

Table of Contents

Introduction.....	3
Some terms used in this guide	4
Toolbar	5
Options Dialog box	6
Presets.....	6
Output	8
Environment	9
Choosing the Right Preset	11
Interior or Exterior.....	11
Quality.....	12
Preset comparison	14
Natural Light and Background.....	20
Default.....	20
Podium Physical Sky 1	20
Podium Physical Sky 2	20
Podium Rendering Manager/OOPR.....	22
Materials	25
Automatic Materials	25
Additional Materials	26
Material dialog box	26
Bump Mapping	29
Light Power	30
Material type	30
Artificial Light	32
LEM (Light Emitting Material)	32
Podium Light System	33

Podium Panoramas.....	35
Rendering an Equirectangular Panoramic image in V2.5.1 and above:	36
Image Settings and Presets:	36
Create your Panoramic VR experience with Podium Image Editor.....	37
Sharing a Panorama With Your Clients.....	38
Uploading to the Panorama Server from Podium Image Editor:.....	39
SU Podium Browser	41
Podium Materials.....	41
Light Fixtures	42
Vegetation: Plants and Trees.....	42
Render Ready Components	43
Analyse Model	45
Podium Tools	46
Reset Materials	46
Toggle Point Lights.....	46
Toggle Spot Lights	47
Post-Production and Podium Image Editor (PIE).....	48
General tab	52
Color balance	55
Presets.....	56
Tips and Tricks	57
Illuminating Interior Scenes	58
Line overlay.....	60
Pencil filter technique	64
Night Rendering	65
Parallel Projections for Elevation Plans	65
Correct Level of Detail	66
Reflection of Environment	68

Modeling an exterior environment.....	68
Reflection Plane.....	68
Chrome	69
Water	70
Framing an Image	72
Computer Hardware	73
Important Things to Remember	74
Problems and Solutions	75
Imperfections/ Blotches	75
Crashing	75
Texture has moved in the rendered image.....	76
Distortion of Textures/Material.....	76
Blank/Impossibly Fast Rendering	76
Missing objects	76
Poor LEM Illumination	76
File Saved Improperly	76
Black Texture.....	77
OOPR Does Not Appear	77
Failed Rendering or Inconsistent Results	77
Documentation and Extra Help	78
Examples of Scene Configuration	79
Scene 1: Kitchen	79
Scene 2: Bedroom.....	80
Scene 3: Integration with an exterior photo	81
Acknowledgements	82
Special thanks to:	82

Introduction

SU Podium V2.6 is the latest version of Podium for SketchUp. Podium allows you to easily create photo-realistic rendered images from your 3D SketchUp models with very little learning curve. This powerful plug-in allows users to take advantage of the speed and ease of SketchUp to create professional, high quality images.

The second version of SU Podium (V2) includes a superior raytracing and global illumination engine, which produces higher quality results in less time than ever before. In addition, several features were added in the upgrade from V2.5 to V2.6.

In this guide, we will show you how to achieve professional results while identifying important concepts for photo-realistic rendering. We will begin with the basics and discuss more advanced concepts as we progress through the book.

There are no quick secrets that will allow you to create the photo-realistic images you are hoping for. However, if you approach Podium with an eagerness to learn and a willingness to experiment, this guide will help you save valuable time by exposing useful tips to aid you as you create great looking finished images.

Some terms used in this guide

Podium - In this guide Podium refers to SU Podium V2.6.

Camera - Your SketchUp view. For all intents and purposes, your eye is the camera. As you zoom in and out, orbit, and pan around your model you are looking through the SketchUp camera.

Viewport - The portion of your Sketchup screen that displays the 3D environment in which you view and manipulate your model. The viewport does not include surrounding UI elements (toolbars, shelf, etc.).

Rendering - In this guide, this can mean the final rendered image or it can mean the actual computational process that podium carries out in producing a final image. Most often, rendering refers to the final photo-realistic image that Podium produces.

Scene - This is what is displayed in the SketchUp viewport.

Materials and textures - In this guide we often refer to materials and textures as if they were different. Our definition of a texture is simply a SketchUp bitmap texture that has no Podium material properties applied to it. A *material* is a SketchUp texture with Podium material properties such as bump, reflection, and refraction.

Image-based lighting (IBL) - Image-based lighting uses an HDR background image to cast light into your SketchUp scene. When discussing IBL, we will use the term ‘HDR image-based lighting’ to introduce the idea, and then ‘HDRI lighting’ as a shorthand. This should not be confused with the .HDR *output* format.

.HDR (output format) - .HDR is an image type, like .jpg or .png, which can be selected as the output format when you create a render with Podium. The main advantage of HDR images is that they can store a much larger range of lighting data than jpg/png, making HDR a beneficial choice for post-processing.

Toolbar

After Podium is installed, a new toolbar will be displayed in the SketchUp menu bar.



Render current scene: Begins rendering.



Alternate rendering process: Generate a render file to be saved on disk and imported manually into the Podium rendering manager.



Material properties: Opens the material properties dialog box.



Options: Opens the options dialog box.



SU Podium Browser: Opens Podium's included Library of trees, light fixtures, textures, and materials ready to be inserted and rendered.



