

# SHORT SHARP TRAINING

## (monthly) *issue 1008*

Welcome to this issue of the VectorWorks Short Sharp Training (monthly). This manual is designed to work like a user group meeting. There is a main workshop topic, then extended movies showing tips or techniques and an area for beginners.

### Workshop Topic

#### Lighting and Rendering

I think rendering is one the really fun parts of Vectorworks. It can really look like your building is coming to life, but without good lighting, all your work can be wasted. Good lighting can even make a dull model come to life.

**Extended Podcast 112 - [Click here](#)**

How to create a window with a different wall above.

**Extended Podcast 113 - [Click here](#)**

How to use the landscape area for site area analysis.

**Beginners Corner 23 - [Click here](#)**

How to make a symbol.

# Lighting and Rendering

## Introduction

I think that Rendering is one of the fun parts of VectorWorks, You can see you buildings coming to life. Getting the lighting right and setting the correct rendering can take you some time.

I think rendering is one the really fun parts of Vectorworks. It can really look like your building is coming to life, but without good lighting, all your work can be wasted. Good lighting can even make a dull model come to life.

This manual will work though the rendering options and show you when each one should be used. Then we will look at the lighting options and see when we should be using each type. Finally we will look at a couple models and look at applying the lighting and rendering to get the best results.

But it can take a long time to get nice results. Some of the renderings can take several minutes to render. While RenderWorks can be fun it can also be very time consuming. On more than one occasion I have been have stopped to look at the time and wondered where the day has gone.

Obviously you have to create a model to render. Try to plan your views, then model all the part of your project you can see from the views. Remember that you don;t have to model the parts of your project that you can not see. Where will you be standing, what will you be looking at. This will help you to decide on what you need to draw and what you can leave out. If you don't know what areas you will be rendering then you will have to draw the whole project and assign textures to the all the objects in the drawing. If you have used a lot of classes, work out if some of these classes can be turned off to speed up the rendering process.

When you create your model think about texturing the model as you draw. Remember that sometimes you do not have to model objects if you can tex-

ture them. I have created a manual on textures, we covered this in the user group not long ago. Go back to those notes for information about textures.

If you use a lot of classes for materials, then you can use the class set up dialog box to assign textures as you draw. Using classes for things like the windows and doors is a great way to get the textures on them, and it's really fast as well. Using this method you can set up your file for the textures, even without any textures in the file yet. If you are using walls, remember to use the wall styles to control the textures.

Also consider using a lot of symbols. The symbols make it easy to repeat objects, and then go back and edit them all. If you do not use symbols, the textures would be assigned to each object individually. If the objects had needed changing, you would have to edit all the objects, one at a time. If you use symbols, you can assign the texture to one object and they would all be the same.

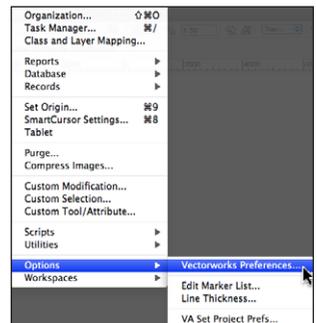
## Rendering Preferences

[cadmovie503](#)

### VectorWorks Preferences

VectorWorks Preferences affect every VectorWorks file.

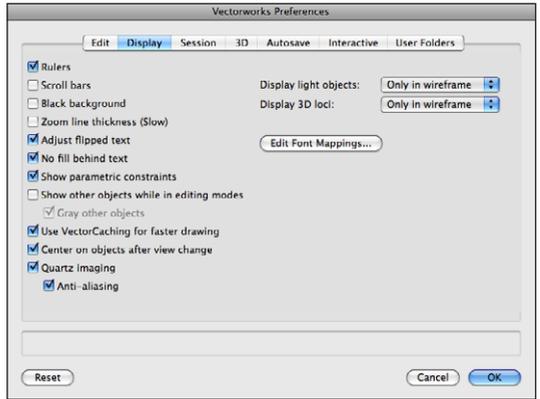
- From the Menu Bar choose **Tools > Options > VectorWorks Preferences...**



## Display Tab

Here are the controls for the display of light objects and 3D Loci.

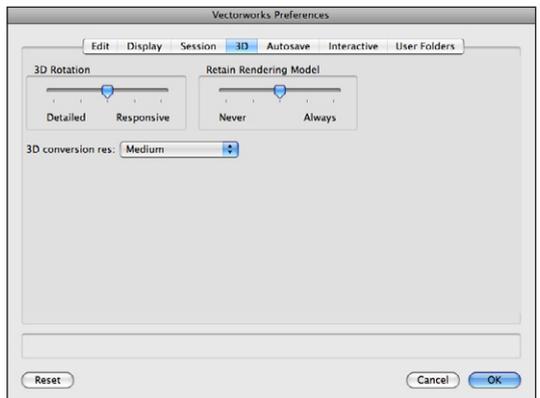
I usually choose the “Only in Wireframe” option so that in wireframe I can see the lights and 3D loci and move them around, but when I render the view the lights and 3D loci are not displayed, just the output from the light source is visible. It is really disconcerting to see the light appear is a rendered view.



## 3D Tab

Under the 3D tab are controls for the resolution of the conversion resolution (how finely 2D shapes are converted to 3D faces), and how VectorWorks retains the 3D geometry in is memory. If you choose “Always” then VectorWorks should keep the model rendered in OpenGL when you walk through the building.

- Click on the **OK** Button to close the preferences.



# Setting 3D Views

[cadmovie504](http://www.cadmovie504.com)

## Quick 3D Views

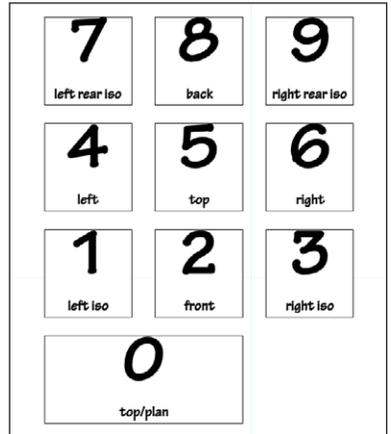
For Quick 3D views, use the numeric keypad on your keyboard. The numeric keypad is on the right side of your keyboard, if you have a full size keyboard. Use this for quickly typing in numbers.

VectorWorks has assigned hot keys to 3D views that you can change 3D views quickly.

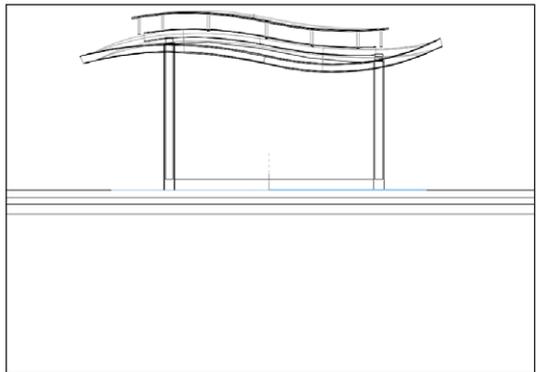
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*The trick to remembering the order is to imagine your model on key 5.*

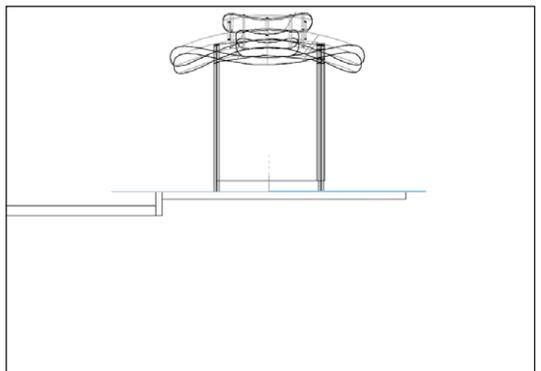
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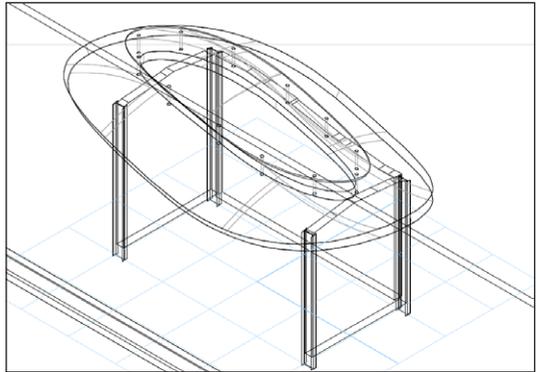
- To look at it from the front, key 2 is in front of key 5.



- To look at the model from the right, key 6 is to the right of key 5 and so on.



- We want to look at our 3D model from the right front isometric - key 3 on the numeric keypad.

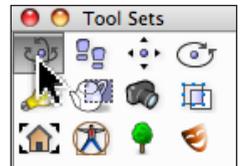


### The Flyover Tool

The **Flyover** tool is used to move your view around the building - over and under the building. But you can't walk into the building. That's what the Walkthrough tool is for. You can use this tool from any view.

[cadmovie505](http://cadmovie505)

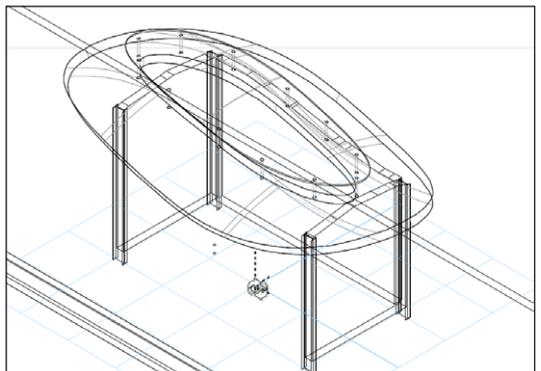
- Go to the **Visualization Tool** set.
- Select the **Fly Over Tool**.



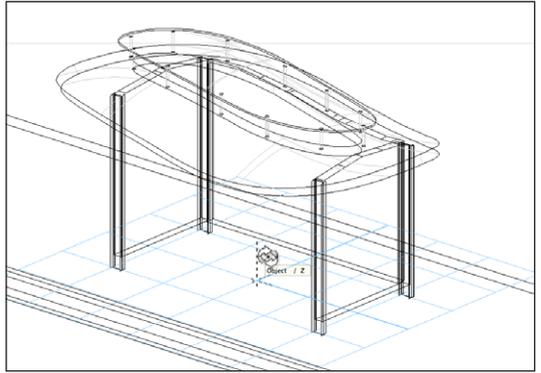
- Go to the Tool bar.
- Click on the first mode.



- Move your cursor into the drawing window.



- Click and hold the mouse button down. Slowly move the mouse up the screen.
- The further you move the mouse from the center of the screen the more dramatically the view changes.

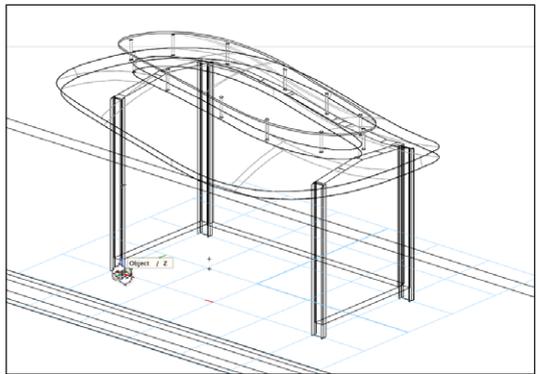



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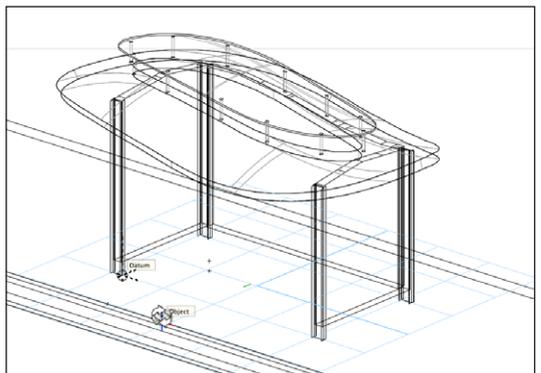
The best way to use this tool is to move a little bit then let go of the mouse button. Move your cursor back to the middle of the view.

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- Move your mouse to a part of your model.
- Click and hold the mouse button for a small time, then release the mouse button.



- This will become the centre of the rotation (if you choose the first mode on the Mode Bar).



## The Walk Through Tool.

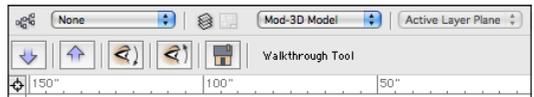
The walk through tool is used to walk into and through your model. You can use it from any perspective view but the results are always more pleasing if you set your perspective first.

[cadmovie506](#)

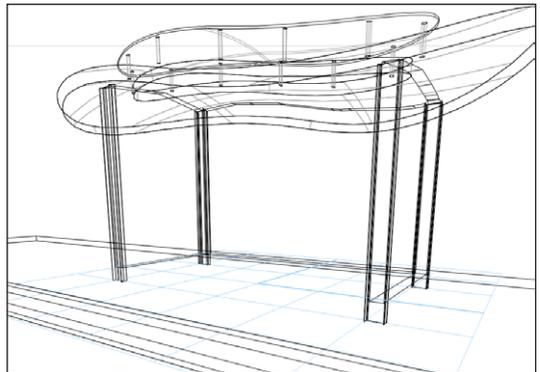
- Go to the **Visualization Tool** set.
- Select the **Walk Through Tool**.



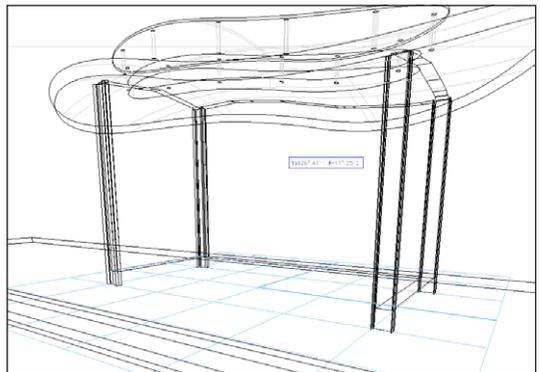
- Go to the Tool bar. These buttons can be used to move the eye position up, down, or title the view.



