**

When a plan created in Chief Architect X2 or prior is opened in Chief Architect X6, Materials Lists are set to calculate **Total Lineal Length**. For a combination of lineal length and piece count, select **Mixed Reporting** in the **Structural Member Reporting** dialog. See "Structural Member Reporting" on page 1250.

☐ 10. **Fill New Framing Members**

In Chief Architect X2 and prior, Fill New Framing Members was view-specific; in Chief Architect X6 it applies to the entire plan. As a result, it is turned off by default in legacy plans opened in version X6. See "CAD Defaults Dialog" on page 1040.

New and Improved Features by Chapter

The following is a list of new and improved features in Chief Architect Version X6. Where possible, cross-references to additional information has been provided.

Installation

- License deactivation can now be accomplished online. See “Installing on Multiple Computers” on page 14.

Program Overview

- Tabbed dialogs have been replaced with dialogs with panels. See “Dialogs” on page 36.
- Redesigned dialog panels feature vertically columns of settings divided by horizontal headings for greater ease of use. See “Dialogs” on page 36.
- Object previews in specification dialogs can now be resized, rotated, and zoomed. Multiple Rendering Techniques can be used, as well. See “Dialog Preview Panes” on page 38.
- Scroll bars can be turned on/off in any view. See “View and Side Windows” on page 33.
- New **View** menu. See “View Tools” on page 858.
- The program’s Help is now always contextual: it will try to launch the page associated with the active tool. See “Getting Help” on page 46.

File Management

- The recent file list was moved to the **File> Open Recent File** submenu. See “Recently Opened Files” on page 61.

Preferences and Default Settings

- New **Active Defaults** dialog allows you to view and modify your currently active Saved Defaults. See “Using Active Defaults” on page 79.
- The **Active Annotation Set** drop-down was removed from the **Annotation Sets** dialog. See “Annotation Sets Dialog” on page 79.
- “Modified” Annotation Sets are no longer described as such to avoid confusion. See “Using Active Defaults” on page 79.
- Annotation Sets and their Saved Defaults are now view-specific and retained with saved views. See “Using Multiple Saved Defaults” on page 75.
- The **Preferences** dialog can now be accessed regardless of whether a plan or layout file is open. See “Preferences Dialog” on page 88.
- New **Open Dialogs to the Last Panel Visited** setting in the **Preferences** dialog. See “General Panel” on page 96.
- All settings in the **General Plan Defaults** dialog are now applied file-wide rather than being view-specific. See “General Plan Defaults Dialog” on page 86.
- The **Living Area To** settings were moved from the **Floor 1 Defaults** dialog to the

General Plan Defaults dialog. See “General Plan Defaults Dialog” on page 86.

- New **2D Zoom and Panning Optimizations** option in the **Preferences** dialog. See “General Panel” on page 96.
- All **Reset** options are now found on the Reset Options panel of the **Preferences** dialog. See “Reset Options Panel” on page 125.
- New **2D Zoom and Panning Optimizations** setting in the **Preferences** dialog. See “General Panel” on page 96.
- The Text and Page Setup panel of the **Preferences** dialog was renamed the Text panel. See “Text Panel” on page 95.
- Legacy Plan and Layout Page Setup options were removed from the **Preferences** dialog. See “Text Panel” on page 95.
- The **Fixture/Furniture Resize Enable** setting was removed from the **General Plan Defaults** dialog. See “General Plan Defaults Dialog” on page 86.
- Obsolete **Double Buffer Drawing** and **Always Display Images and Pictures in Color** settings were removed from the **Preferences** dialog. See “Appearance Panel” on page 90.
- Obsolete **Hardware Culling**, **OpenGL Vector View** and **Surface Backdrop** settings were removed from the **Preferences** dialog. See “Render Panel” on page 122.

Toolbars and Hotkeys

- Improved **Toolbar Customization** dialog includes a searchable button list and table showing toolbar names and the views in which each is active. See “Toolbar Customization Dialog” on page 135.
- The **Lock Toolbars** setting has been moved from the **Toolbar Customization** dialog to the **Tools** menu and also has a toolbar button that can be added to the toolbars. See “Locking Toolbars” on page 133.
- Undocked toolbars can no longer be resized. See “Moving Toolbars” on page 132.
- Can now create custom keyboard hotkey sequences to activate tools. See “Customize Hotkeys Dialog” on page 140.