Podium Light System: Used to insert point lights and "Spotlights".

Please note that the contents of the toolbar can also be found in the SketchUp Extensions drop-down menu under SU Podium V2.6. Information about your license and additional tools can also be found there.

Options Dialog box

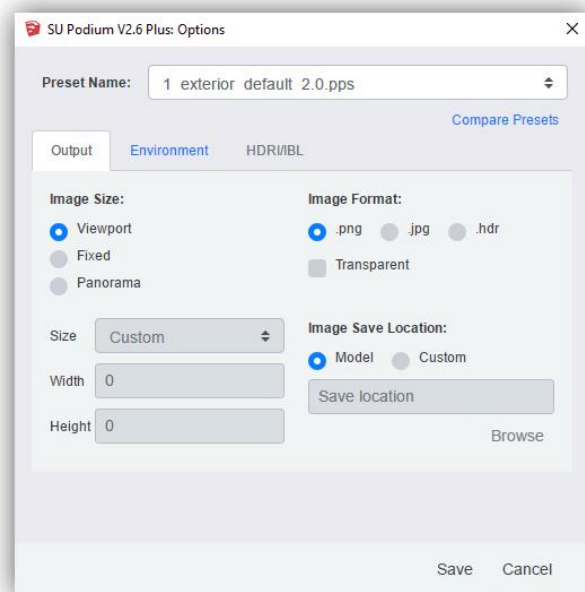


The “*Options*” dialog box contains the global settings that will allow you to properly setup your rendering. The choices you make in the Options dialog are not saved with each SketchUp model—the parameters you select are saved to your Windows registry or a preference list in Mac OS X. Podium’s options are persistent, and will not change from model to model, and will not reset at the end of a session. Render settings will only change when you manually select different settings. Let’s take a quick look at the settings in the Options Dialog box:

Presets

Podium’s built-in presets determine several crucial parameters with respect to the length, quality, and environment settings of your finished render. See [Choosing the Right Preset](#) for explanations on each preset.

All presets are XML files with .pps extensions and can be found in the “Presets” directory located in the SU Podium V2 folder. Presets can be modified with a text editor as needed (or with the Podium Preset Editor).



We strongly recommend you consult <http://www.suplugins.com/presets.php> before editing any of the preset files.

Preset files can be found in the following locations:

For Windows - SketchUp 2014 through 2019:

C:\ProgramData\SketchUp\SketchUp 201x\SketchUp\Plugins\SU_Podium_V2.6\presets\

For Windows, SketchUp 2013

C:\program files (x86)\sketchup\skechup 2013\plugins\SU_Podium_V2\presets\

For Windows, SketchUp 8

C:\program files (x86)\google\google sketchup 8\plugins\SU_Podium_V2\presets\

For Mac, SketchUp 8

MacIntosh HD\Library\Application Support\SketchUp 2015\SketchUp\Plugins\
SU_Podium_V2\presets\

For Mac - SketchUp 2013:

MacIntosh HD\Library\Application Support\SketchUp 2013\SketchUp\Plugins\
SU_Podium_V2\presets\

For Mac, SketchUp 2014-2019

MacIntosh HD\Library\Application Support\SketchUp201x\SketchUp\Plugins\
SU_Podium_V2.6\presets\

Output

Size of Image

If you choose “**Viewport**,” Podium will render an image that matches the resolution of your SketchUp drawing area.

The “**Fixed**” option allows you to choose a predefined image size. Preset formats 4:3 (Normal) and 16:9 (Widescreen) can be found in this list. You can also manually enter custom pixel width and height values to render your image at a specific target resolution.

Image Format

Determines the file format in which the rendered image will be saved.

When the .PNG format is used, the “**Transparent**” option will be made available. If checked, Podium will automatically remove the background of the rendered image and make it transparent. This allows you to easily add a customized background using your image editor.



HDR (High Dynamic Range) is an advanced image format. HDR is a 32-bit lossless format that contains a greater range of color and luminance information than JPG or PNG. This makes HDR images ideal for users who want deeper control over lighting and color grading during post-processing.

Tip: The “Transparent” option allows you to save a considerable amount of time when adding backgrounds in image editing or post processing software such as Photoshop, Krita, PaintShop Pro, etc.

Image Save Location

If you select “**Model**”, your rendered images will be saved in the same location as your SketchUp model. Select “**Custom**” to change Podium’s save directory to a custom folder location.

Environment

Background - You can choose between SketchUp's background and Podium's physical sky. SketchUp shadows must be turned on to use Podium's physical sky.

Sun/Brightness and Intensity Sliders - You can use these two sliders to adjust the strength of sun exposure when using Podium's "physical sky" option. If you simply wish to increase or decrease brightness, increase the two options equally. In order to obtain a noticeable difference, move the sliders significantly in one direction or another. The reset button will reset the sliders to the default middle position.