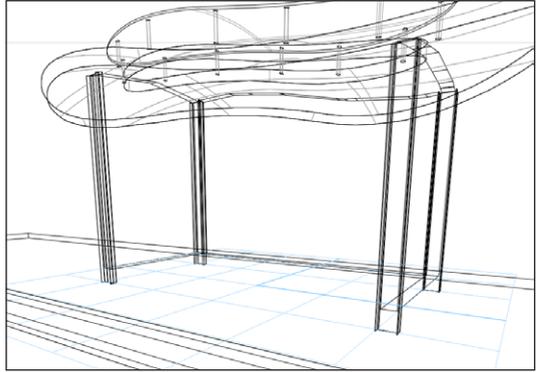
- Move your cursor to the center of the drawing window. This does not always mean the center of the model.



- Click and hold the mouse button down. Slowly move the mouse up the screen. The further you move the mouse from the center of the screen the faster you walk into the model.



- The best way to use this tool is to move the mouse up the screen a little bit. With the mouse button down move the cursor to the right or to the left.
- You can walk backwards and you can walk both in and to the side at the same time if you want.




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*When you get lost, go back to Top/plan view. From the Menu Bar, choose View > Standard Views, Top/Plan.*

*This always gets back to a plan view and you can start again.*

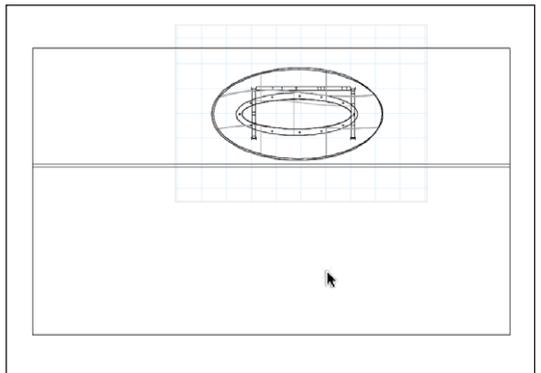
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### Set 3D View

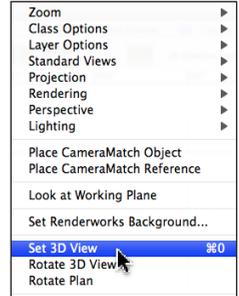
We are going to set a perspective view of the object. It helps to be able to see the whole scene when you are setting the perspective so check that you can see enough of the object. Fit To Window will help out, or zoom out until you can see the whole scene and surrounding area.

[cadmovie507](#)

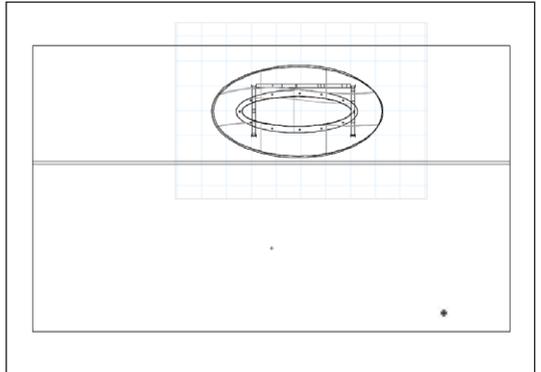
- Set your view to **Top/Plan**



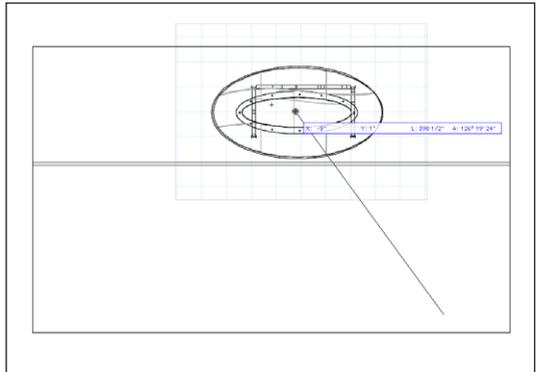
- Go to the Menu Bar.
- Choose **View > Set 3D View...**  
Look at the Tool bar - it tells you what to do.



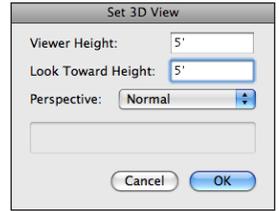
- The first thing VectorWorks asks you to set are the camera positions - the view or location. So starting away from the object, click once.



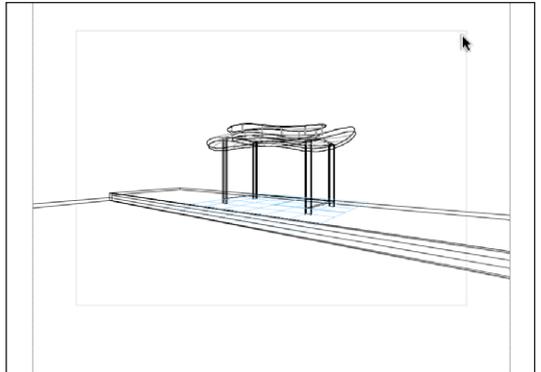
- Move the cursor into the object. This is the centre of your view, i.e. what you are looking at, click once.



- This gives you a dialog box so that you can set the viewer height, what height you are looking at and the perspective. The viewer height and the look toward height, use actual heights in your current layer. If you want to look straight ahead the viewer height has to be the same height as the look toward height.
- For a Perspective view make sure that you choose Narrow, Normal or Wide. Otherwise it won't be a perspective view .
- Click on the **OK** button.



- Now you have a perspective view.
- Use the saved view menu to save this view.



## Renderworks Camera

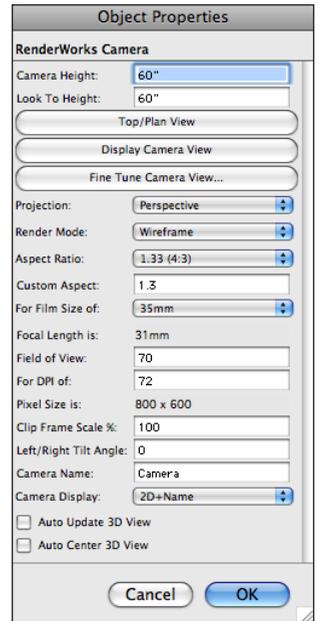
The Renderworks Camera tool is great for setting the view. It is similar to the Set 3D command in that you click to locate the camera position and look toward position, but unlike the Set 3D View, you end up with an object on the screen that you can move and edit. This make the Renderworks Camera more useful.

[cadmovie508](http://www.cadmovie508.com)

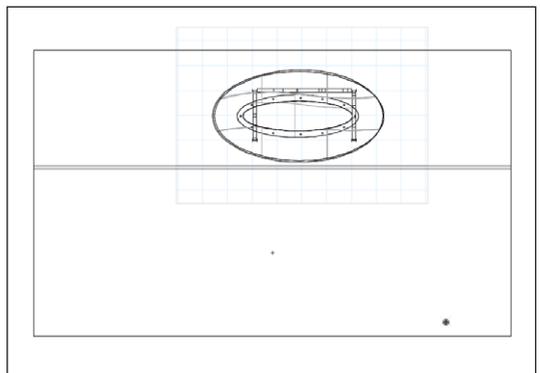
- Go to the **Visualization Tool** set.
- Select the **Renderworks CameraTool** .



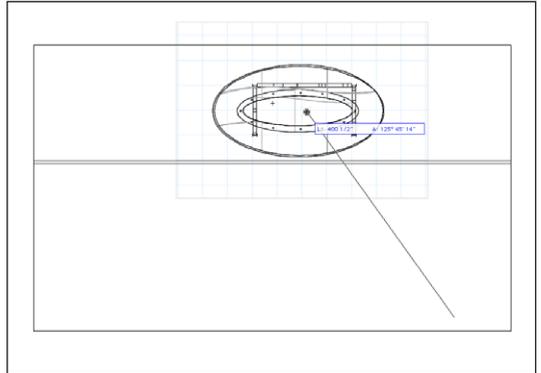
- Go to the **Tool bar**.
- Click on the **Preferences** button, the last one on the tool bar.
- Fill in the preferences to suit.
- Click on the **OK** button.



- Set your view to **Top/Plan**
- The first thing VectorWorks wants is the camera position. Move your cursor to a suitable location.
- Click once.

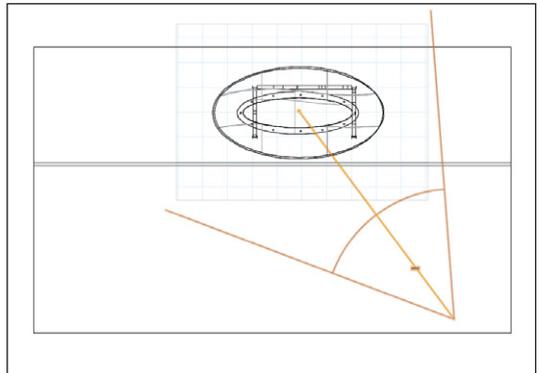


- Move the cursor into the object. This is the centre of your view.

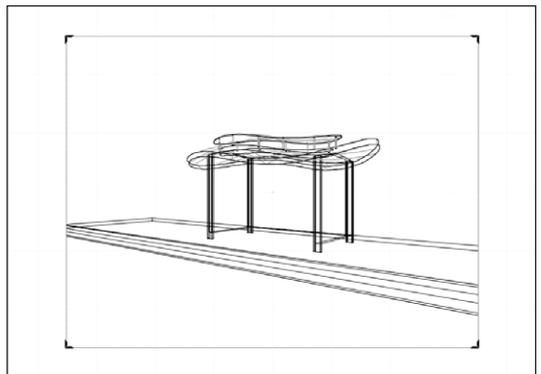


- Click once.

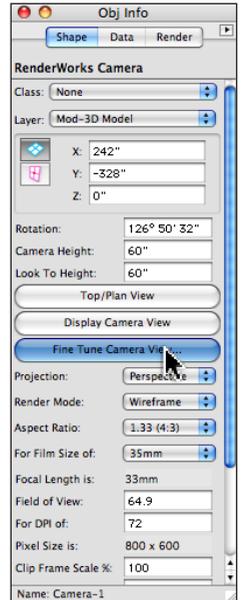
The Renderworks camera has a plan object that stays on the screen.



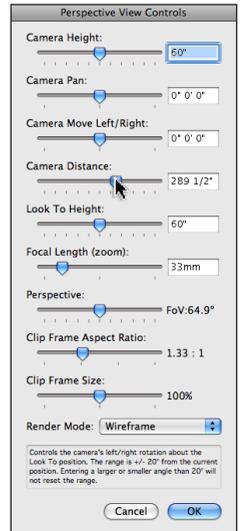
- Double click on the camera to display the view.



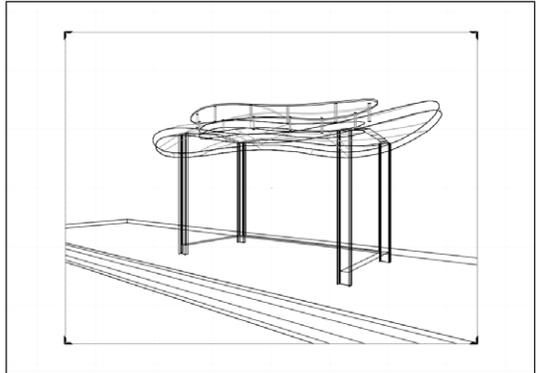
- Go to the Object Info palette. You can change many of the settings in the Object Info palette, and you can fine tune the camera as well.
- Click on the **Fine Tune Camera View...** button.



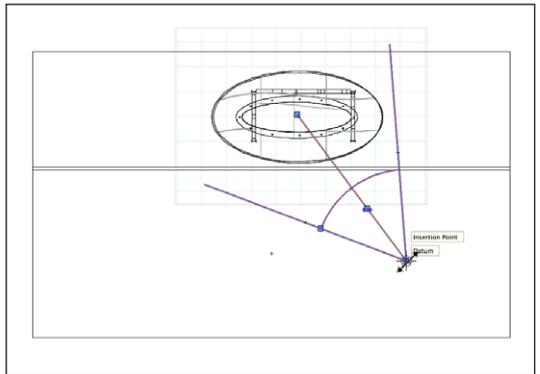
- You can see the camera view and this dialog box.
- Move the sliders to fine tune the camera view. The view will update as you move the sliders.
- Click on the **OK** button.



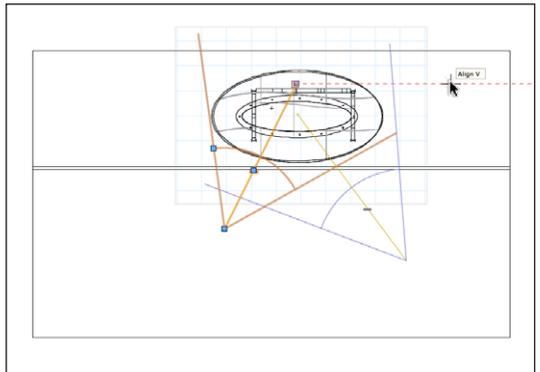
- You can see the new camera view.



- Use the 2D Selection tool to edit the the camera position. You can move the camera location, view angle and the look toward location this way.



- You can drag a copy of the camera to make a new one, then edit the camera location, view angle and the look toward location. This a quick way to add cameras.



# Rendering Types

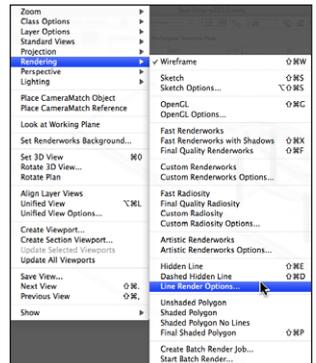
Rendering is a way of looking at your 3D model with light and shade. There are several ways of doing this and each different way has some advantages and some disadvantages.

## Line Render

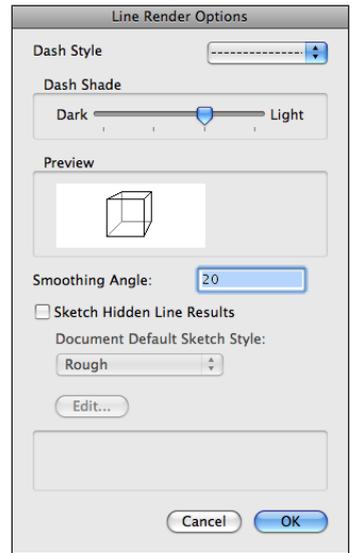
These options only control the current file. So as you change files, you will have to come back to these and check. Of course, if you set these option, then save this file as a template, you will not have to check them each time. These preferences control the options for hidden line and dashed hidden rendering. The line render options also cover the sketch rendering settings.

