Chapter

5

Presentation Drawings

Presentation drawings are used to illustrate design concepts to a client. When completing a set of presentation drawings the main focus is to ensure the drawings highlight the key areas of the design and that the client can understand the drawings presented. Any construction detail is eliminated to avoid confusion.

Computer-Aided Design has added 3-dimensional capabilities to presentation drawings. Photo realistic renderings and even animations are used in presentations to illustrate design ideas.

Presentation drawings are often used to win a job, so the drawings must be of high quality and clearly illustrate the design concept.

Objectives

In this chapter we will explore the following topics:

- Renderings
- Material Properties
- Inserting Light Fixtures
- Creating a 3D Real View™ Rendering
- Rendering Settings

Renderings

A rendering is a perspective drawing of a building's design. This can be a pen and ink drawing, a watercolor, or a computer-generated rendering. It is a way of communicating the design concept to the home owner so that they can understand and appreciate it.

The rendering is often the client's first glimpse of their home, so the quality of the rendering is critical, especially if the rendering is a design proposal which the designer must use to win the project.

Renderings can include exterior and interior views of the home. Careful attention must be given to the following elements to ensure that a rendering is of high quality:

- **Materials**. Each material (wood, tile, marble, paint, etc.) in a scene has different properties. Some have glossy finishes, some are dull, some are reflective and some are transparent. In a rendering you must depict the materials in a way so that a client will understand and appreciate the elements that you have chosen.
- **Lighting**. Adding lighting to a scene allows you to add drama to a room or exterior view. It will also illustrate to the home owner the lighting quality that you are specifying for the room.
- **Perspective**. When choosing a view to illustrate you must ensure that it is a flattering view of the room or building that has attractive shadow lines.

Exercise – Understanding Material Properties

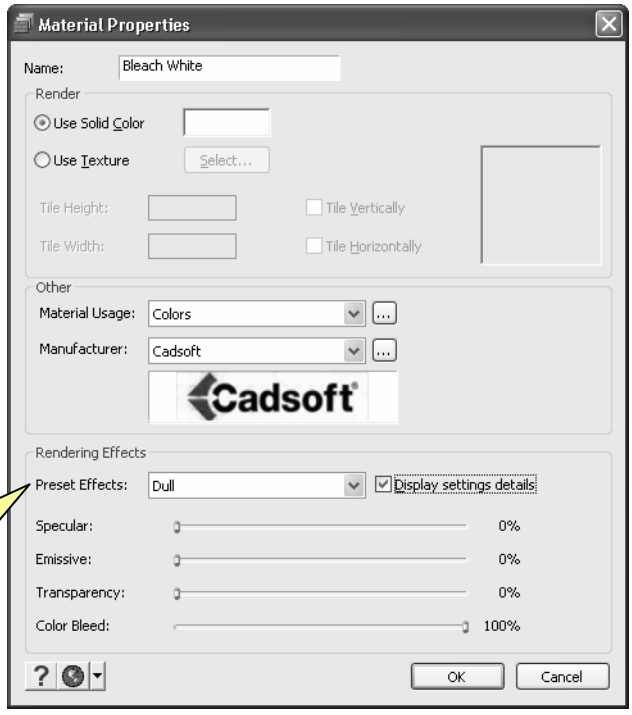
Every material has properties that determine how much the material reflects, emits and absorbs light. These factors come into play when creating renderings.

Let's take a look at the available settings to better understand their effects.

1. Continue with the same drawing you've been working on.
2. Set the current location to **Ground Floor**.
3. Select **View > 3D Camera Views > Camera 1** to display your 3D kitchen view, or click the 3D Camera Views button on the View Control toolbar and select Camera 1.

4. Select **Edit > Materials Paintbrush**, or click the Materials Paintbrush button on any tabbed toolbar.

5. In the catalog panel, select the **Colors** category, than select the **Bleach White** color.
6. Right-click and select **Edit Material**.
7. In the **Materials Properties** dialog, enable the **Display settings details** check box at the bottom of the dialog. This expands the dialog to display various rendering properties.