Environment Options

There are several other options available in the environment tab:

- **Soft Omni Lights:** Renders point lights with a softer, more natural looking shadows at the expense of slower render times.
- **Caustics:** Simulates the reflection and refraction of light on curved or transparent surfaces such as glass and water. Caustics only works with materials that have refraction.
- **Clay:** Allows you to quickly change textures and colors to a dull gray while maintaining transparency, reflection, and refraction. Clay mode is especially useful when conceptualizing your project, as it allows you to omit both color and texture data, giving you a quick overview of your final lighting result without visual interference from textures and colors.
- **Geometry Caching:** Eliminates render-time scene analysis by storing a cached version of your model's geometric data for subsequent renderings of the same SketchUp scene. If the geometry and materials remain unchanged, subsequent renderings will omit the "Processing Scene" phase, which can significantly reduce render times. This is especially useful for larger models. Geometry caching will remain in effect even if you change the camera and sun parameters found in Podium's Options dialog box.

However, if a "Face Me" component is present in your scene (2D SU Podium Browser trees or a SketchUp face-me person, for example) "Geometry Caching" will automatically be disabled.

It is very important to note that Geometry Caching does not function with all models. A Geometry Caching error will cause Podium to produce a blank image almost immediately after pressing the render button. If this happens, the solution is to simply disable geometry caching.

- **Information Bar:** This option will place an information bar at the bottom of your rendered image, including the software version, render time, preset used, and image resolution.
- **Translucent Color:** Allows translucent surfaces to transmit color when light passes through them. Please note that results can be somewhat unpredictable, so this function can be enabled or disabled according to your preference. This option only works on solid color materials, not with textures.
- **Automatic Materials:** Automatically attaches Podium material settings to standard SketchUp textures. See “Automatic Materials.”

Tip: Apart from final renderings, it is advised that you activate the “Information Bar.” It is a very useful reference and provides further assistance for future rendering.

Choosing the Right Preset

Presets control everything so you don't have to, it is therefore crucial to know how to choose the correct preset for a given situation. The “*Default*” preset is not optimized for any type of scene, and you should not need to use it except in specific cases—in almost every instance, there will be a better option than the default. Consider the following points to help you choose a preset:

Interior or Exterior

Imagine you're taking pictures of a human sized scale model and have to set various light settings on your camera. Sometimes the answer is obvious: if there are 4 walls, a floor, and a ceiling surrounding you, you are photographing an interior. If you are outside the structure, you are in an exterior setup. You will then adjust the aperture, shutter speed, and ISO accordingly.

Podium does a bit of the same when calculating light. For proper exposure levels, Podium has to fire more photons (light rays) in darker environments and fewer in a brighter one, just like your camera has to capture more or less light depending on those same parameters. Calculating more light rays takes more time and lowers the chances of producing render artifacts. If you chose an exterior preset to render an interior scene it will likely render too dark and will probably render with some imperfections. If you render an exterior setup with an interior preset, it will be overexposed, often leaving you with a quasi-absolute white image.

Occasionally your scene will combine traits of both an interior and exterior setup, leaving with you a lighting situation half way between the two extremes. In those cases, we recommend you use the sun Intensity/Exposure sliders to find a brightness compromise between the interior and exterior presets. If you are in an interior scene and the interior presets do not have enough brightness, this means you need to add artificial lighting. For example, you might try to add more sunlight by removing wall portions, or adjust the SketchUp time and date setting to let more sun into your scene.

Oppositely, if your interior preset renders are overexposed even with the sun's Intensity/Exposure at minimum, you may need to use an exterior preset, adjust the date and time, or add an out-of-frame wall to minimize some of the light coming in from outside. As a last resort when none of the aforementioned solutions seem to work, try

the *Default.pps* preset to help you bridge the gap between the interior and exterior presets. *Default.pps* is brighter than Podium's exterior presets but darker than the interior settings, and may help you reach a favorable compromise.

Quality is the second major point to consider when deciding which preset to choose:

Quality

To save render time, all Podium presets reduce the number of light rays fired and interpolate between those, therefore eliminating the need to calculate each pixel of your render. This process saves a lot of time, but also creates blotches in certain conditions. The simpler your model is, the greater the chances that blotches will appear. They will generally show up randomly in corners or around point lights, especially in darker areas of an image. More complex geometry and the presence of textures will reduce the appearance of blotches, but sometimes they can be difficult to eliminate altogether.

As a result of this, Podium presets are optimized to reach a balance between quality settings and render time for any given lighting situation.

Quality settings affect general aspects of the render, including edge sampling, shadow precision, and lighting quality, while simultaneously determining the chances of blotches showing up in the image. Since exterior renders require less light rays than an interior, fewer rays will be calculated when using the exterior presets. Decreasing the number of light rays can increase the chance that blotches will appear. However, this is not typically a problem for exterior renders, as they rarely have the low-light concave corners that are seen in most interior rooms. Additionally, exteriors often place less emphasis on shadow detail, making the discrepancy in light samples between the interior and exterior preset types virtually imperceptible.

As a general rule of thumb: Always try the lower quality presets first, and then move up in quality when you have problems or need to get the best out of Podium. There are currently 5 different quality ratings: preview, default, fine AA, high, and QMC.

Preview

This preset is optimized only for testing and should not be used for final renders. It has the lowest quality but fastest speed. Preview should be used for quick render tests, and to quickly check lighting, textures and overall composition.

This preset is only slightly faster than the default for most scenes, so in many cases you may actually get better test renders by using the default interior and exterior presets at a slightly lower resolution.