[cadmovie509](http://cadmovie509)

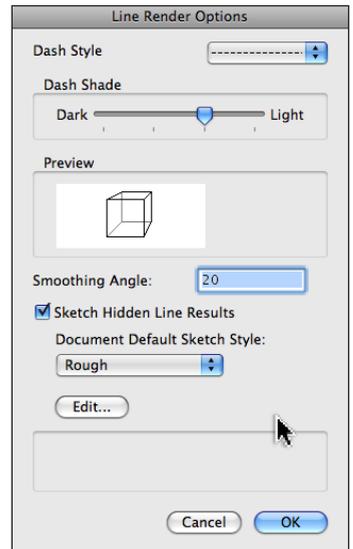
- Go to the Menu Bar.
- Choose **View > Rendering > Line Render Options...**



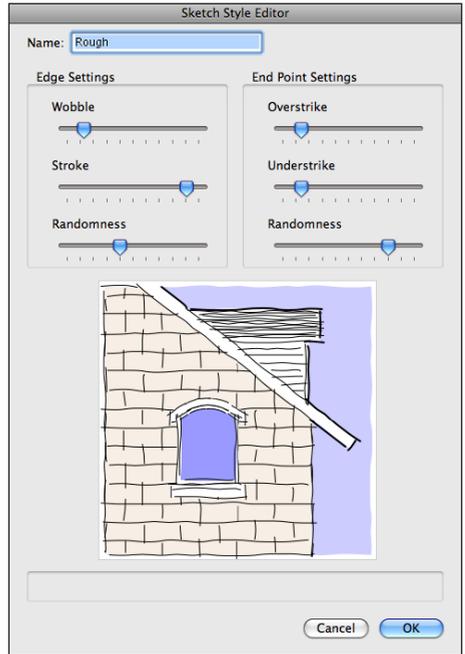
- Change the smoothing angle to **20°**. The smoothing angle controls the facets that you see on a hidden line rendering for curved objects. Setting an angle of 20° will show very few of the facets.



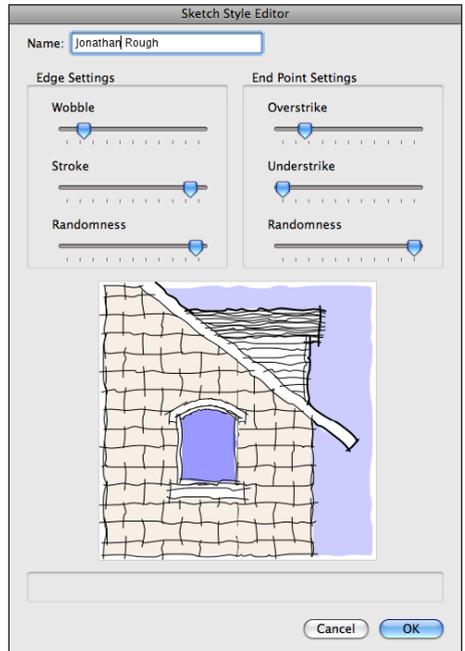
- Click on the tick to **Sketch Hidden Line Results**.
- Click on the pop-up menu to choose the **Document Default Sketch Style**. I've chosen Rough, because that's the one I like.
- Click on the **Edit...** button.



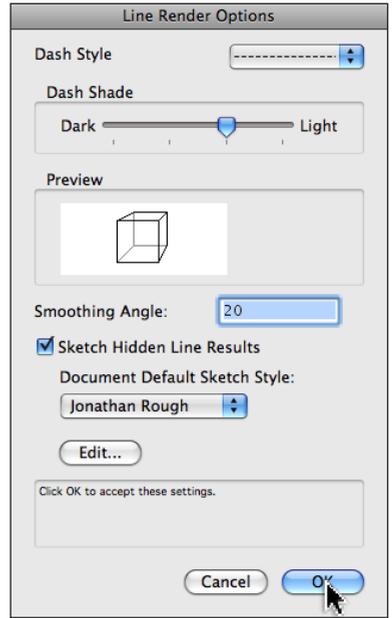
- These are the default settings.



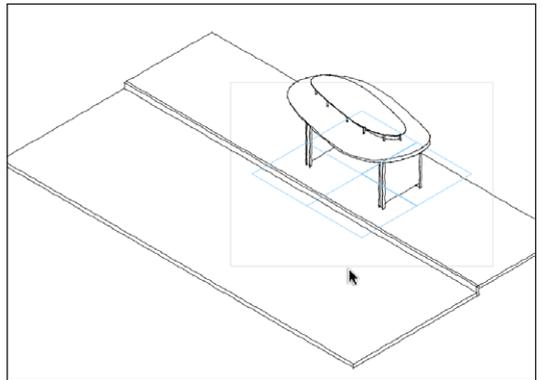
- Move the Sliders to see the changes in the preview.
- You might get some strange results.
- Move the sliders until you get nice results.
- Click on the **OK** Button to get back to the Line Render Options.



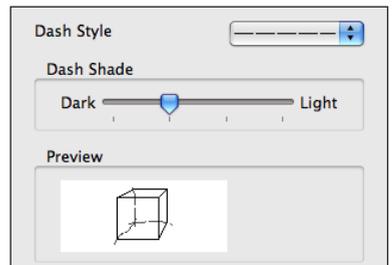
- Click on the **OK** Button.



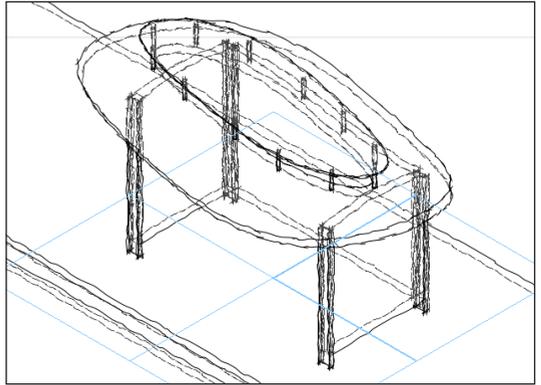
This is the view rendered with **Hidden Line** rendering.



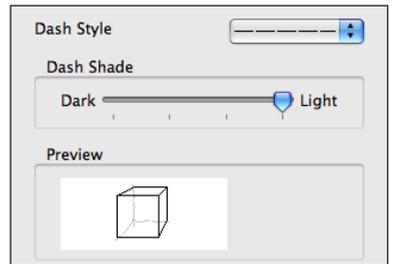
- You can choose a different dash style by clicking on the Dash Style pop-up menu.
- You can change how dark the dash lines are by sliding the Dash Shade to the right.



This is the view rendered with **Dashed Hidden Line**.

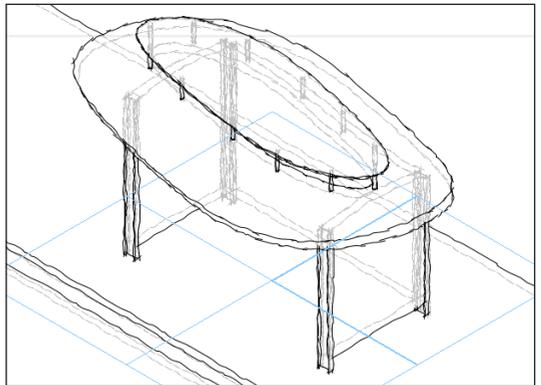


- You can lighten the dash lines are by sliding the Dash Shade to the left.



This is the view rendered with **Dashed Hidden Line**.

- Notice how much lighter the lines have become.

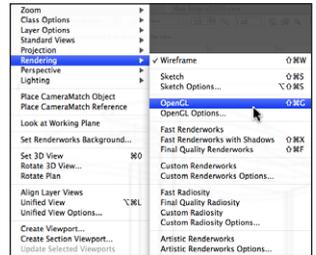


# Open GL

OpenGL rendering is fast and reasonable quality, but is not the best quality. I sometimes call it quick and dirty, because it is one of the fastest rendering modes, but it is not the most accurate.

[cadmovie510](http://cadmovie510)

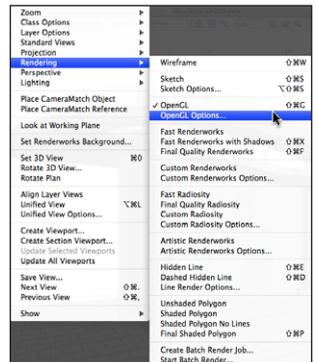
- Go to the Menu bar.
- Choose **Views > Rendering > OpenGL.**



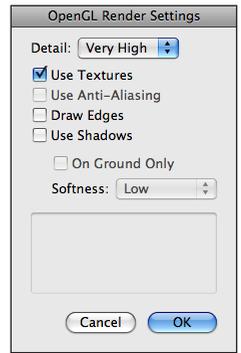
- OpenGL rendering is fast but not very detailed.



- Go to the Menu Bar.
- Choose **Views > Rendering > OpenGL Options.**



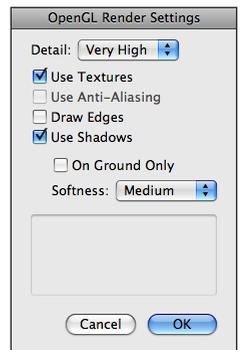
If you set a high level of detail VectorWorks will take longer to render the view. Each of these option will make the view more detailed and therefore it will take longer to render.



The higher level of detail makes the model look better.



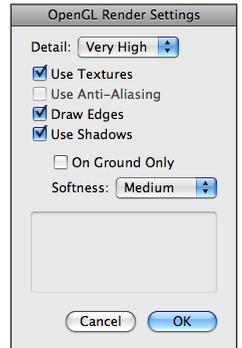
Later versions of Vectorworks have the option to **Use Shadows**.



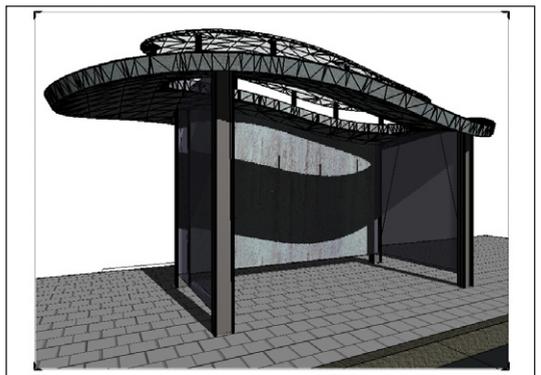
If you want to use this option, you must have a light in the file, otherwise you will not see the shadows.



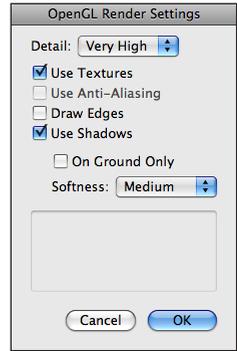
Later versions of Vectorworks have the option to **Draw Edges**.



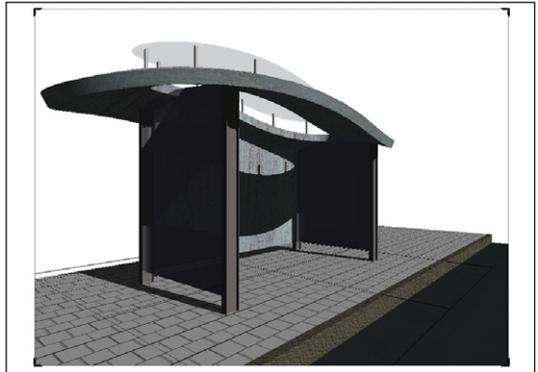
Some of the complex models look worse with this option though.



- Choose your options.
- Click on the **OK** button.



OpenGL is the one rendering mode that keeps the model rendered as you use the flyover or walkthrough tools. This make this rendering mode valuable.

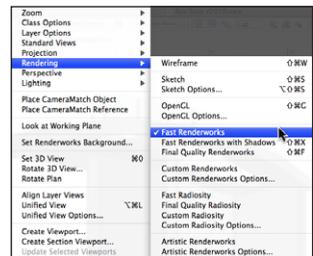


### Fast RenderWorks

I hardly ever use this rendering mode. It is barely a step up from OpenGL, and there are no options to choose from.

[cadmovie511](http://cadmovie511)

- Go to the Menu bar Choose **Views > Rendering > Fast RenderWorks**.



- This is fast but without shadows it's not much better than OpenGL.

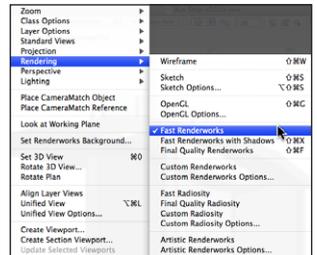


### Fast RenderWorks with shadows

This rendering mode is better, you can see the shadows, but it is barely a step up from OpenGL, and there are no options to choose from.

[cadmovie512](http://cadmovie512)

- Go to the Menu bar.
- Choose **Views > Rendering > Fast RenderWorks With Shadows.**



This is a reasonable rendering mode if you want it quickly. It's a bit crude, but it is FAST!

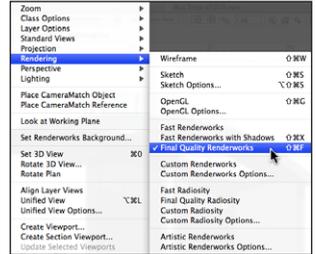


# Final quality RenderWorks

This is my usual render choice. It is high quality.

[cadmovie513](#)

- Go to the Menu bar.
- Choose **Views > Rendering > Final Quality RenderWorks.**



This one of the best rendering options available, but it is also fairly slow. Some views can take several minutes.

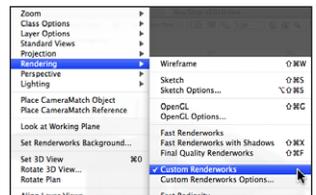


## Custom RenderWorks

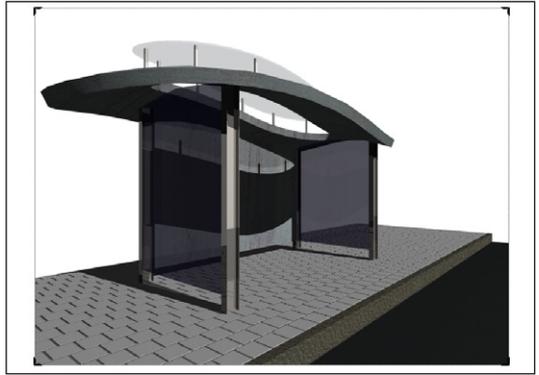
This rendering method has a lot of flexibility. There are several options you can choose from, so you can make Custom Renderworks go from Fast Renderworks to Final Quality, and some special options as well.