Define a material's rendering effects here

RENDERING EFFECTS

Specular. Reflection that creates highlights on materials, making them appear shiny. Be careful not to make a material too shiny or it may overpower a scene. 15% or less is an ideal value.

Emissive. The amount of light given off by a material. The more emissive a material is, the more self-luminous it appears. Usually set to zero unless it is a light source.

Transparency. The degree to which a material is pervious to light. For example, a piece of glass in a window is 100% transparent.

Color Bleed. The degree to which different colors blend where they meet. Usually set to 100% so that colors appear correctly.

8. Click **Cancel**. We're going to use the default settings for all of our materials.

Lighting

Direct light and ambient light levels define the light that is reflected in a scene. Direct light is light that is emitted from light fixtures. It has a specific color, intensity and direction. Ambient light can be thought of as a general level of light that is everywhere in the scene. Every light in a scene contributes to the overall ambient light in a scene.

If you are rendering an interior view, you need to consider the light sources in your model. Although light coming in through windows is taken into account during the calculation, you may want to insert interior light fixtures to provide additional light.

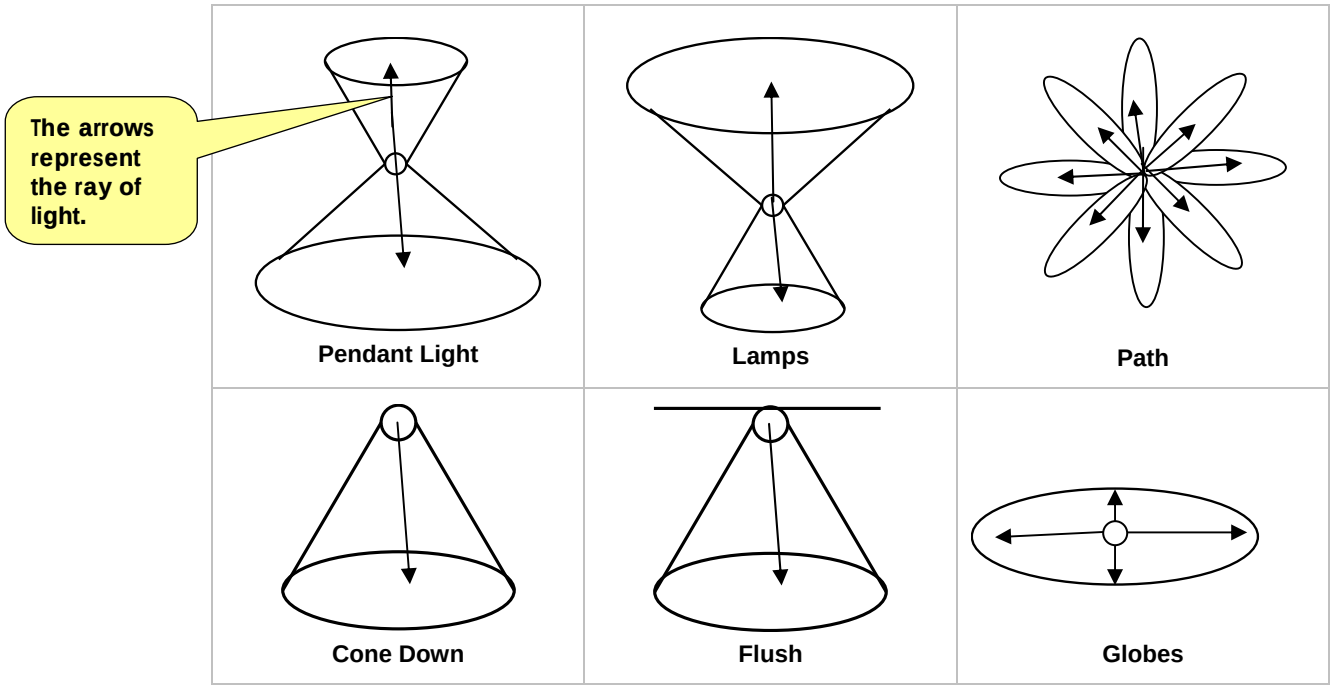
Exercise - Inserting Lights

Each light fixture casts light in a different manner. When choosing a light be aware of how the fixture will cast light.