Note - The *preview* presets are no longer included in the V2.6 installation, as we feel the default presets are a better choice for creating test images. They will still be present in SU Podium V2.5 and lower.

Default

This is a general purpose preset which can be used for either interiors or exteriors depending on the overall lighting level. In terms of lighting, it is darker than the interior presets, but brighter than the exterior settings. Although generally you will get better results with the interior or exterior default presets, this can be useful for interiors with large windows where the interior settings would be too bright, or with exteriors which have lots of dark textures.

Interior and Exterior default

These will be your go-to presets for most scenes. You can use them for final renders or for test renders at lower resolution. They represent the best balance between speed and quality. Always test your scene using these presets first—do not make the mistake of using the high presets thinking they will make every scene look significantly better.

Exterior renders in particular very rarely need higher quality settings than what *exterior default* can produce.

Fine AA

This preset enhances the edge smoothing for small details, making it possible to render details down to just a few mm in size. For example, cabinet joints, cables, and shadow-gaps will all render better in Fine AA. Basic quality settings are exactly the same as the default presets, but Podium will spend more time calculating AA (Anti-aliasing). This is the last stage of the render process. It can also reduce the *Moiré* pattern that is evident in some renders. This preset significantly increases Podium's render time, so it should only be used when you can see gaps or jagged artifacts in the fine details of your image.

High

This produces the highest quality renders, but at the cost of a substantially longer render

time. You can use this preset when you need to eliminate render artifacts or to produce the highest quality output that Podium is capable of.

A render which takes only 20 minutes with interior or exterior default presets can take several hours on high. However the high preset produces the cleanest renders, with few or no artifacts. The quality increase is generally most noticeable in subtle shadows from indirect light. These presets are best suited to high-spec computers, or for when you can afford to wait longer for the best possible results.

QMC

QMC stands for Quasi-Monte-Carlo, which is a mathematical algorithm used for render calculations. This method does not use sampling and interpolation; it samples every single pixel in an image. For some scenes QMC can be faster than the High presets, but produces a grainy output. To deal with the grain, render at a higher resolution (2-3 times) and then downsize the image in an image processing software like Photoshop.

Preset comparison

Here are the same two scenes rendered with different presets. No post-processing has been applied and everything in the model can be found in the Podium Browser, including the background, sky, and vegetation. High AA presets were not used as difference can sometimes be too subtle to show.

Exterior Preview



Jagged edges and a random light spot outside are noticeable here. Render time: 3 minutes.

Exterior Default



Edges are less jagged but more blotches have appeared. Since they are random they could have also appeared with the Preview preset. Remember that artificial light and indoor environments as seen here increase the chances of render artifacts. Render time: 11 minutes.

Exterior High



Image is brighter, better general quality and no blotches appeared. Render time: 5 hours, 2 minutes.

Exterior QMC



Image is darker and a subtle gain is visible in the interior. However, in this case QMC did render significantly faster than with the High preset. Render time: 2 hours, 0 min.

Preview



Jagged edges and corner sampling issues are especially apparent here. Render time: 2 minutes.

Default



Better edge definition, but corner sampling issues are still noticeable. Render time: 9 minutes.

High



Image is brighter, lighting and shadows are significantly better. No corner sampling issues. Render time: 54 minutes.

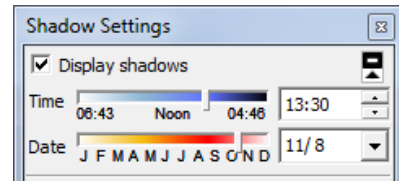
QMC



Even brighter than the High preset, to the point of being overexposed. Visible grain throughout the image. Render time: 1 hour 32 minutes.

Natural Light and Background

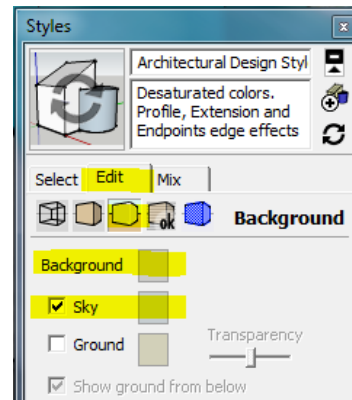
Podium uses SketchUp's sun settings. Geolocalization, date and time will be taken into account once you hit the render button. However, you must make sure shadows are activated. If they are not, Podium will render without any sun using the background color you set in SketchUp.



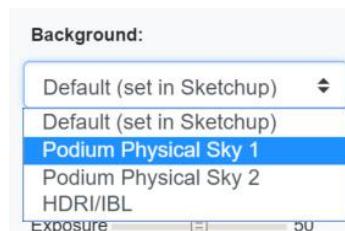
You now have 4 choices of backgrounds; V2.6 introduces the HDR/IBL option.

Default

When default is selected, Podium will use the background set in SketchUp. You can set different SketchUp backgrounds in the Style window, accessible through SketchUp's plugin menu. The Default setting can also be used to set a white/grey background in order to render an object in a photography studio-like setting. In this case, the background color determines the brightness of the environment. SketchUp's ground is not supported.