Layers

- New **Name Filter** in the **Layer Display Options** dialog. See “Layer Display Options Dialog” on page 148.
- Removed the **Current CAD Layer** setting from the **Layer Display Options** dialog to reduce confusion. See “Layer Display Options Dialog” on page 148.
- Improved feedback in the **Layer Display Options** dialog shows which column is being used to sort the table and in which order it is sorted. See “Layer Display Options Dialog” on page 148.

Editing Objects

- Removed the obsolete **Accurate Move** edit tool. See “Moving Objects” on page 217.
- The **Center Object** edit tool is now available for use in layout See “Aligning Objects” on page 220.
- New **Create Hole** edit tool lets you draw a hole in a selected closed polyline-

based object. See “Polyline Holes” on page 203.

Walls, Railings, and Fencing

- Invisible Wall tool replaced by the new **Room Divider** tool. See “Room Dividers and Invisible Walls” on page 267.
- Dimensions now locate walls specified as at their centerline rather than at their dimension line. See “Measuring Walls” on page 277.
- New **Edit Wall Layer Intersections** edit tool provides control of how individual wall layers build at intersections. See “Edit Handles for Walls” on page 282.
- Can now specify multiple Main Layers for a single wall type. See “Multiple Main Layers” on page 296.
- **Add to Library** tool can now be used to add walls to the library for future use in other plans. See “Library Walls” on page 260.
- New **Energy Values** settings for wall types, which are used when exporting to REScheck. See “Wall Type Definitions Dialog” on page 298.
- New **Hang Floor Platform Above on Wall** specifications. See “Structure Panel” on page 304.
- New **Bearing Wall** specification produces joists that either lap or butt over the selected wall. See “Structure Panel” on page 304.
- Improved feedback when a wall connection problem is present in a plan. See “Fix Wall Connections” on page 273.
- Increased flexibility displaying upper and lower pony walls in views sent to layout. See “Displaying Pony Walls” on page 266.
- Automatically generated Attic Walls now become **Invisible** if deleted while **Auto Rebuild Attic Walls** is on. See “Removing Attic Walls” on page 290.
- New **Wall Material Regions** let you replace finish layers of walls with custom material layers. See “Floor and Wall Material Regions” on page 779.

Rooms

- New **Conditioned Area** settings for rooms which are used when exporting to REScheck. See “General Panel” on page 347.
- New **Energy Values** settings for floor and ceiling platform definitions, which are used when exporting to REScheck. See “Floor and Ceiling Platform Definitions” on page 337.
- New **Floor Material Regions** let you replace finish layers of floors with custom material layers. See “Floor and Wall Material Regions” on page 779.
- The **Select Same Type** edit tool can now be used to identify rooms included in the Living Area calculation. See “Living Area” on page 333.
- New **Display in Uppercase** checkbox for room labels. See “General Panel” on page 347.

Doors and Windows

- Door and doorway jambs are now drawn in floor plan view. See “In Floor Plan View” on page 359.
- New Jamb panel in the **Door Specification** dialog. See “Jamb Panel” on page 375.
- New Frame panel in the **Window Specification** dialog. See “Frame Panel” on page 406.
- New **Has Frame** checkbox and increased maximum window **Frame Depth**. See “Frame Panel” on page 406.
- New Framing panel in the **Door** and **Window Specification** dialogs with new **Headers**, **Trimmers**, and **Sill** settings. See “Framing Panel” on page 379.
- New **Include Header** option lets you omit headers for individual doors - such as interior doors. See “Framing Panel” on page 379.
- New **Energy Values** panel and settings settings for doors and windows, which are used when exporting to REScheck. See “Energy Values Panel” on page 381.
- Can now specify a window’s **Floor to Bottom** height as well as its Floor to Top. See “General Panel” on page 398.
- New Options and Materials panels in the **Bay/Box** and **Bow Window Specification** dialogs. See “Bay/Box and Bow Window Specification Dialogs” on page 420.
- New **Size, Ceiling**, and **Floor** settings for Bay, Box, and Bow Windows. See “General Panel” on page 421.
- Inproved usability of settings controlling movable window components. See “General Panel” on page 398.
- Inproved usability of settings controlling number of lites. See “Lites Panel” on page 407.
- New **Separate Trim and Materials on Each Side** option lets you specify the appearance of each side of interior doors and **Pass-Throughs**  differently. See “General Panel” on page 368 and “General Panel” on page 398.
- Door and window louvers are now two-sided and can have separate interior and exterior materials. See “Door Sides” on page 362.
- New “Glass Louver”, or jalousie, **Type** for doors and windows. See “General Panel” on page 368 and “General Panel” on page 398.
- New **Hardware on Fixed Section** option for Doors. See “Hardware Panel” on page 377.
- Can now specify the **Number of Hinges** assigned to a selected door. See “Hardware Panel” on page 377.
- Can now select a shutter style from the library and specify custom shutter **Offset** values. See “Shutters Panel” on page 414.
- Can now specify shutters for doors. See “Shutters Panel” on page 379.
- New **Fire Door** setting and Column to Include in Door Schedules. See “Options Panel” on page 370.
- **Tempered Glass** setting is now available for all door types except doorways. See “Options Panel” on page 370.