In this exercise we will insert some ceiling lights in the kitchen in preparation for rendering later.

1. Continue with the same drawing you've been working on.
2. Switch to **2D Plan View**. Set the current location to **Ground Floor**, and then zoom in on the kitchen area.
3. Select **Insert > Interiors > Interior Lighting**, or click the Interior Lighting button  on the Interiors toolbar.
4. In the catalog, select **Island Light 2** in the **Ceiling Lights** folder.

5. Insert the fixture in the approximate center of the kitchen island area.
6. In the catalog panel, select **Ceiling Fixture 1**.
7. Insert the fixture in the approximate center of the breakfast nook.
8. Right-click and select **Finish**.
9. Select the inserted **Ceiling Fixture 1** and then right-click and select **Properties**.
10. In the **Interior Lighting** dialog, select the **Lights** tab. Notice that the light source for this fixture is a 75w Incandescent Pendant Mount. If you find after rendering that a room is too bright, you can click the **Edit** button on this page to select a light source with a different wattage. If you don't like the path of the light, make a selection from a different Light Source category. The figure below illustrates different types of lights and how they cast light.



11. Click **OK** in the **Interior Lighting** dialog.
12. Select **File > Save**.

Exercise – Creating a Rendering

Envisioneer's *Render 3D Real View* tool renders a 3D scene with the click of a button. The program can take anywhere from a few seconds to several minutes to calculate the solution depending on the number and complexity of elements in your drawing. You can stop the solution if needed, then start it again.

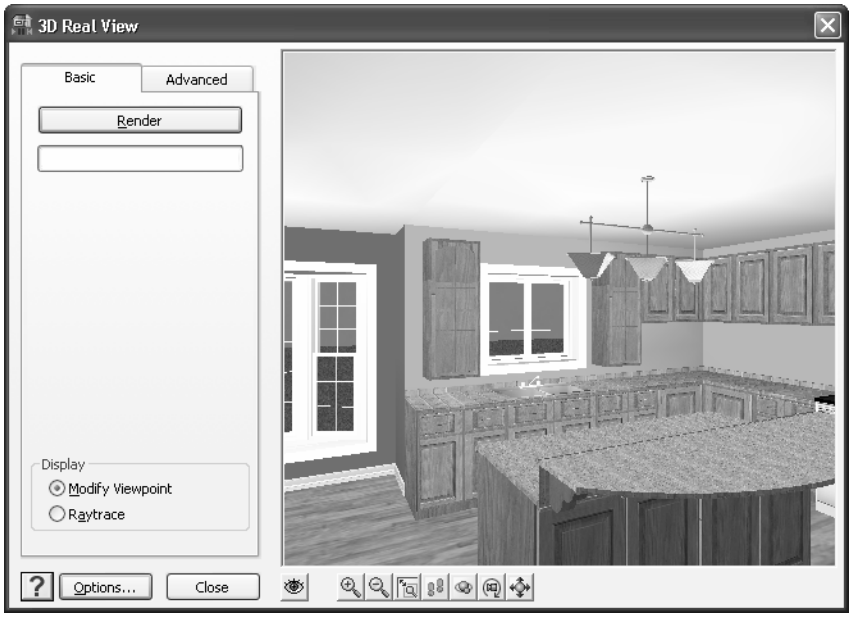
Tip: You can save time by saving copies of your model and removing any extra elements that will not be visible in the rendered view. When Envisioneer renders an image it looks at every element and how element materials emit and reflect light. The

more elements in a scene, the more time needed to render, and the larger the resulting file size.

In this exercise we will render a 3D view of the kitchen. Before starting the rendering we will look at the available rendering options and settings.