Podium Physical Sky 1



Podium's Physical Sky settings will produce the most realistic renders. The physical sky simulates a clear sky based on the date and time set in SketchUp. Using physical sky 1 & 2 will expose your scene with the appropriate brightness and color, giving much better results than

SketchUp's built-in sky backgrounds could. However, Podium Physical Sky 1 can produce unwanted results near dusk and dawn, and renders a slightly purple color just below the horizon.

Podium Physical Sky 2

The second version corrects those two issues by providing realistic sunrises and sunsets with no unwanted color shifts near the horizon. This second physical sky option is brighter and uses a slightly more cyan toned background than Physical Sky 1. For this reason, we kept the first physical sky, which is still useful for daytime renderings when a purer shade of blue is desired.

Note: SketchUp Shadows must be turned on for Podium Physical skies to work.

Tip: The strength of the sunlight is controlled using the “Intensity” and “Exposure” sliders found in the “Environment” tab in the Options dialog box.

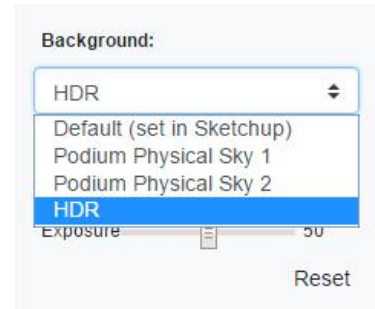
The following chart illustrates the difference between the 2 skies. All images are raw Podium renders; no post processing has been applied.



Rendered with the Exterior 1.07 preset at summer solstice, with the sun Intensity/Exposure at default values. Original resolution: 1920 X 1080. No modifications to the model have been made between renders. All items, grass, trees, and clouds can be found in the Podium Browser.

HDR image-based lighting

When the HDR background option is selected, the SketchUp sun and sky are turned off, and Podium utilizes Image-Based Lighting (IBL) for the natural light and background in your render.



The HDR image format can capture and store the full dynamic range of real-world lighting scenarios. Image-based lighting takes advantage of this, by using the lighting information contained within 360 degree HDR backgrounds images to illuminate your SketchUp scene.

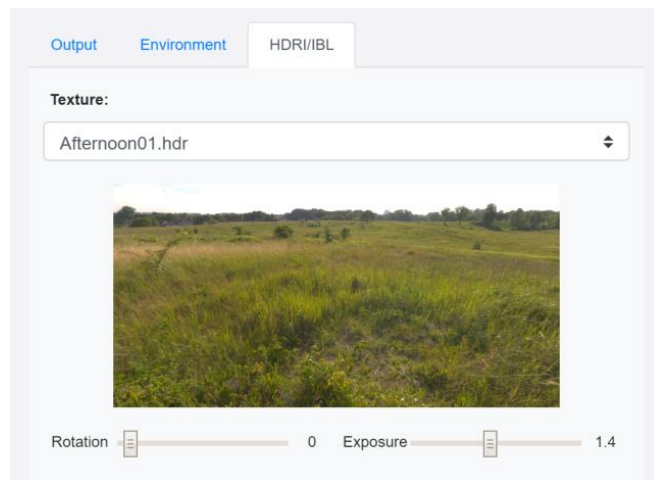
There are two primary advantages to this lighting method:

1. When using HDR image-based lighting, all lighting information is directly captured from the real world, so the subtleties and nuance of natural, real-world light are accurately represented.
2. An HDRI background can be photographed in any physical location in the real-world, so the breadth and variety of possible background images is virtually limitless.

When HDR is selected, the IBL/HDRI tab becomes clickable. This is where you select the background that you will use for your render.

Texture - Select the HDR image that will be used as the background and light source for your render.

Five backgrounds are installed with Podium V2.6, but additional HDR images may be added directly from Podium Browser, or from third party sources like HDRI-haven.com.



HDRI images only need to be downloaded from Podium Browser once. After they are installed they will always appear as a selection in the Texture drop-down unless you delete them manually.

Note - HDRI backgrounds from external sources can be installed by copying them into the Podium Backgrounds directory. Simply paste them into the below directory:

Win - *C:\ProgramData\SketchUp\SketchUp 2017\SketchUp\Plugins\PodiumHDR*

Mac - *MacintoshHD\Library\ApplicationSupport\SketchUp\2018\SketchUp\Plugins\PodiumHDR*

Rotation: The preview window shows the portion of the HDRI background that will be seen in your render. If you orbit the SketchUp camera, you will see that the background image is linked to the SketchUp camera. The rotation slider lets you rotate the background relative to its initial position to change the section of the image that will be seen in your render. Because the sun is embedded in the HDRI background, this also gives you a way to change the position of the sun, and therefore change the direction of the light/shadows in your scene.