- New “Custom” window type for window symbols. See “Window Symbols” on page 387.
- Can now specify custom CAD block to represent window symbols in floor plan view. See “Window Symbols” on page 387.
- To reduce confusion, the settings for editing panel and glass door frames were moved to the General panel of the **Door Specification** dialog. See “General Panel” on page 368.
- Sliding glass doors included in Window Schedules are now listed as **Egress**. See “Sliding Doors” on page 357.
- **Curved Wall** options are now available in the **Door** and **Window Defaults** dialogs. See “Options Panel” on page 370 and “Casing Panel” on page 372.

Multiple Floors

- New **Step floor/ceiling elevations to match existing floor** checkbox maintains the floor and ceiling heights on the existing floors when a new floor is created. See “Adding Floors” on page 427.

Foundations

- The default Floor Finish for Floor 0 is now inherited from Floor 1 if a Minimum Wall Height of 76” (1900 mm) or greater is specified when the foundation is generated. See “Foundations and Rooms” on page 449.
- Improved ability to generate a foundation using stem walls and slabs based on the structure of rooms on Floor 1. See “To create a foundation of multiple types” on page 443.

Roofs

- Can now specify roof **Pitch in Degrees** from -89° to 89°. See “General Panel” on page 487.
- When a roof plane is deleted, any roof framing associated with it is also deleted. See “Deleting Roof Planes” on page 486.
- New **Retain Roof Framing** checkbox in the **Roof Plane Specification** dialog prevents a roof plane’s framing from being replaced when framing is regenerated. See “Framing Panel” on page 489.
- New Framing panel in the **Ceiling Plane Specification** dialog. See “Ceiling Plane Specification Dialog” on page 500.
- Can now choose whether to **Include Ridge Caps** on Auto Roof Returns. See “Roof Returns” on page 515.

Stairs, Ramps, and Landings

- Decreased the minimum **Width** for stairs and ramps to 2” (50 mm). See “General Panel” on page 547.
- New Named Value Pairs for stairs, ramps, and landings. See “In Floor Plan View” on page 527.

Framing

- Twelve new default layers for framing objects, including “Framing, Posts” and “Framing, Sill Plates”. See “Displaying Framing” on page 588.
- New **Build Framing for Selected Object(s)**  edit tool for walls, roof planes, and ceiling planes. See “Build Framing for Selected Object” on page 593.

- Settings on Headers panel of the **Build Framing** dialog were moved to the Openings panel of the dialog and to the **Door** and **Window Specification** dialogs. Header size and count can now be specified per door or window, and maximum header count was increased to 10. See “Framing Panel” on page 379.
- The default **Header Depth** based on opening width now includes the Rough Opening value. See “Openings Panel” on page 574.
- The specified **Header Type** is now used when wall framing is generated as well as in the Materials List. See “Rough Openings” on page 563.
- The framing for **Railings**  specified as **Solid** can now display in floor plan view. See “Displaying Framing” on page 588.
- Can now specify the width and framing type for rim joists in the **Build Framing** dialog. See “Floor Panels” on page 570.
- Can now specify the default framing for **Fireplaces**  in the **Build Framing** dialog. See “Fireplaces Panel” on page 576.
- **Floor/Ceiling Beams**  specified as **Bearing Beam** no longer need a **Bearing Line**  in order to split a platform. See “Floor/Ceiling Beam” on page 568.