1. Display your 3D kitchen view (Camera 1).

2. Select **View > Render 3D Real View**.



3. In the **3D Real View** dialog, make sure the **Basic** tab is selected.

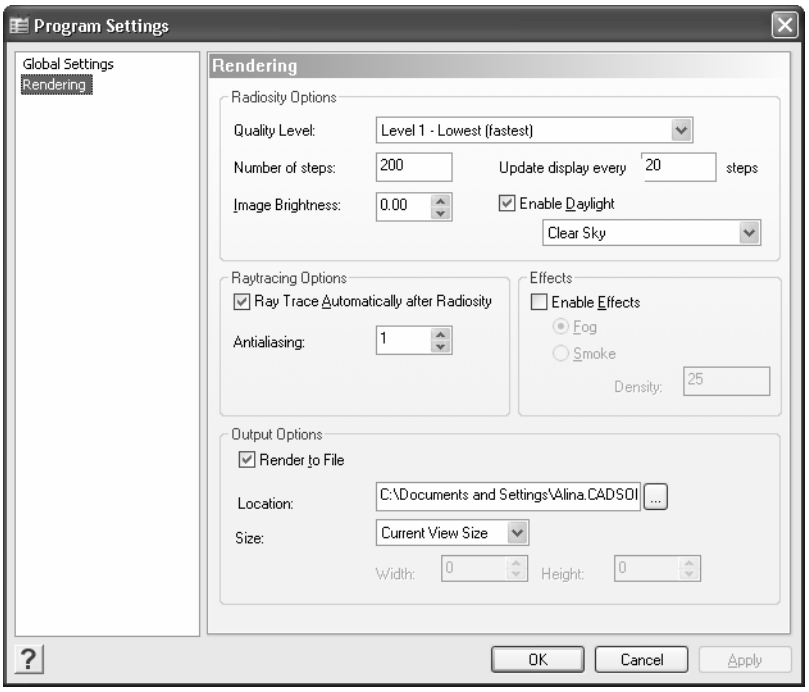
   There are two rendering options in Envisioneer: *Basic* and *Advanced*.

   Basic rendering uses the *raytracing* method. Raytracing traces the path taken by a ray of light from the camera through the scene, and then calculates the reflection, refraction, or absorption of the ray when it intersects objects in the scene. Basic rendering is ideal when you want to produce something of fair quality very quickly.

   Advanced rendering uses the *radiosity* method as well as the *raytracing* method. Radiosity is a global illumination algorithm that simulates the many reflections of light around a scene, generally resulting in softer, more natural shadows and reflections. Advanced 3D Real View rendering can take considerably longer than basic rendering, but the result is generally more photo realistic.

4. Click the **Options** button at the bottom of the dialog.

5. In the **Program Settings** dialog, select **Rendering** in the left pane.



6. Let's take a look at the available rendering settings.

Quality Level — There are 5 levels to choose from. Note that the higher level of quality you choose, the longer the rendering process takes. This level is the distribution of light to a scene. Level 1 will take 200 steps to bounce light into a scene whereas Level 5 will take 1500 steps to bounce light into a scene and therefore create a more realistic distribution of light in an area and a more photorealistic image.

Number of Steps — The number of times light is bounced in a scene during the radiosity process. Increasing this number may improve the lighting conditions in your rendered image, as well as its overall quality. The maximum number of steps is 999,999. However, increasing this from anywhere between 2000 and 4000 is best.

Update display every __ steps — As the program performs lighting calculations, the view updates at regular intervals to reflect calculations up to that point. This is the number of steps between visual updates.

Image Brightness — The program's "virtual camera" works in a manner similar to actual point-and-shoot cameras. It automatically calculates the correct "exposure" for the lighting situation and produces a view with infinite depth of field (i.e. everything is in focus). You can override this to make a scene brighter or darker.

Sky Conditions	This setting helps to control the amount of light being cast onto a scene. Choices are *Clear Sky*, *Partly Cloudy Sky*, and *Overcast Sky*. For example, if your rendered image looks overexposed, you can select a partly cloudy or overcast sky to reduce the amount of light coming through.
Enable Daylight	By default, daylight is included in radiosity calculations, even for indoor scenes (light can come through a window). You can turn daylight off if you want. This basically omits daylight from the lighting calculations, and can speed up rendering. **Note**: Daylight should be turned off if you are rendering a night scene.
Antialiasing	Blends pixels in areas where two colors or two materials meet to reduce artifacts (or "stair steps") and produce a more natural look to the scene. If areas in your rendered image appear jagged, than increasing the antialiasing value will help to compensate for this and straighten the lines. **Tip**: For smoother lines always set to level 4.
Raytrace Automatically after Radiosity	Sets the default state for the *Auto Raytrace* check box in the 3D Real View dialog.
Enable Effects Fog/Smoke	Lets you create a fog or smoke effect in the rendering, and set the density of the fog or smoke.
Render to File	If enabled, the next rendering you create will be saved to a file. The image will be saved to a BMP or JPG file that you can open in most graphic editing applications.