[cadmovie514](#)

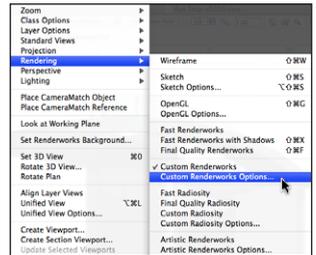
- Go to the Menu bar.
- Choose **Views > Rendering > Custom RenderWorks.**



This method allows you to control the quality the best rendering available, allowing you to balance quality with the time you have available.

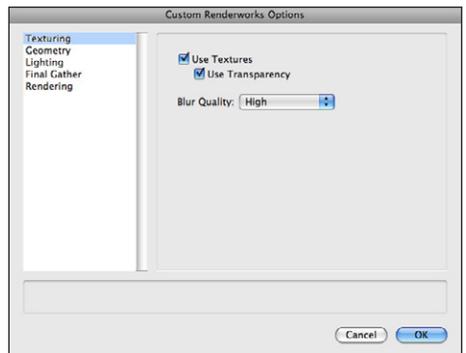


- Go to the Menu bar.
- Choose **Views > Rendering > Custom RenderWorks Options...**

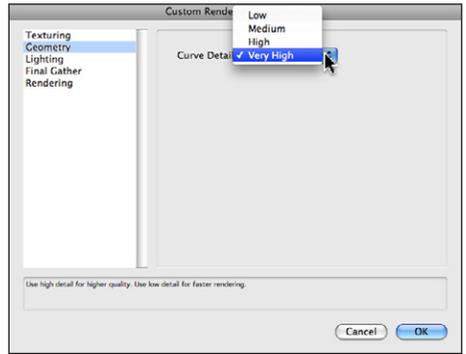


The RenderWorks options control the rendered results if you use Custom RenderWorks or if you use the render bitmap tool. Each of these choices can dramatically improve the rendered image, but they will also add to the time that it takes to render an image.

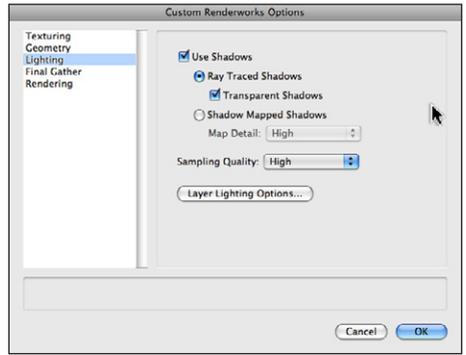
- Generally you would use textures. If you don't use textures VectorWorks will use the color of the object as assigned by the attributes palette. Glass will not be transparent if you do not turn on the Use Transparency.



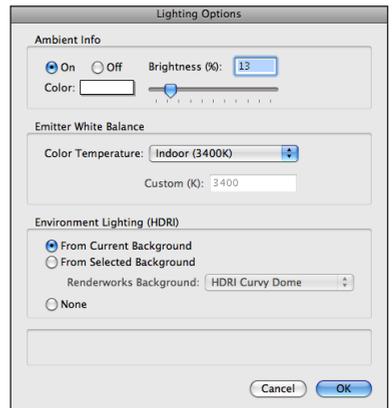
- You can change the curve quality by clicking on the pop-up menu.



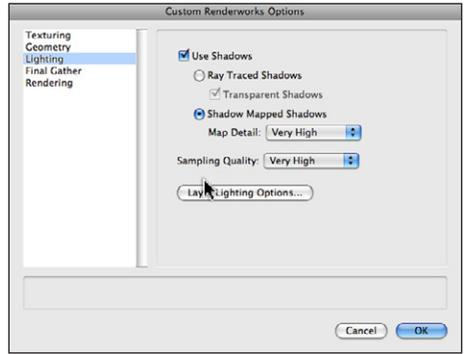
- Ray Traced shadows are crisp but slower, shadow mapped shadows are not as crisp but they are faster.
- Ray Tracing on reflective objects like marble, mirrors and glass looks better, the recursion level is how many bounces of light VectorWorks considers. Use Ray Tracing to see through transparent textures.



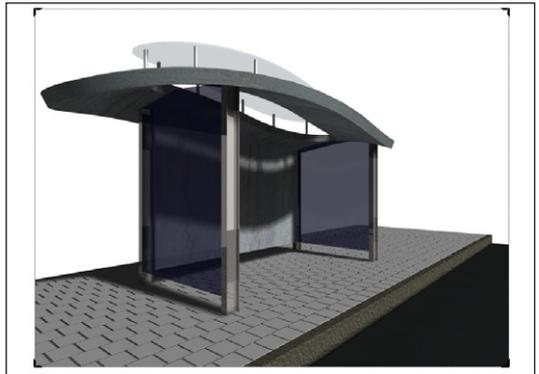
- Click on the **Layer Lighting Options...** button. We will cover this in more detail when we look at lighting.



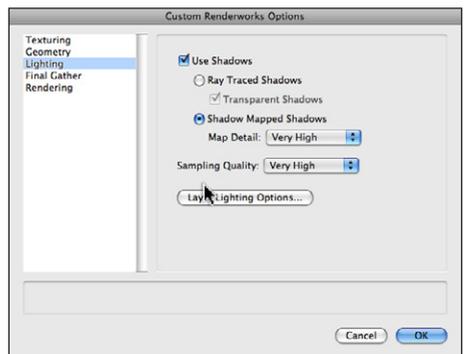
- You can choose between Ray Traced shadows and mapped shadows.
- Go to the pop-up menus to choose the quality of the shadows.



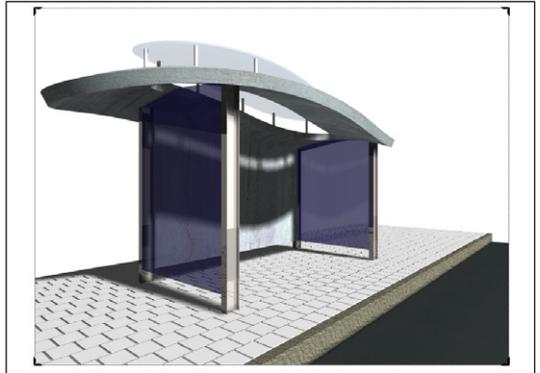
- The shows look nice, but I notice the glass does not render as well as Final Quality Renderworks.



- Anti-Aliasing reduces the look of jagged pixels on the screen and make the printed image look better.
- Auto-Adjust Exposure can be used to control the lighting.



- Beware, it can over light the scene if you are not careful.
- Notice that I used 73%, not 100%.



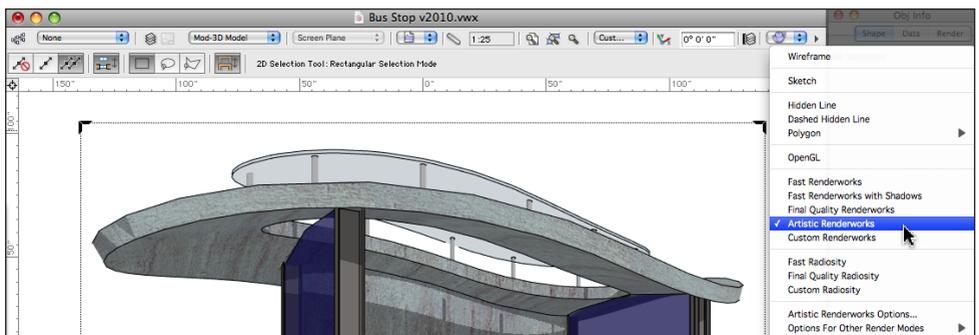
## Artistic Renderworks

You can choose Renderworks settings from the menu bar, or from the view bar.

Artistic Renderworks lets you create an artistic rendering that looks like a pencil sketch, cartoon and so on.

[cadmovie515](#)

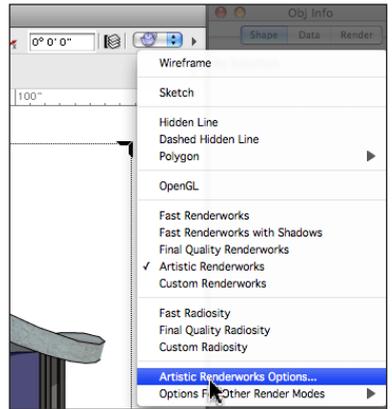
- Go to the **View** bar.
- Click on the Rendering button, the one that looks like a teapot.
- Choose **Artistic RenderWorks**.



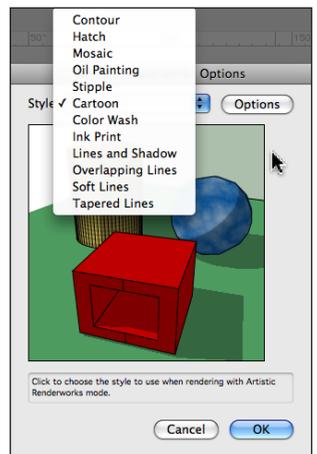
This the Artistic rendering with the default values.



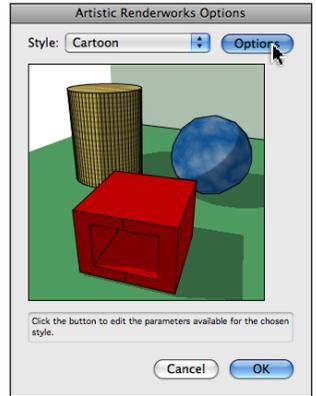
- Go to the **View** bar.
- Click on the Rendering button, the one that looks like a teapot.
- Choose **Artistic RenderWorks Options...**



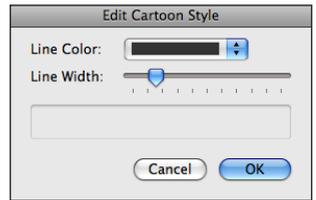
- Click on the **Style** pop-up menu.
- Choose your rendering style.



- Click on the Options button.



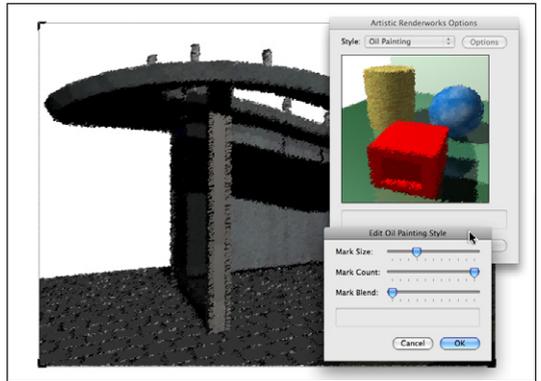
- Set the options.



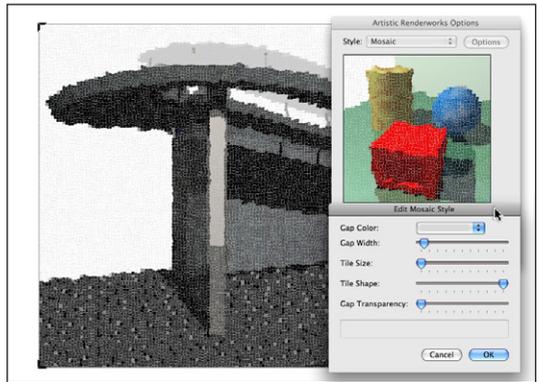
- You have try these options, and see the results. Edit the options again until you are happy with the results.



- Try another style.



- Try several other styles.



# Lighting

Lighting is a really important part of rendering, without good lighting a rendered model can look dull. Good lighting can save a dull model!

There are two types of lighting:

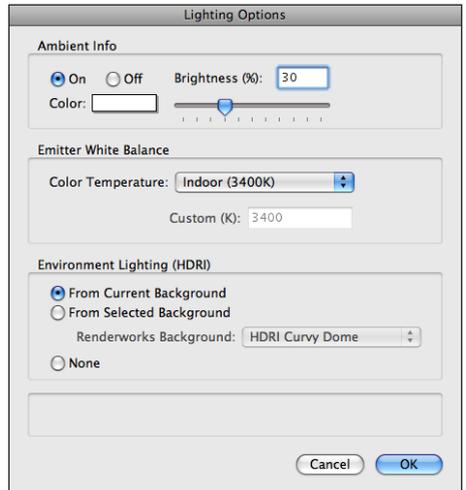
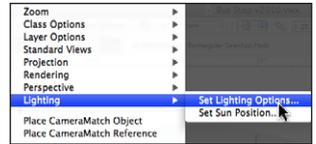
- Ambient Lighting (layer lighting);
- Light Sources

## Layer Lighting Options

The Layer Lighting Options control the ambient lighting. It is the lighting all around, it has no direction and therefore casts no shadows. The real world equivalent is the southern sky, also known as the sky dome.

[cadmovie516](http://cadmovie516)

- Go to the Menu Bar.
- Choose **Views > Lighting > Set Lighting Options...**
- This opens a dialog box for you to set the level of ambient lighting.



This is ambient lighting turned off. If you are using Radiosity, turn off the layer lighting.



This is ambient lighting at 30%. Usually 30--40% is about right.

Ambient lighting on it's own is not good enough. We also need to have some light sources.

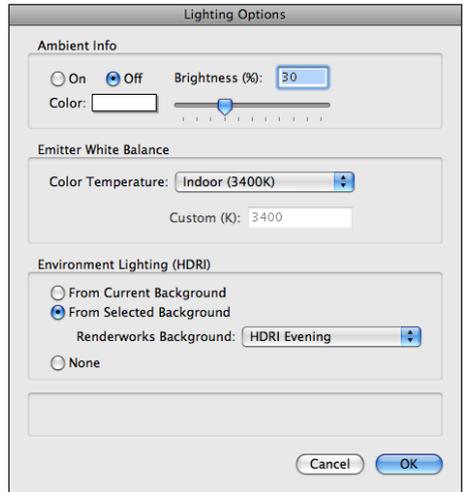


## Environment Lighting

Environment lighting is the ability to place a kind of background to your model. Environment lighting uses something called HDRI (High Dynamic Range Image) and uses the light in the HDRI image to calculate the light. the effects can be very nice, but very slow.