Trusses

- Can no longer delete the Truss Detail if there are trusses present in the current plan. See “Truss Details” on page 607.

Trim and Moldings

- New **Repeat Distance** lets you modify the width of a symbol molding assigned to an object. See “Symbol Moldings” on page 647.
- New **Retain Aspect Ratio** option for moldings. See “Moldings Panel” on page 643.

Cabinets

- Can now specify the material assigned to cabinet shelves. See “Cabinet Shelves” on page 675.
- Moldings assigned to cabinets are now placed on the same layer as the owner cabinet rather than on the “CAD, Default” layer. See “Displaying Cabinets” on page 668.
- The width of Clipped and Rounded cabinet and countertop corners is now measured along the front of the cabinet rather than along the clipped edge. See “General Panel” on page 679.
- Increased the minimum distance between cabinets in which automatic fillers will generate in metric plans. See “Cabinet Fillers” on page 664.
- New **Custom Backsplash**  tool. See “Custom Backsplashes” on page 663.

Other Objects

- New floor and wall **Material Regions** let you replace finish layers of walls and floors with custom material layers. See “Floor and Wall Material Regions” on page 779.

- The individual edges of **Face** objects can be aligned using the **Make Parallel/ Perpendicular** edit tool. See “Face Objects” on page 761 of the Reference Manual.

Architectural Blocks

- New Display and Size/Position settings in the **Architectural Block Specification** dialog. See “General Panel” on page 793.
- Display of sub-objects in plan view is no longer tied to their inclusion in schedules and the materials list. See “General Panel” on page 793.

The Library

- Objects can now be placed from the library by dragging. See “Placing Library Objects” on page 814.
- New **Retain Aspect Ratio** option for fixtures, furnishings, and other symbol objects. See “General Panel” on page 823.

Materials

- The **Material Painter** can now be used to paint the upper and lower parts of pony walls separately. See “Material Painter and Walls” on page 830.

View and Window Tools

- Multiple view windows are now tabbed at the top. See “Working in Multiple Views” on page 861.
- View windows can now be torn out of the main program window. See “Working in Multiple Views” on page 861.
- The Cascade and Arrange Icons options for displaying view windows were removed. See “Working in Multiple Views” on page 861.

View and Window Tools

- Zooming with the mouse wheel now centers on the location of the mouse pointer, allowing you to zoom in one window while a different window is active. See “Zoom Tools” on page 859.

3D Views

- The **Color** toggle is now available in all Rendering Techniques. See “In Rendered Views” on page 887.
- New **Position** options for camera callouts. See “Plan Display Panel” on page 904.
- If a cross section/elevation view has been sent to layout, the new **Automatic** option populate’s the view’s callout with the name of the layout page. See “Plan Display Panel” on page 904.

Rendering and Ray Tracing

- New panel in the **Ray Trace Options** dialog lets you set the initial values for **Image Properties**. See “Image Properties Panel” on page 947.
- New **Reflections in Mirrors** option for rendered Previews and Final Views. See “Reflections” on page 913.
- Shadows in 3D views now generate significantly more quickly. See “Shadows” on page 912.

- Sunlight can now shine through windows in rendered views. See “Default Sun Light” on page 916.
- The Line Thickness for Glass House, Technical Illustration, Watercolor, and Line Drawing Rendering Techniques can now be set with greater precision. See **“Rendering Technique Options” on page 931**.

Dimensions

- New **Auto Refresh Dimensions** option in the **Auto Exterior Dimension Defaults** dialog. See “Auto Dimension Defaults Dialogs” on page 973.
- New **Dimension Defaults** option prevents dimensions from locating walls. See “Locate Objects Panel” on page 968.
- Can now specify whether dimensions locate **Primitive/Shape** objects. See “Locate Objects Panel” on page 968.
- Can now specify whether dimensions locate the **Sides** and/or **Centers** of **Framing** objects. See “Locate Objects Panel” on page 968.
- Dimensions can now be set to locate multiple components of wall openings. See “Locate Objects Panel” on page 968.