7. Click **OK**. You're now ready to render the view.
8. In the **3D Real View** dialog, click **Render**. The calculation begins. When the solution has been calculated, the rendered image is displayed in the preview window of the **3D Real View** dialog.
9. Click **Close**.

Note: The rendering is also saved to a BMP or JPG file that you can open and edit in graphic editing programs. It is saved in the same folder as your project.

Animations

An animation is like a movie — a series of images that, when viewed in rapid succession, create the illusion of movement through a scene. Animations are a great way to take a client on a virtual 3D tour through their model.

Exercise – Creating an Animation

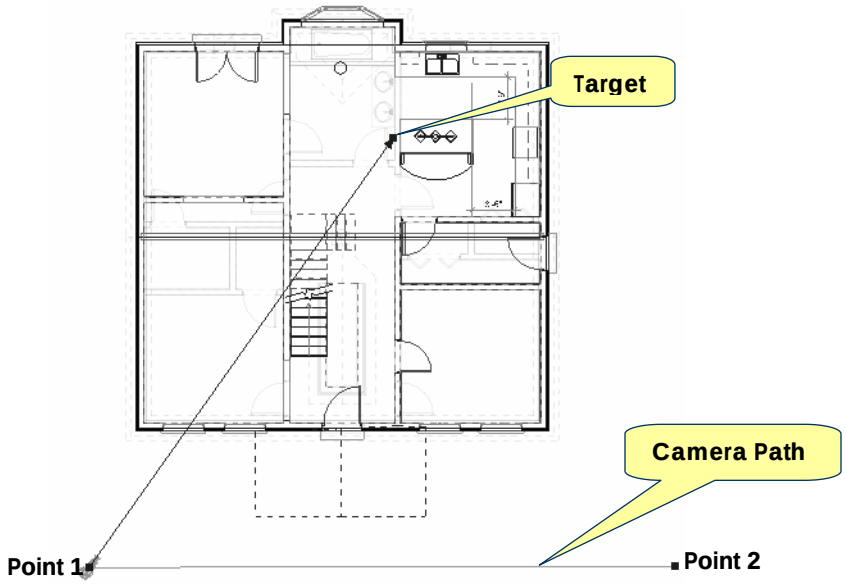
To create an animation, you need to draw a path through your 2D plan for the camera to follow. Once the path has been drawn you can change it if you want, and even enhance it with sound. You can draw more than one path if you want, and specify the order of paths for the camera to follow. You then preview and record the animation.

When you record an animation, it is output to an AVI file. You can control the animation's speed, video compression, frame size and frame rate. You can also opt to ray trace the animation for optimal effect.

Let's create an exterior walkaround animation.

1. Continue with the drawing you've been working on.
2. Return to **2D Plan View**, and make sure the current location is the **Ground Floor**.
3. Select **View > Zoom > Zoom to Fit**, and then zoom in on the model a bit.
4. Select **View > View Filters > View Filter** and then click **Display All** to make sure everything is displayed.
5. Select **Tools > Animation > Insert Path**.
6. In the **Path Properties** dialog, type **Exterior Walkaround** in the *Description* edit box.
7. The *Behavior* section of the dialog box deals with the camera focus. Selecting "Follow Path" will cause the camera to focus on the path that you set. "Specify Target" will cause the camera to focus on one point as you move along the animation path. Choose the **Specify Target** option for this lesson.
8. The *View Angle* is the width of the camera view. If you want a close up view then specify a lower value by sliding the bar to the left. If you want a wider view slide the bar to the right. Specify an angle of **90°**.
9. Click **OK**.
10. Select a start point for the camera path in the Southwest corner of the yard (see next figure).
11. Continue selecting points to define the path, then right-click and select **Finish**.