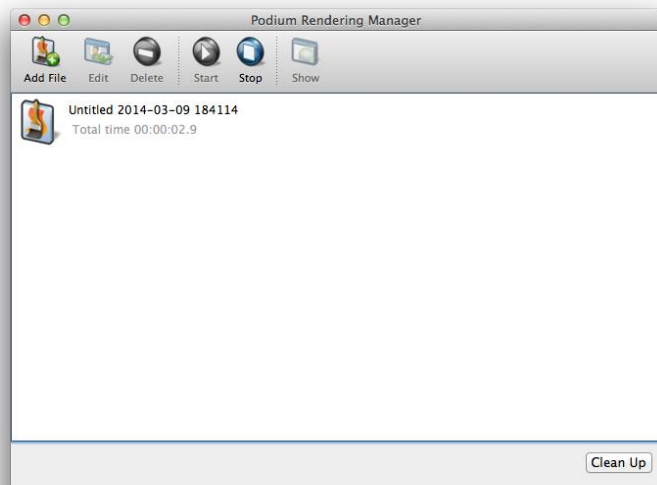
Exposure: This slider lets you increase or decrease the intensity of the light that will be cast into your scene from the background image. The preview image updates automatically to give an idea how bright/dark the sky will be in your render.

Podium Rendering Manager/OOPR

When you start a new render, two new dialog boxes will open in your SketchUp viewport. One is the “Processing Scenes” window where the SketchUp model and textures are translated to the render engine’s mesh model. The other is the Podium Rendering Manager or OOPR.

In order to better manage larger models, Podium exports the rendering process out of SketchUp to OOPR.

OOPR (Out of Process Renderer) will automatically begin when Podium finishes the “Processing Scene” mesh calculation stage. The estimated remaining time is included with the filename and date. When the various OOPR processes are completed, the total time will be displayed.



OOPR creates a list of rendered images being worked on or completed, and has a small number of options you should be aware of:

“Show” - Displays a live preview of the image as it is being rendered when double clicked. You can see the results of various completed projects while they are still on the list. Live preview is *not* typically shown at full resolution.

“Stop” - Cancels the rendering process. It is not possible to pause a rendering.

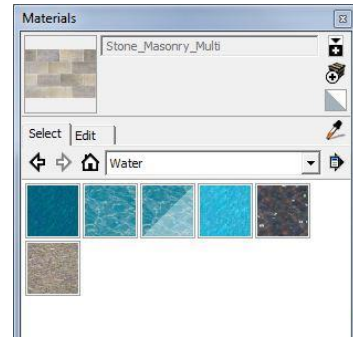
“Delete” - Deletes selected files displayed in the dialog box.

“Clean Up” - Removes all of the files that are completed.

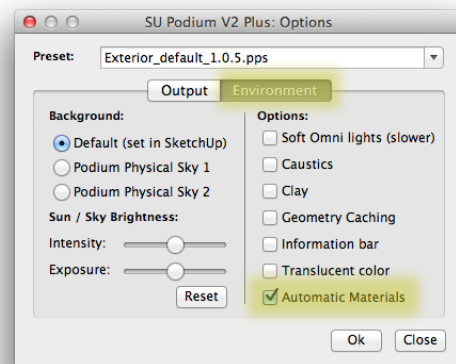
Materials

Automatic Materials

When Automatic Materials is enabled, Podium will automatically assign Podium material properties to any standard SketchUp texture being used in your model. All basic SketchUp textures are accessible from the SketchUp Materials dialog box in the Materials pull-down menu. These will have Podium properties such as reflection, refraction, and bumps assigned to them automatically.



You can enable or disable this feature using the Automatic Materials toggle in the Environment tab of the Podium Options dialog box. When activated, you will notice a change in the material properties of the standard SketchUp textures. These changes are not saved in your model and will not remain in effect when this option is disabled.



This feature instantly gives SketchUp textures superior quality when rendered in Podium. This is especially noticeable in transparent materials such as glass or water.

Note: Make sure that the “Option” dialog box is expanded so that all options are displayed for you.



Example of a scene with automatic materials

Additional Materials

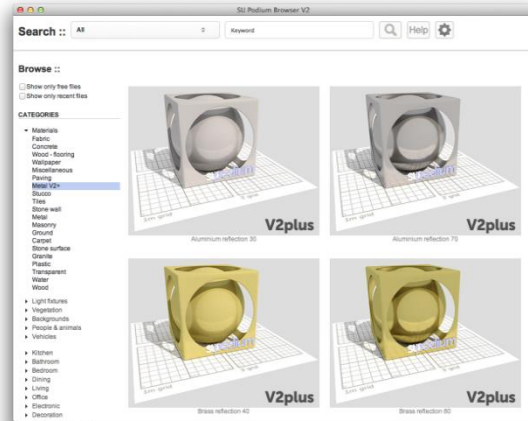


Your choice of textures is perhaps the most important factor in determining the quality of your rendered image. In order to produce a rendering of superior quality, it is strongly recommended that you search outside of SketchUp to find the best textures for your rendered image. The standard textures provided in SketchUp are often quite mediocre, bland, and repetitive in quality.

We suggest that you look in the “Materials” section of the SU Podium Browser to find your desired textures. SU Podium Browser is installed automatically with SU Podium V2, and all Browser materials are optimized for rendering in Podium.

(Please see SU Podium Browser section for more information.)

It is important to note that standard SketchUp textures become materials, with Podium reflection, refraction, and bump properties when Automatic Materials are enabled. Otherwise, they are simply textures comprised of bitmap images or solid colors. The free textures found in the texture category of SU Podium Browser use much higher resolution images than the standard SketchUp textures.