Text, Callouts, and Markers

- Can now specify a **Prefix** and **Suffix** for the number or letter at the beginning of list paragraphs in **Rich Text**  . See “Paragraph Options Dialog” on page 1007.
- The **Numbering Start at** setting was removed from the **Paragraph Options** dialog. See “Paragraph Options Dialog” on page 1007.
- Undo and Redo are now available in the contextual menu in the **Rich Text Specification** dialog. See “Text Panel” on page 1004.
- Misspelled words are now underlined in the **Text** and **Rich Text Specification** dialogs. See “Rich Text Specification Dialog” on page 1004 and “Text Specification Dialog” on page 1011.
- Text macros can now be inserted into **Callouts**  and **Markers**  . See “Callout Panel” on page 1025 and “Marker Panel” on page 1029.
- Can no longer specify the size of bullets in **Rich Text**. See “Paragraph Options Dialog” on page 1007.
- The **Printed Size Input** dialog was renamed **Print Size Calculator**. See “Scaling Text” on page 1017.
- New **Replace Fonts** dialog. See “Missing Fonts” on page 1001.

CAD Objects

- Enhanced settings in **New CAD Arc** dialog. See “Input Arc” on page 1058.
- New CAD Detail windows can now be created in the Project Browser. See “CAD Details” on page 1085.

Project Management

- New **Clear Form** buttons in the **Designer Information** and **Client Information** dialogs. See “Project Information” on page 1095.
- New **Expand All** and **Collapse All** options in the Project Browser contextual

menu. See “Project Browser” on page 1093.

Pictures, Images, and Walkthroughs

- **Screen Capture** tool is now easier to use: simply click and drag a marquee. See “Creating Screen Captures” on page 1121.
- The **Screen Capture Setup** dialog now remains open after you click **Capture**, allowing you to create multiple captures more easily. See “Creating Screen Captures” on page 1121.
- Imported pictures, metafiles, and PDF files can now be cropped using the edit handles. See “Using the Mouse” on page 1119.

Importing and Exporting

- New **Export to REScheck** tool exports information about a plan’s thermal envelope to REScheck (**.rxl**) file format. See “Export to REScheck” on page 1157.
- Can now import and export 3D symbols from and to the COLLADA (**.dae**) file format. See “Importing and Exporting” on page 1133.
- Can now import and export 3D symbols from and to the stereolithography (**.StL**) file format. See “Importing and Exporting” on page 1133.
- The Import Drawing Wizard was renamed **Import Drawing Assistant**. See “Import Drawing Assistant” on page 1136.
- Can now import and export 2D **.dxf** and **.dwg** files compatible with AutoCAD® version 2014. See “Importing and Exporting” on page 1133.

Printing and Plotting

- Can now save any view as a PDF, even if no PDF writer is installed. See “Print View Dialog” on page 1194.
- The Page Setup and Print dialogs were renamed **Drawing Sheet Setup** and **Print View**, respectively. See “Printing and Plotting” on page 1179.
- Can now specify the **Margins** of the drawing sheet. See “Drawing Sheet Setup Dialog” on page 1184.
- Redesigned **Print View** dialog includes a scrollable, zoomable print preview and DPI setting. See “Print View Dialog” on page 1194.
- Improved ability to include and exclude specific layout pages as the Print Range. See “Print View Dialog” on page 1194.
- Page breaks no longer display in either the **Drawing Sheet Setup** dialog or when **Print Preview** or **Drawing Sheet** are enabled. See “Print Preview” on page 1187.
- Line Styles assigned to object surface edges and patterns are now maintained when Vector Views are printed. See “Printing and Plotting” on page 1179.
- Obsolete **Double Buffered Printing**, **Line Weight**, and **Height** and **Width Correction** settings removed from **Print View** dialog. See “Print View Dialog” on page 1194.

- **Use These Settings When Converting Old Files** settings removed from the **Drawing Sheet View** dialog. See “Drawing Sheet Setup Dialog” on page 1184.
- **Print to File** option removed from the **Print View** dialog. See “Printing to File” on page 1181.