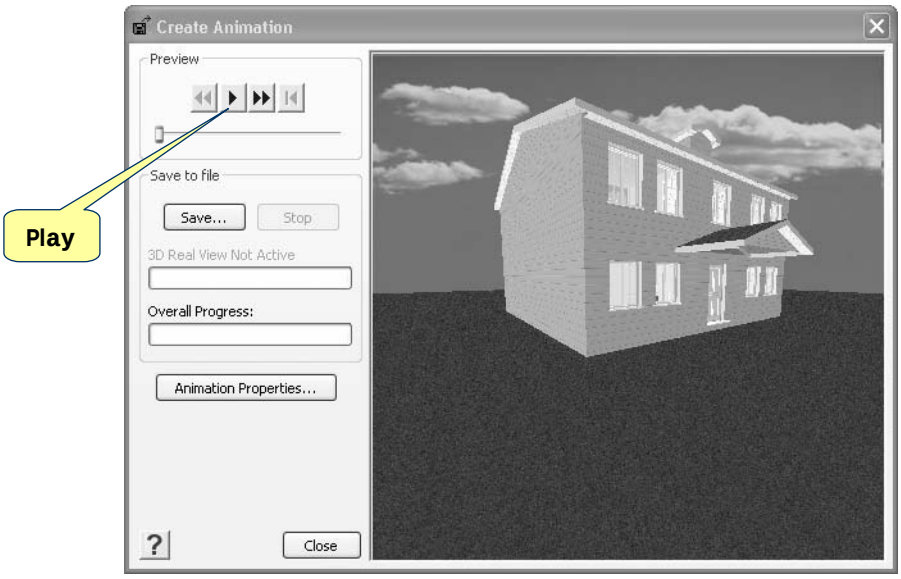
NOTE: The more points you choose, the longer the animation and the potentially choppier the animation will be. Below is an example of a simple animation path at the front exterior of the model.



12. Click on the animation path. Adjust the target if necessary by clicking and dragging its square blue grip.

13. Select **Tools > Animation > Create Animation**.

14. In the **Create Animation** dialog, click the Play button to preview the animation.



15. If you are happy with the animation preview, click the **Save** button. In the **Save As** dialog, specify a name for the *.avi file, then click **Save**. The animation begins to record. Recording can take several minutes.

16. When you are done recording, click **Close**.

17. To turn the animation path off, select **View > Viewing Aids > Animation Paths On/Off**.

18. Select **File > Save**.

Review – Presentation Drawings

1. To create a good rendering you need to understand:
   - Material Properties
   - Lighting
   - Rendering Settings
2. Before creating a rendering, create a copy of the model using the Save As tool and use the copy for rendering purposes. Eliminate any extra information in the model. For example, if you will be doing an exterior rendering, gut the interior of the house. If you will be doing a rendering of the kitchen, eliminate everything in the model except for the rooms adjacent to the kitchen and any landscaping visible through kitchen windows. When Envisioneer creates a rendering it looks at all elements in the model. If you have a large model, it will take extra time to render. By "gutting" the model you save yourself valuable time.
3. Different light fixtures cast light in a different manner. Play with the lighting to ensure you use the right type of light and the right amount of light.
4. Before creating a rendering you can select a higher quality level and increase the number of steps in the radiosity solution for an even more photorealistic image. The maximum number of steps is 999,999. However, increasing this from anywhere between 2000 and 4000 is best.
5. For smoother lines always set the Antialiasing level to 4 in the Rendering settings.
6. When drawing an animation path, remember that the more control points that you insert, the more times the animation stops and starts again, creating the potential for a choppy-looking animation.

Additional Activities

1. Visit **http://www.cadsoft.com/community.php**. This web page contains various presentation drawings, renderings and animations. Review the samples, taking into consideration what you have learned about lighting and materials, and determine if each sample helps to sell the design or what could be changed to make the presentation drawings more appealing.
2. Create an animation of the interior of the project model, walking from the front door to the kitchen.
3. Create an exterior camera view of the project model and create a daytime and nighttime rendering. Remember to change the lighting levels