[cadmovie517](http://www.cadmovie517.com)

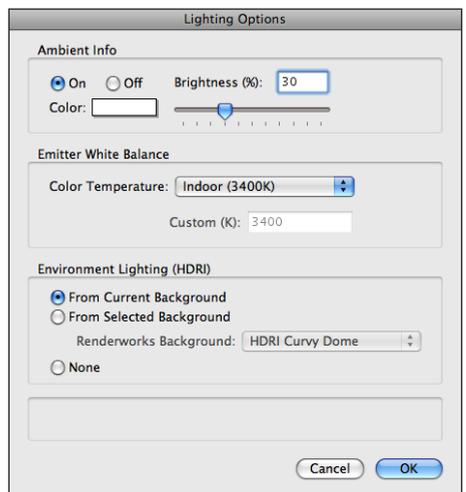
- Go to the Menu Bar.
- Choose **Views > Lighting > Set Lighting Options...**
- Change the Environment Lighting to **From Selected Background**.
- Click on the **Renderworks Background** pop-up and choose the source you want. Vectorworks comes with some HDRI backgrounds already made.



- Render the view in Final Quality Renderworks to see the result.



- Go to the Menu Bar.
- Choose **Views > Lighting > Set Lighting Options...**
- Turn off the ambient lighting.



- Render the view in Final Quality Renderworks to see the result.



## Light Sources

The light sources are the lights that make the rendered image come to life. If you try to render a file with no lighting, Vectorworks will insert a light behind you to light the scene, but you will not see any shadows, the light always stays behind you.

There are 5 types of light sources:

- Directional
- Point
- Spot
- Line Lights
- Area Lights

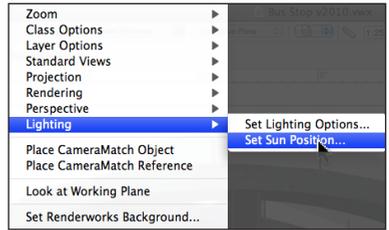
### Directional Light

The directional light is like a sun, it's an outside light. The directional light is the type of light that is placed when you use the Set Sun Position from the View Menu.

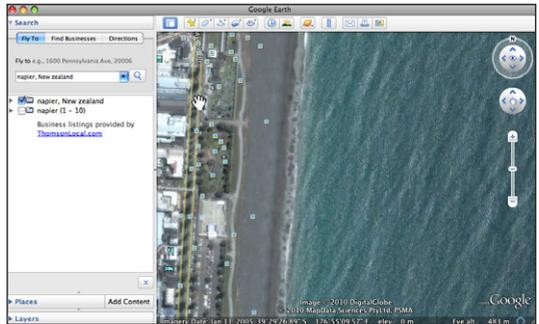
This light source has a direction and casts shadows but its position in the file is not critical as it casts a general light from a direction rather than from a point.

[cadmovie518](http://www.cadmovie518.com)

- **View > Lighting > Set Sun Position...**

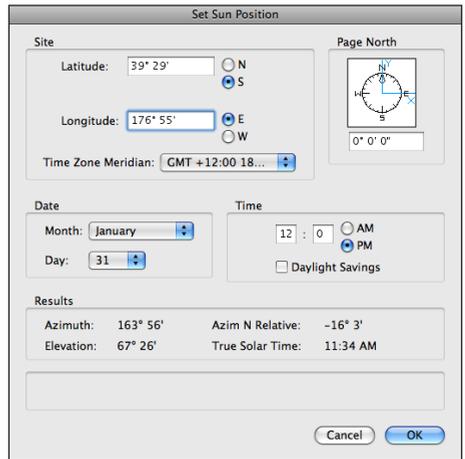


To place an accurate sun, you need the latitude and longitude of your site. If you do not know these, use Google earth to find the site. At the bottom of the Google Earth screen is the latitude and longitude.

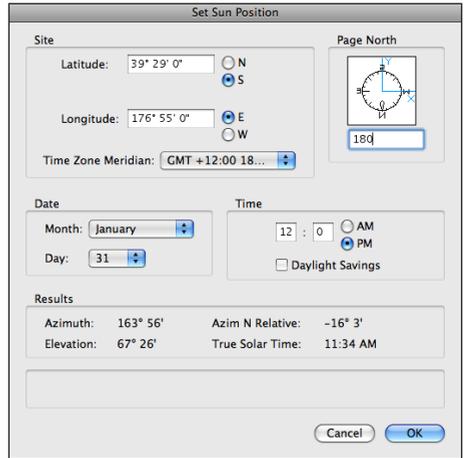


- On the dialog box that opens we can set our latitude, longitude, month, day and time.

This dialog box assumes that the model is drawn with north directly up the page.



- If you have not draw the model with north directly up the page, use the **Page North** to tell Vectorworks where north should be.
- Click on the **OK** button.



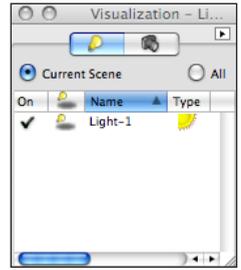
- Choose Final Quality Renderworks. You can't see the actual light source, but you can see the results of the light source. Notice that when using this light source, the light does not fall off as you move away from the light.



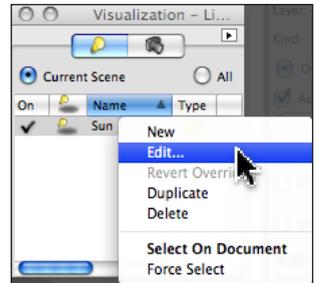
If you have the light selected and you choose **Set Sun Position...** again, it changes the position of the selected sun, it does not place a new sun. VectorWorks will insert a directional light with the correct direction and angle.

You may find the scene is too bright. The sun is selected, so you can edit it on the Object Info Palette to reduce the brightness, and change the color.

- Lights appear on the **Visualization** palette.
- Open the Visualization palette from the Window > Palettes menu.



- The Visualization palette allows you to create, edit, duplicate, delete and select lights, by right mouse clicking in the palette.



If you want to create a solar animation, do not add a directional light. The solar animation command will add its own light. Your extra directional light will confuse things by adding extra shadows.

## Point Light

A point light is like a bare light bulb. The light goes out in all directions.

## [cadmovie519](http://www.cadmovie519.com)

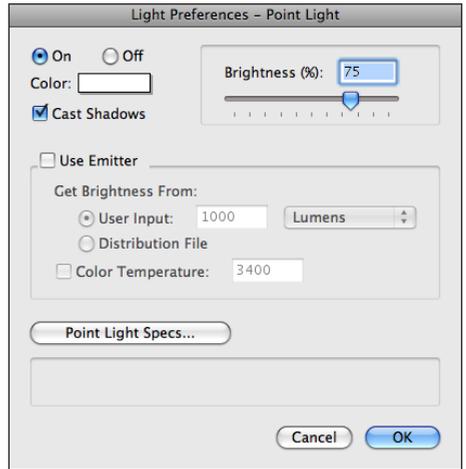
- Go to the **Visualization** Tool Set.
- Click on the **Light Tool**.



- Go to the Tool bar.
- Click on the second mode, the **Point Light** mode.



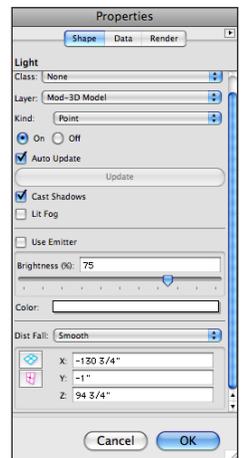
- Go to the Tool bar.
- Click on the Preferences button, the last mode.
- Check your preferences. You can change the color and brightness, but beware about putting in too many bright lights.



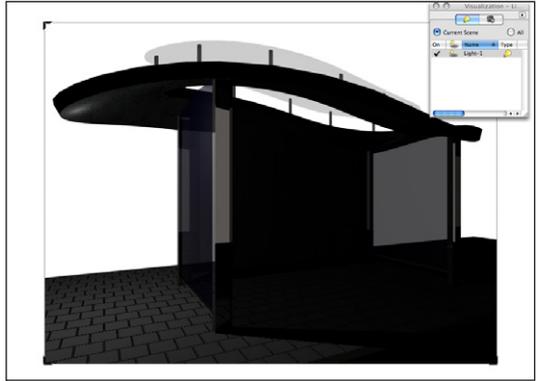
- Click in the drawing area to place a light object. You can use the model as a guide, and line up with it.



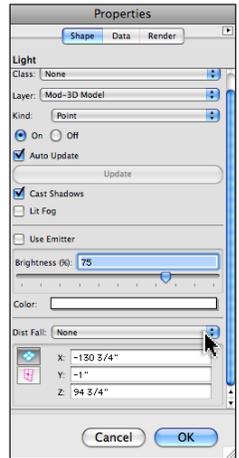
- Go to the **Visualization** palette.
- Right mouse click on the light.
- Choose **Edit...**
- You can change any of the settings on the light using this palette, or you can use the Object Info palette if the light is selected.
- If you change the **Dist Fall** (distance falloff, the amount the light falls off) to Smooth, it will change the effect of the light.



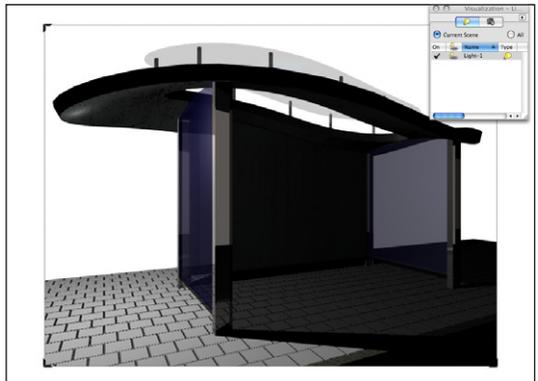
- This is the view in Final Quality Renderworks



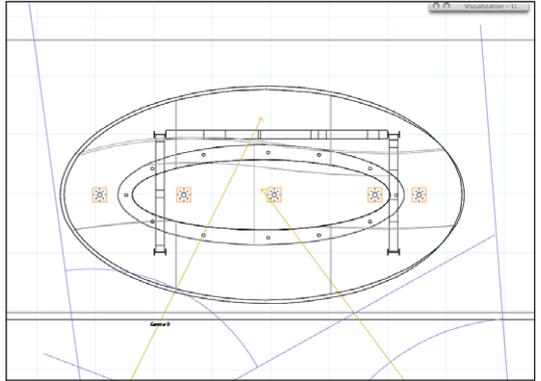
- Change the **Dist Fall** to None.



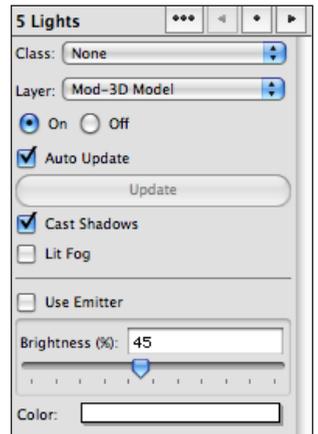
- This is the view in Final Quality Renderworks with no layer lighting. You can't see the actual light source, but you can see the results of the light source. You can see the bright spot near the light and the light falls off as you move away from the light.



- Copy the light to several places.
- Select the lights.



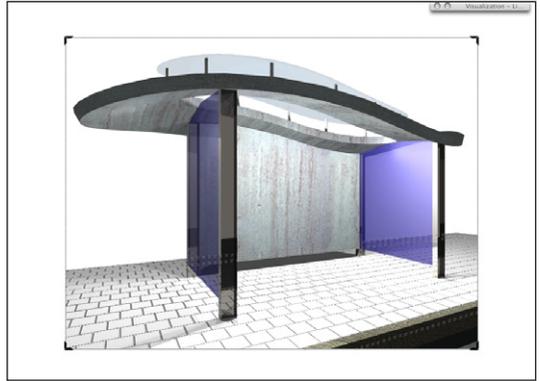
- Go to the Object Info palette.
- Change the **Brightness** by pulling the slider to the left, reducing the brightness of all the lights.



- If you put too many lights in the scene you can over-light it.
- This is the view in Final Quality Renderworks with no layer lighting.



- This is the view in Final Quality Renderworks with 30% layer lighting.

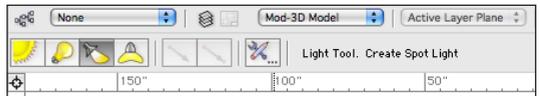


- **Spot Lights**

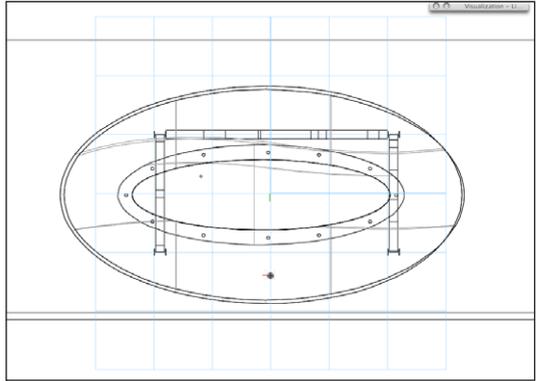
Spot lights are directional lights that point at a particular location, and they have a controllable beam and spread. Spot lights are best placed in plan and then checked in elevation.

[cadmovie520](#)

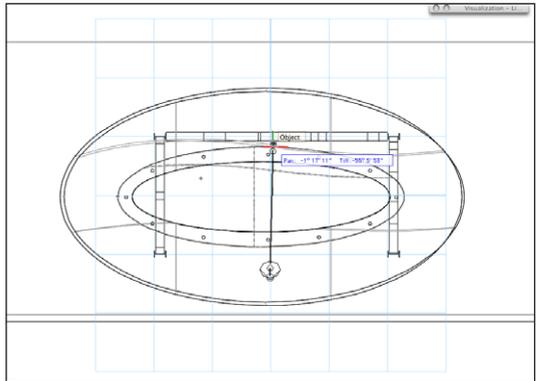
- Change your view to a **Top View**.
- Go to the **Visualization** Tool Set.
- Click on the **Light Tool**.
- Go to the **Tool bar**.
- Click on the **third** mode, the **Spot Light** mode.



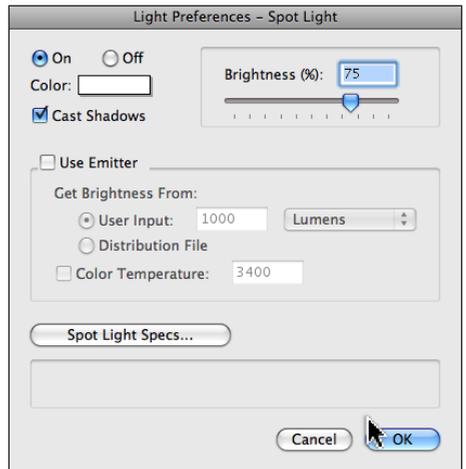
- Click on the screen to place the light.