Material dialog box

The Podium Materials dialog box allows you to add Podium material properties to textures or other materials. After opening, you can select the desired material/ texture from SketchUp by highlighting the face the material is on or selecting textures from the SketchUp Materials dialog box (Windows only). You may also use the SketchUp eyedropper on a face to sample a texture in the Materials dialog. The name of the texture will then appear at the top of the Podium Material dialog box, allowing you to begin making changes to its material properties.

It is important to choose the texture after opening the Material dialog box and to make sure that its name is displayed at the top of the dialog box.

Diffuse/Transparency/Reflection

These three parameters should always total 100%.

To ensure this, the sliders are linked together so that if you increase the value of one property, the others will automatically compensate. However, if you decrease one of the property sliders, it is possible the other two may not always update. Be sure to check the percentage sum of the three sliders.

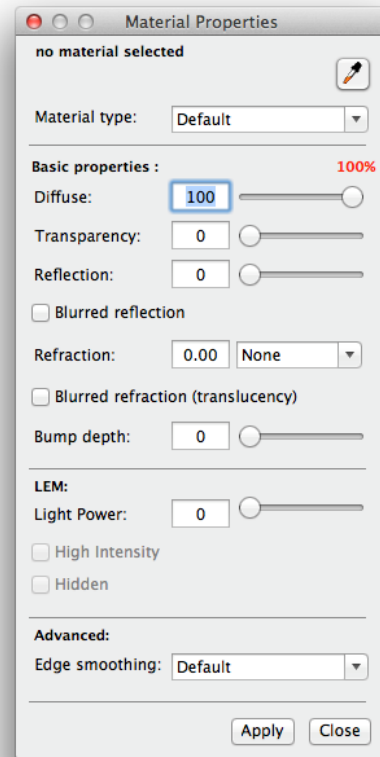
Diffuse: This is the reflected light that does not go directly to the camera. It makes the surface visible through indirect reflections. A 100% “Diffuse” setting will yield a material with no reflection or transparency; it will be completely dull.

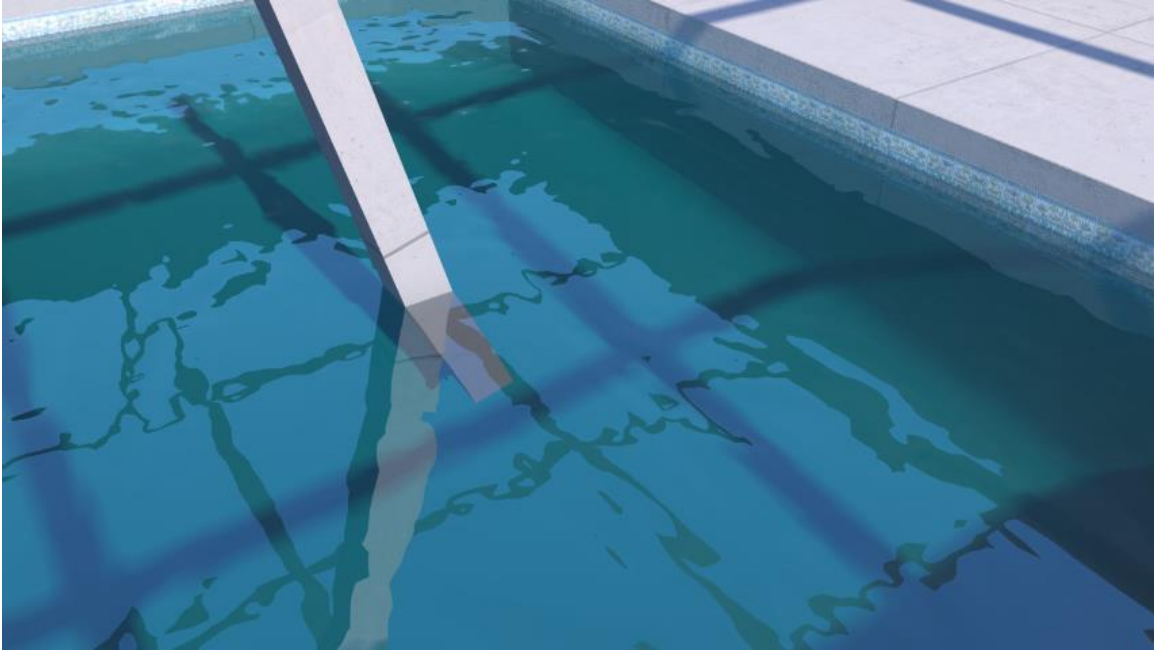
Transparency: The transparency slider is directly linked to SketchUp’s settings for opacity and transparency levels. It has the exact same value and effect as the Opacity setting in the Edit Materials dialog in SketchUp.

Reflection: The opposite of “Diffuse,” this slider controls the amount of reflected light that bounces directly into the camera. A 100% “Reflection” value will produce a mirror effect.

Blur: This setting enables blurry reflections. It is useful with a wide range of material types, particularly with vinyl floors, laminate material, and some metals.

Refraction: Refraction refers to the change in a light ray’s direction when it passes through a transparent medium of a different density, which results in visible distortion at the contact point. For example, this effect can easily be seen when a pole seems to bend at its contact point with water (as seen below).





The pole appears to be bent upon contact with water.