Layout

- New **Layout Page Table** tool lets you create layout tables of contents. See “Layout Page Tables” on page 1229.
- New **Layout Revision Table** tool lets you create revision tables. See “Revision Tables” on page 1229.
- Can now create multiple layout Page Templates and assign them to the pages of your choice. See “Layout Page Templates” on page 1226.
- Can now create custom layout page numbering conventions. See “Layout Page Numbering” on page 1225.
- Can now delete pages from a layout when they have content on them. See “Adding and Deleting Pages” on page 1225.
- Can now insert layout pages both before and after the current page. See “Adding and Deleting Pages” on page 1225.
- Can now insert pages into and delete them from a layout using the contextual menu in the Project Browser. See “In the Project Browser” on page 1224.
- Can now specify the floor number shown and the Annotation Set used in a floor plan view sent to layout in the **Layout Box Specification** dialog. See “Plan View Panel” on page 1219.
- New **Layout Info** submenu for Text Macros and six new layout page macros. See “Text Macros” on page 1033.
- Line Styles are now maintained when Vector Views are sent to layout. See “Sending Views to Layout” on page 1208.
- Improved **Edit Layout Lines** tool. See “Editing Layout Lines” on page 1216.
- Removed **Highlight Weight** settings from the **Layout Line Specification** dialog. See “Layout Line Specification Dialog” on page 1216.
- If a cross section/elevation view has been sent to layout, the new **Automatic Text Below Line** option populates the view’s callout with the layout page’s Label. See “Plan Display Panel” on page 904.
- Can now specify the drawing order for the Reference Plan Display in views sent to layout. See “Plan View Panel” on page 1219.

Schedules and Object Labels

- New **Move Row** and **Move Column** edit handles let you change the order of objects and the columns in schedules . See “Using the Edit Handles” on page 1233.
- New **Move Down in Schedule** and **Move Up in Schedule** edit tools let you move a selected object’s position in a schedule. See “Editing Schedule Order” on page 1234.

- Schedule columns can now be renamed in the **Schedule Specification** and **Defaults** dialogs. See “General Panel” on page 1237.
- Can now choose whether to display a schedule’s column headings as well as whether to use uppercase text. See “General Panel” on page 1237.
- New **Group Similar Objects** option lets you choose whether to display similar objects as one line item or separately. See “General Panel” on page 1237.
- Fixtures and appliances set into cabinets can now display callout labels associated with a Fixture Schedule. See “Object Labels” on page 1241.
- New “Custom” Window Type for garden windows and other window symbols. See “Columns and Objects to Include” on page 1234.
- Can now create separate schedules for Interior and Exterior Doors. See “Columns and Objects to Include” on page 1234.
- New “Room Name” **Column to Include** for all schedules except Plants. See “Columns and Objects to Include” on page 1234.
- New **Columns to Include** for door, window, cabinet, and electrical schedules. See “Columns and Objects to Include” on page 1234.
- “Std. Area” and “Int. Area” columns in Room Finish schedules were renamed “Area, Standard” and “Area, Interior”. Legacy plans are not affected by this change. See “Columns and Objects to Include” on page 1234.
- Objects included in more than one schedule can now display multiple callout labels. See “Working with Multiple Schedules” on page 1236.
- All objects now derive their schedule Descriptions from the **Components** dialog. See “Components Dialog” on page 1265.
- New “Totals” row at the bottom of Door and Window Schedules that include an Area column. See “Area Totals” on page 1235.
- Hinge Side, Swing, and Header Type can now be included in Door Schedules. See “In Door Schedules” on page 365.

Materials Lists

- The ability to export Materials Lists to **.xls** file format was replaced by export to more flexible **.xml** format. See “Printing and Exporting the Materials List” on page 1261.
- Column headings are now included when a Materials List is printed. See “Printing and Exporting the Materials List” on page 1261.
- Heated Area descriptions were replaced by Thermal Envelope, and are calculated with greater accuracy. See “Conditioned Area Totals” on page 1262.
- Can now generate a Materials List while a camera view is active. See “The Materials List Tools” on page 1248.
- Obsolete **Export Version 8 Columns Only** was removed from the **Materials List Export** dialog. See Materials List Export Dialog.

Ruby Console

- Some named values were shortened. See “For Files Created in Version X5 and Prior” on page 1289.
- New named value for stairs. See “Working with Named Values” on page 1271.

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