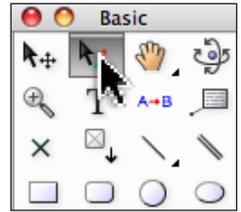
- Click on the screen to show where the light is pointing. This places the spot light in plan.



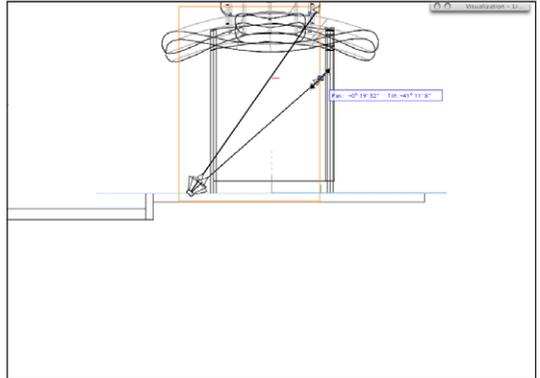
- A dialog box will open. This is for you to set the attributes of the light. Set the brightness, color, beam and spread.
- Click on the OK button.



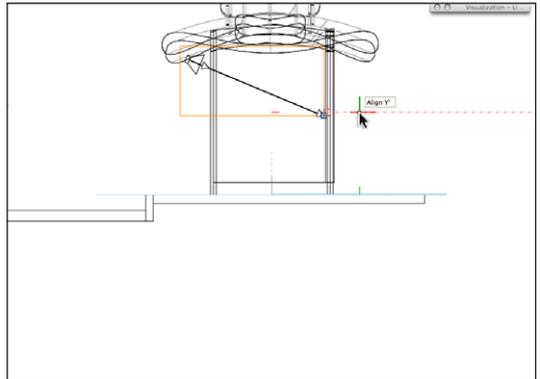
- Go to the **Basic Tool** palette.
- Select the 3D Selection tool.



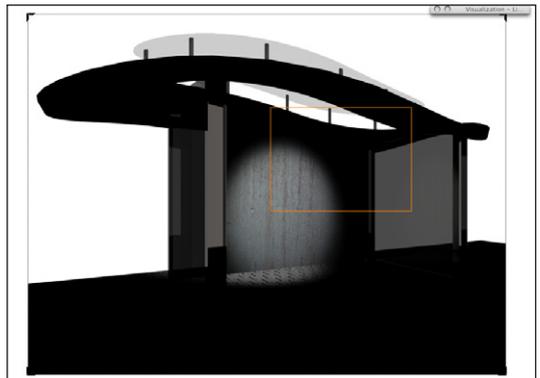
- Change views to right view to check the position of the light in elevation.
- Drag the light up.



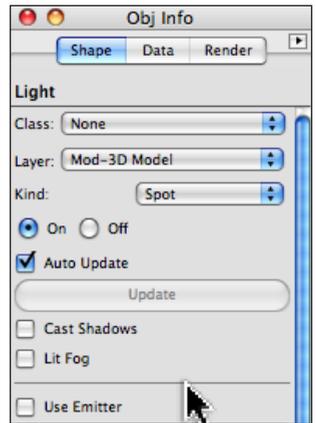
- Move your cursor to the end of the spotlight.
- The cursor should change to an interactive scaling cursor (reshape).
- Drag the end of the light down.



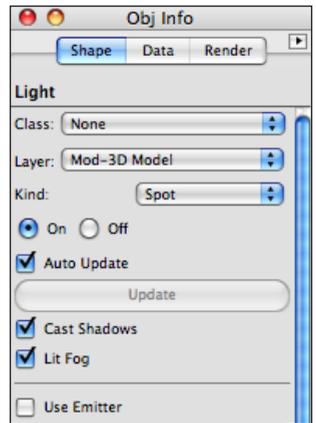
- If you render the view in Final Quality RenderWorks you can see the result of the lighting.



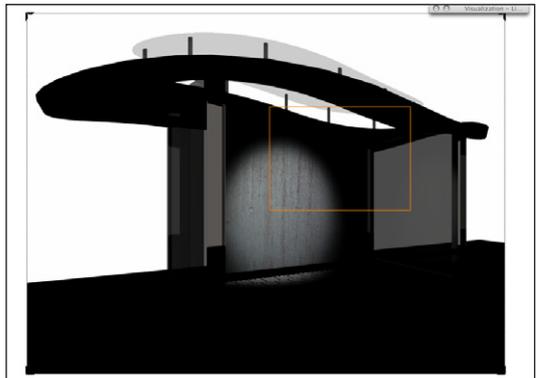
- With the light selected, go to the Object Info palette.
- You can use the Object Info Palette to control the light.



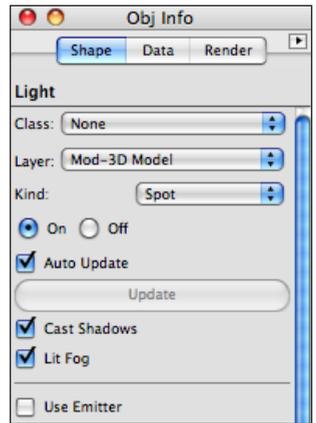
- Turn on **Cast Shadows**.



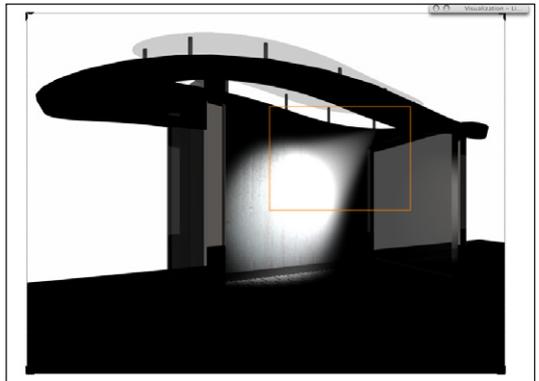
- You can see the shadows on the objects.



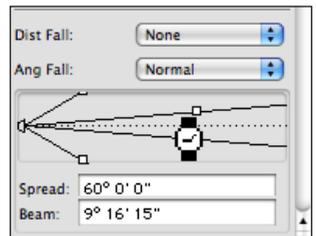
- Go to the Object Info palette.
- Turn on **Lit Fog**.



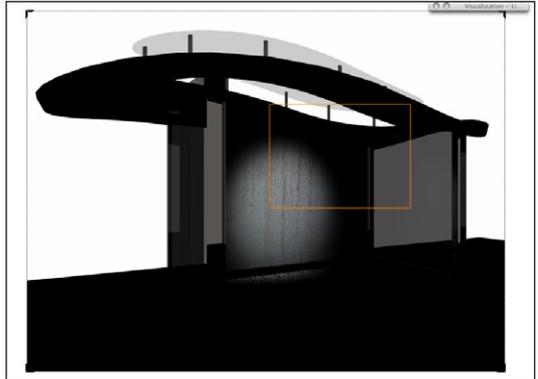
- This shows you the beam of light. be careful with this option.



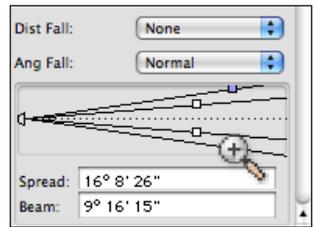
- Go to the Object Info palette.
- Adjust the **Beam** by dragging the handles.



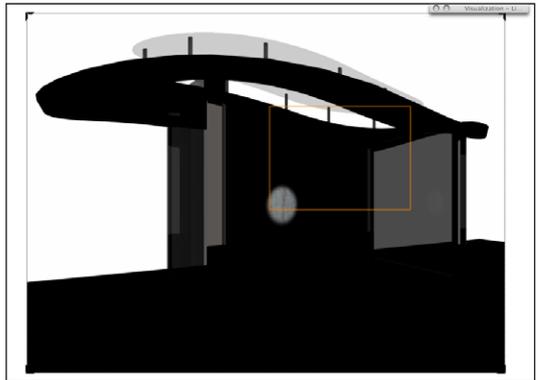
- You may not see the difference.



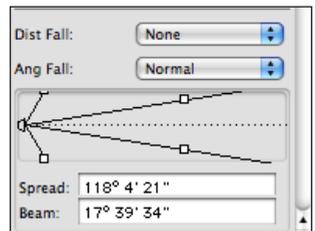
- Go to the Object Info palette.
- Adjust the **Spread** by dragging the handles.



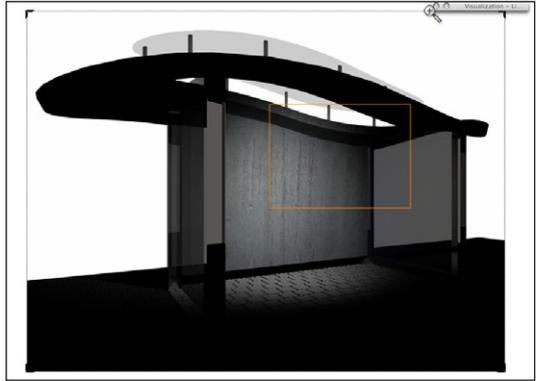
- The difference is dramatic.



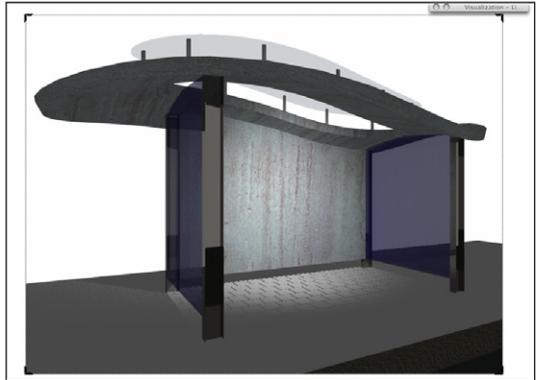
- Go to the Object Info palette.
- Adjust the **Spread** and **Beam** by dragging the handles.



This the view rendered with Final Quality Renderworks, with no layer lighting.



This the view rendered with Final Quality Renderworks, with 30% layer lighting. Notice how the paving texture looks good in the spotlight, not so good in the layer lighting.



Same view with the same lighting direction, but using a direction light.

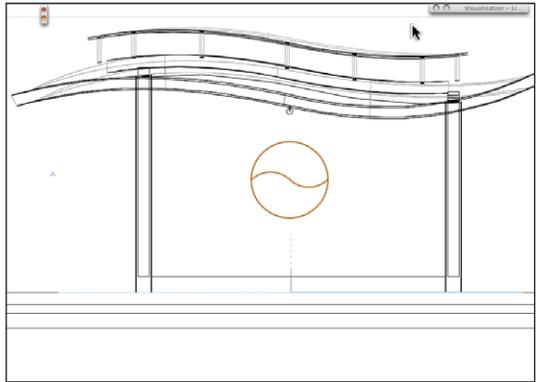


## Line Lights

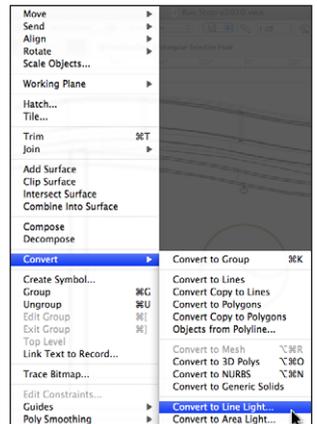
Lines lights can be used to replicate tube lighting and neon lighting. Beware, these line lights take ages to render. There is no tool to use. You draw a shape you want and use a command to convert the shape to a line light.

### [cadmovie521](#)

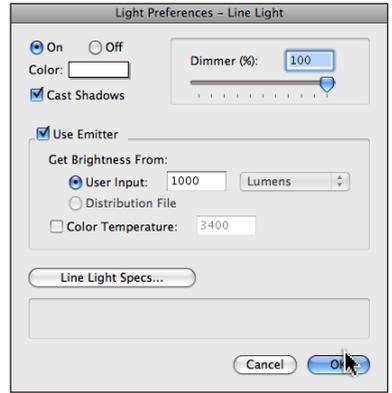
- Draw a shape, or shapes that you want. I have used a circle and polyline, and created the shapes in a front view so they will be at the correct height.



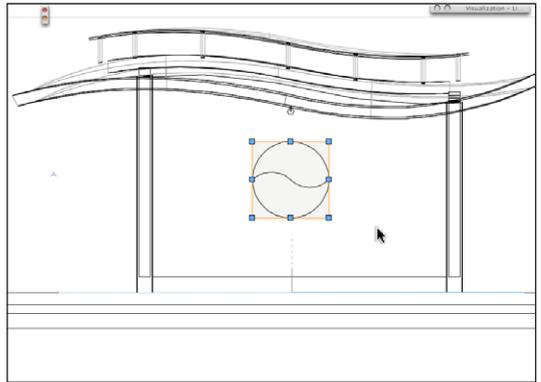
- Go to the Menu Bar.
- Choose **Modify > Convert > Convert to Line Light...**



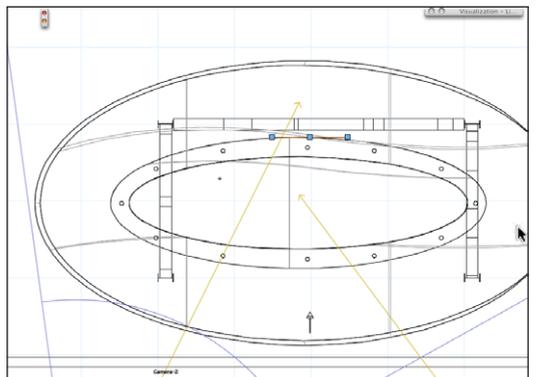
- Choose your lighting options. If you want neon lighting, choose a suitable color.
- Click on the **OK** button.



- If you use more than one object like I did, Vectorworks will group the lights together.



- Check the lights in plan view, and move the lights if necessary.



This rendering takes several minutes on my computer. If I wanted to do a lot of this, I would look at upgrading my computer to a multi-core model (like the new 12 core Mac Pro).



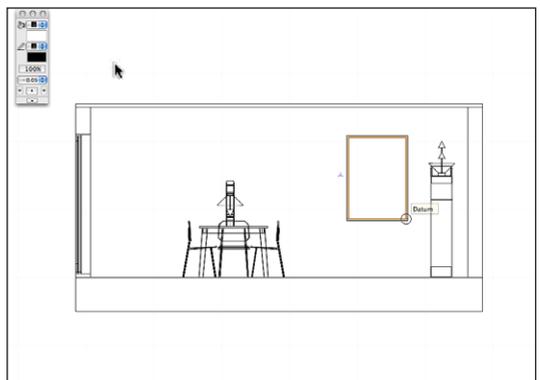
## Area Lights

Area lights can be used to simulate a large area of lighting, like a window. Beware, like line lights the area lights take ages to render. There is no tool to use. You draw a shape you want and use a command to convert the shape to an area light.

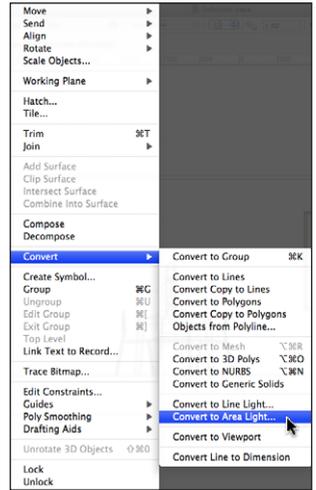
I couldn't find a good example of using an area light for an external rendering, so I will use an interior view.

[cadmovie522](#)

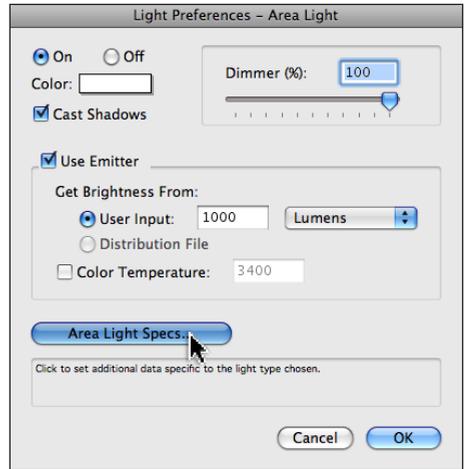
- Draw a shape, or shapes that you want. I have used a rectangle, and created the it in a front view so it will be at the correct height and width.



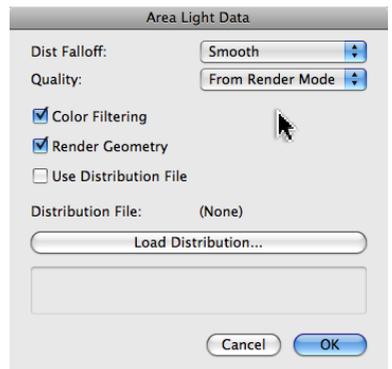
- Go to the Menu Bar.
- Choose **Modify > Convert > Convert to Area Light...**



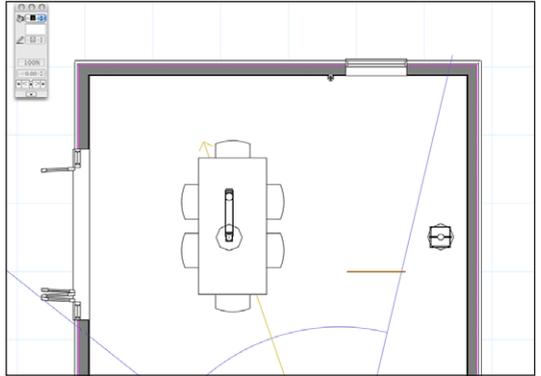
- Choose your lighting options. Choose a suitable color. Use Emitter gives you control over the light output using Lux or Lumens, rather than just brightness.
- Click on the **Area Light Specs...** button.



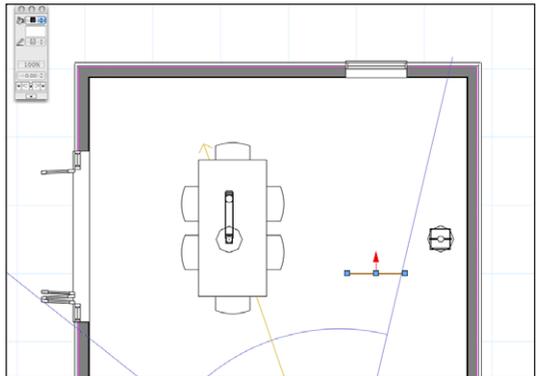
- Chose the options here. To find the solution you light best, try the settings shown, and render the view. Use the Object Info palette to edit the settings and render the view. See what you like.
- Click on the **OK** button to return to the Light Preferences.
- Click on the **OK** button to finish.



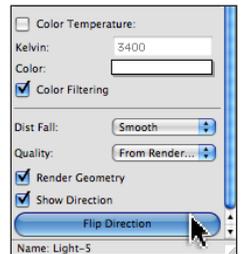
- Check the lights in plan view.



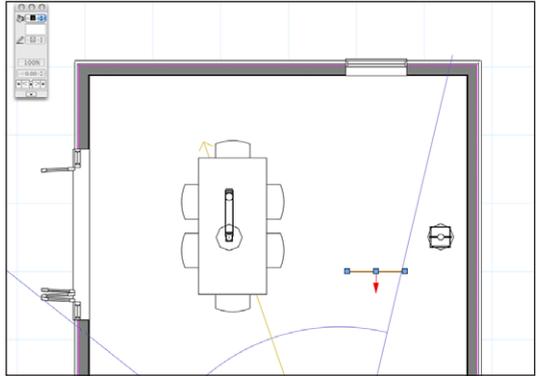
- Change to the **2D Selection** tool.
- The area light has a direction. When I move this light into the window, the light will be going out of the room, not into the room.



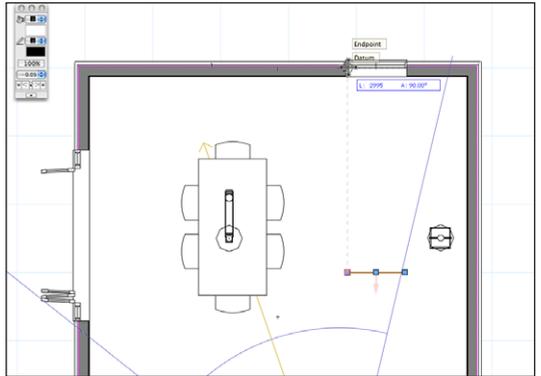
- Go to the Object Info palette.
- Click on the button to **Flip Direction**.



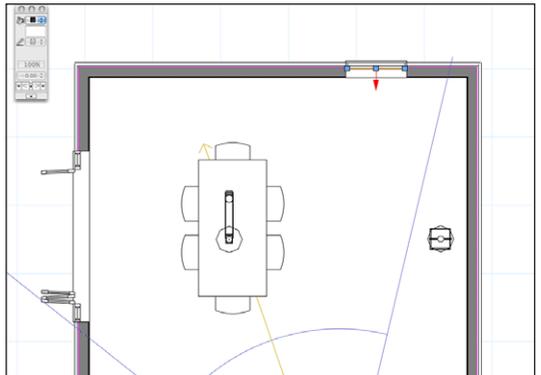
- The light will be shining the right way.



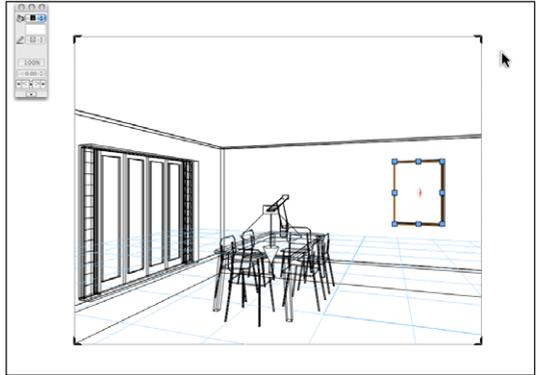
- Move the light into the window reveal.



- Ensure you do not place the area light behind a solid object, like a wall, glass and so on.

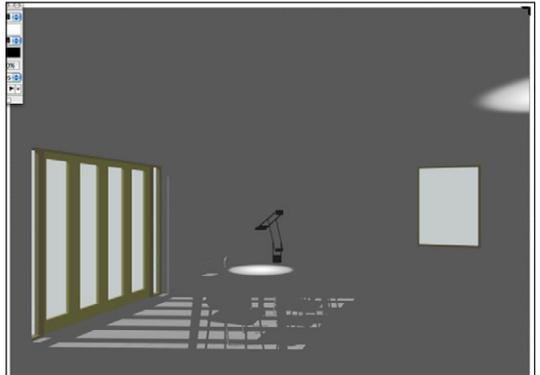


- Change to your perspective view.



To improve the scene, I have placed a directional light outside the building. The glass doors have a glass texture to let the sun light in. I have placed a light symbol on the table, and an uplighter just to the right of the view. you can not see the light, but you will see the light shining on the ceiling.

View rendered with Final Quality Renderworks, with out any textures. You can see the lights, but the scene looks so flat.



View rendered with Final Quality Renderworks, this time using some textures. I have added reflectivity to several of the textures to make the scene more life-like.



# Renderworks Background

The Renderworks background allows you to create something behind your model to make it look better.

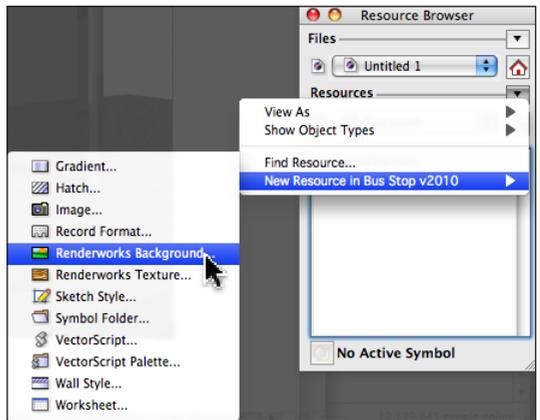
In the views of the bus stop, you will have noticed the background was a plain white. that does not help your clients to visualize the project.

A simple background can make a big difference.

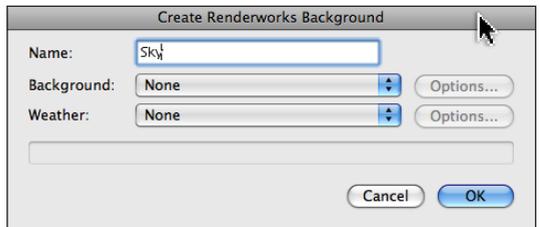
[cadmovie523](http://cadmovie523)

Let's make a Renderworks background.

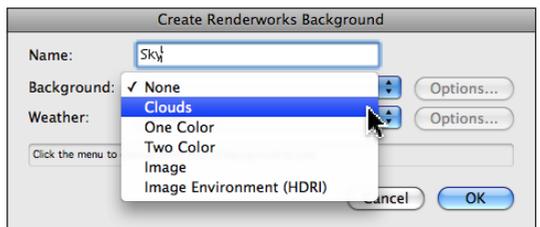
- Go to the **Resource Browser**.
- Click on the **Utility** menu.
- Choose **Create > Renderworks Background...**



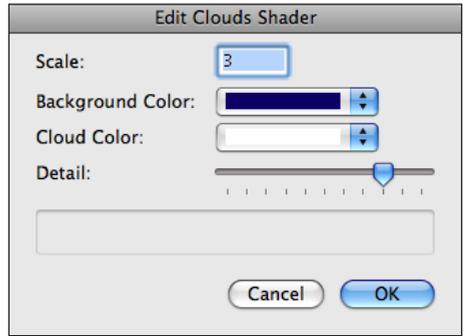
- This dialog box gives you the options to create a background.
- Name the background.



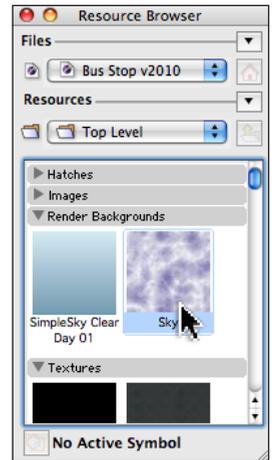
- Click on the **Background** pop-up menu.
- Choose **Clouds**.



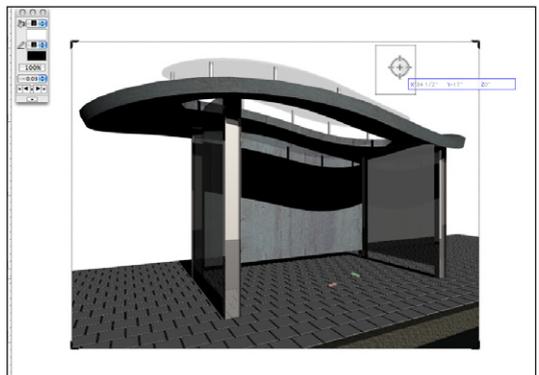
- Click on the **Options...** button.
- I always choose a very dark blue for the background color.
- Change any of the other settings. You will need to play with these settings to get the look you are happy with.



- Click on the **OK** button to get back to the Renderworks Background dialog box.
- Click on the **OK** button to finish creating the Renderworks background.
- You will find the new background in the Resource Browser.



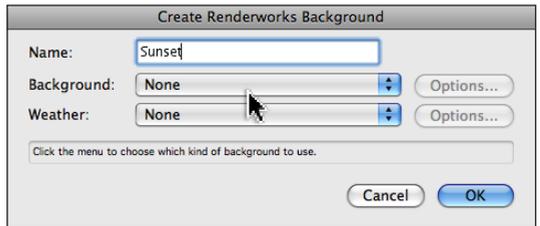
- Click and drag your new background to your view. Without a background the view looks strange and artificial.
- Release the mouse to assign the background to the model.



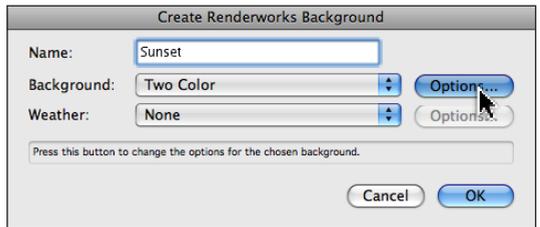
The addition of a simple background can really improve the rendering.



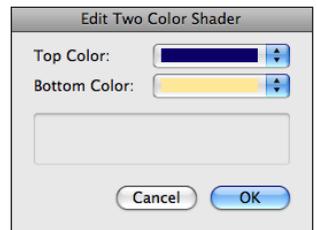
- Use the **Resource Browser** to create a new background.
- Name the Background.



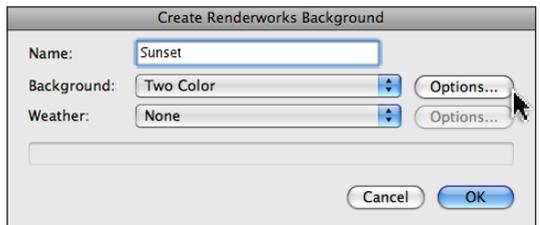
- Click on the **Background** pop-up menu.
- Choose **Two Colors** from the pop-up.



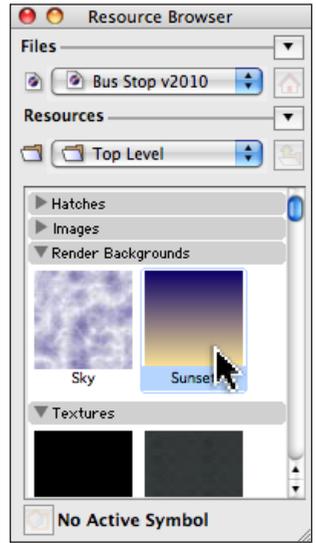
- Click on the **Options...** button.
- For a sunset, I choose a dark, dark blue for the top color, and a yellow or orange for the bottom color.



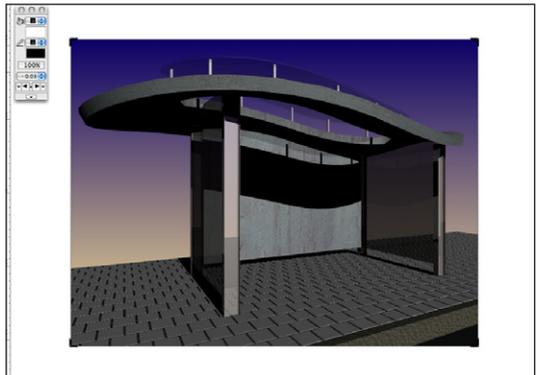
- Click on the **OK** button to get back to the Renderworks Background dialog box.
- Click on the **OK** button to finish creating the Renderworks background.



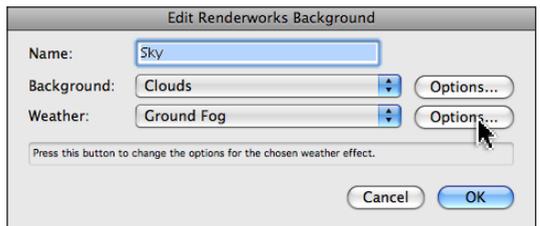
- You will find the new background in the Resource Browser.



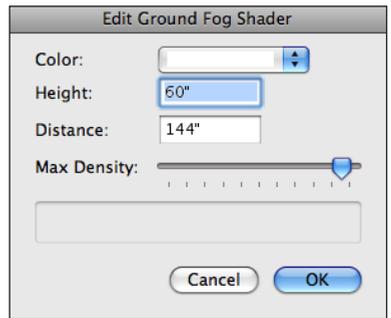
- Click and drag your new background to your view.
- Release the mouse to assign the background to the model.



- Use the Resource Browser to create a new background.
- Name the Background.
- Click on the **Background** pop-up menu.
- Choose **Clouds** from the pop-up and set the options.



- Click on the **Weather** pop-up menu.
- Choose **Ground Fog** from the pop-up.
- Click on the **Options...** button.
- Try some of the options.
- Click on the **OK** button to get back to the Renderworks Background dialog box.



- Click on the **OK** button to finish creating the Renderworks background.
- Drag your new background to your view.



You should try out these options to see which ones you like. I like the clouds and two colors.

## Render Bitmap tool

Adding area lights and line lights makes rendering very slow. I made a texture on the ceiling with a blur, which makes the rendering take longer as well. This has the effect of locking up your computer for 10 or 20 minutes at a time. This is not a great use of your time and it make it hard to make decisions about your rendering. If you need help with textures, refer to the earlier user group notes on textures (1006).

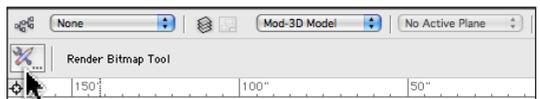
You need to bring all these parts together, the rendering, lighting, textures and modeling. They all need to work together to make the view come alive. As you add textures, lights, background and models to the scene, Vectorworks starts taking longer to render the view.



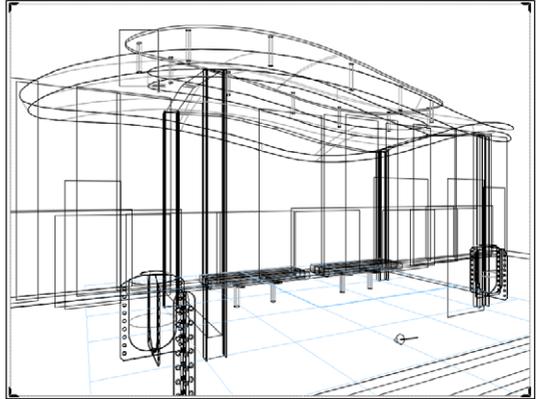
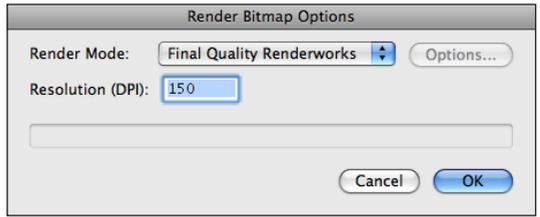
The answer is to render small areas of your view with the Render Bitmap Tool.

[cadmovie524](#)

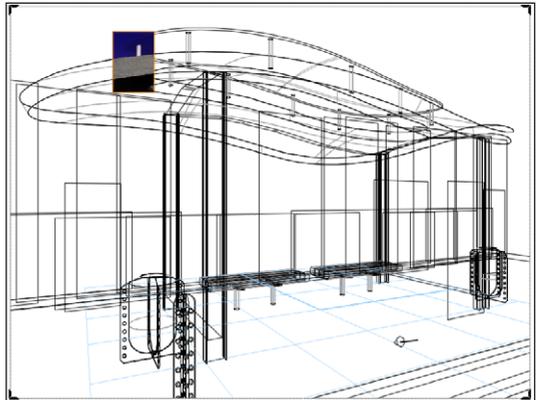
- Go to the **Visualization** Tool Set.
- Click on the **Render Bitmap** tool.
- Go to the **Tool** bar.
- Click on the **Preferences** button.
- Most people forget to check these, then wonder why the rendering is low quality.



- Choose the Render mode from the pop-up.
- Type in the Resolution. the higher the number the better image will look on the screen, but the rendering will take longer.
- Click on the **OK** button.
- Click to start.
- Drag a small area.
- Release the mouse button.

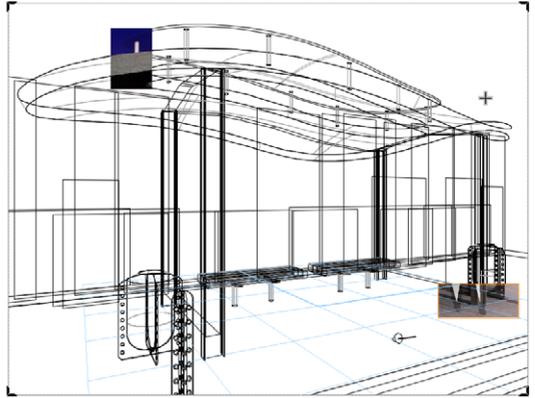


- Vectorworks renders on the area of the marquee.



Because you are rendering a small area, it doesn't take as long.

I often use this to render lots of small areas of the view to test shadows, exposure, reflections, and so on.



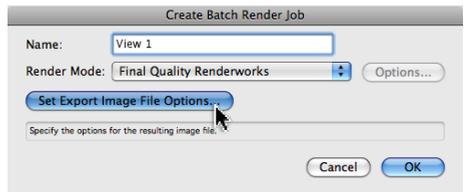
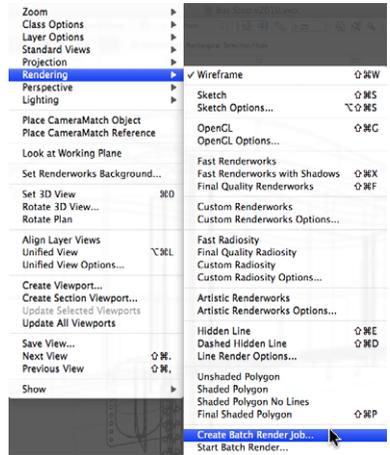
# Batch Render

This is the trick to make sure you do not tie up your computer when you want to be using it. After you have assigned the light, cameras, models and textures, and you have used the render bitmap tool to check everything, you can set up batch render jobs for you computer to work on while you are on site, at meetings, or asleep.

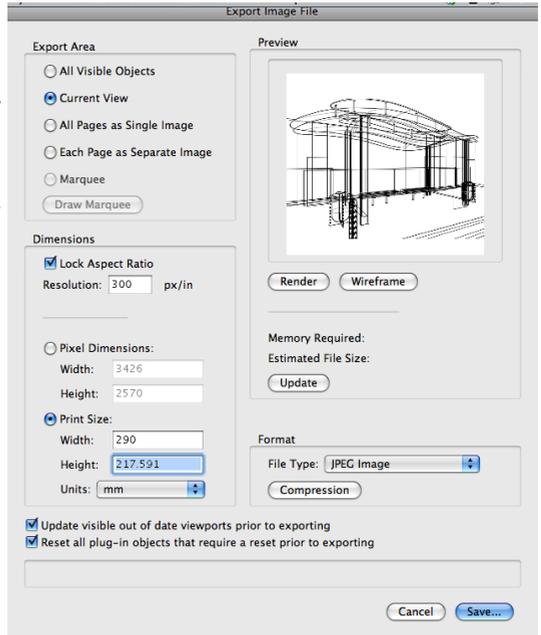
There are two parts to batch rendering. First you have to define each batch render job, then you have to tell Vectorworks which batch render jobs to do.

## [cadmovie525](#)

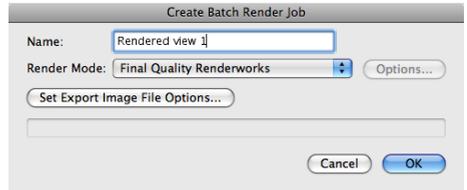
- Because you are setting the view first, it pays you to set the perspective view exactly the way you want first.
- Go to the Menu Bar.
- Choose **View > Rendering > Create Batch Render Job...**
- Click on the pop-up to choose the rendering type.
- Click on the **Set Export Image File Options...** button.



- It is very important to set the options, otherwise you will get the wrong file size, and quality.
- Choose **Current View**.
- Set the **Resolution**. This works with the page size. Set a reasonable resolution and page size, so when you print you have good quality.
- These are the settings I usually use.
- Click on the **OK** button.

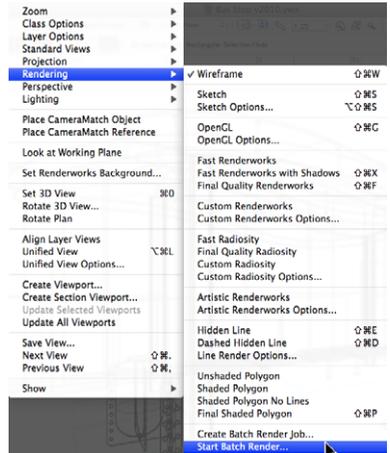


- Name the view. do not use a name that is already used.
- Set up as many views as you want, from different places, heights and so on.

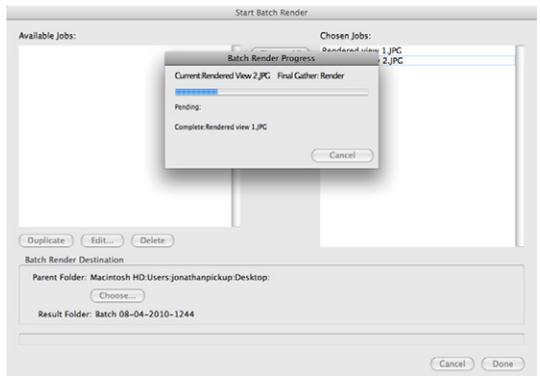
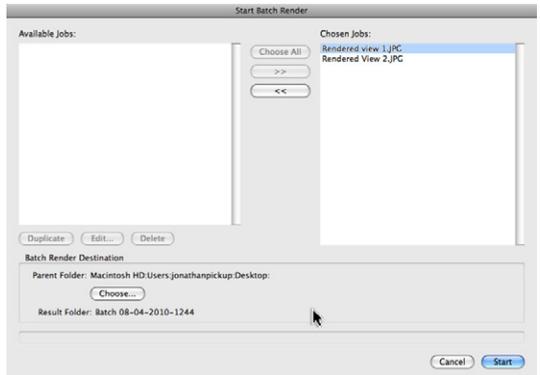


When you have all your batch render jobs, you can set Vectorworks to export them all.

- Go to the Menu Bar.
- Choose **View > Rendering > Start Batch Render...**



- Click on the render you want, on the left-hand side.
- Click on the >> button to add the view to the chosen jobs. Or, you can click on the Choose All button to add them all quickly.
- Click on the **Choose...** button to choose a destination.
- Click on the **OK** button.
- Vectorworks tells you the progress. When it finishes, the exported images will be in the chosen folder in the format you chose.



## Tips

Keep the number of lights you use to a minimum. The more lights you add, the longer each rendering will take. Do not add every light that would be in the scene in real life. Rendering so not replicate real life, you have to show your interpretation of it. Often, few lights will give a better result.

For exterior rendering, Renderworks backgrounds really help. Area lights do not. Use a sun and spot lights to fill in details.

For interior rendering, Area lights really help, but they are very slow. Make sure you use reflective textures to reflect the lights around the room. Use Transparent glass to let the outside light in. Use a sun .

Look at using Camera Match, it can save you a great deal of modeling and the rendering results are fantastic. please look at this site for cameramatch, I have written a manual for cameramatch which you can download from the website. <http://www.panzercad.com/>

Radiosity is sooo sloooow..... I can't use it.. If you want to use Radiosity, get a super-fast computer with multiple cores.