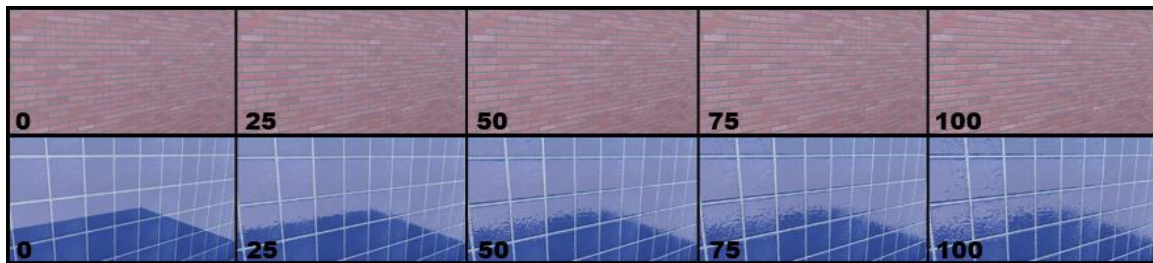
It is important to note that the use of refractive blur increases rendering time. Therefore, this feature should only be used when necessary.

Bump Mapping

Bump Mapping simulates small-scale displacements on a material's surface, giving your rendered image a very realistic relief effect.

Podium lets users assign a bump value to materials, ranging from 0 to 100. You can drag the slider or enter the value manually in the “Bump Depth” section.

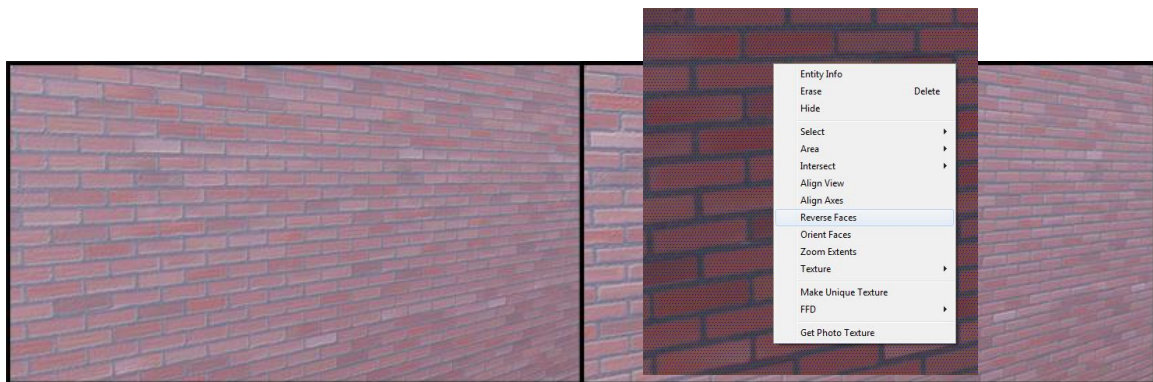
Podium will then analyze your texture's grayscale values to realistically simulate the way light interacts with a bumpy or textured surface in the real world. The higher the assigned value, the more pronounced the relief of the image will be. A higher bump value will result in a longer rendering time.



Example of bump “relief” from 0 to 100.

If the bump map appears to be reversed with regions of the texture indented when they should be raised (or vice versa), you can solve the problem by reversing the SketchUp face.

For example: When working with brick, if the mortar appears to be raised instead of indented, simply right click on the face and select “reverse face.”



Light Power

Use this option to create a light emitting material (LEM).

(Please see “Artificial Light” below for more information.)

Tip: It is very important that you remember to click the “Apply” button after changing your Podium material properties otherwise your changes will not be saved.

Advanced Edge Smoothing

This option allows you to modify the default anti-aliasing parameter of individual materials. This gives a finer level of control, without the significant render-time hit associated with the Fine AA preset.

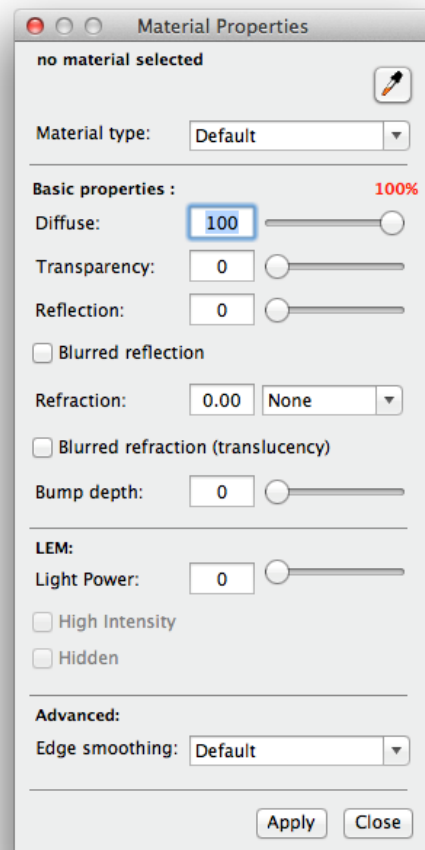
For example: A siding material may need to have an increased edge smoothing value in order to resolve fine-edge details. On the other hand, a grass or asphalt texture might take a lot of rendering time on the edge smoothing phase, so lowering its value may contribute to a faster rendering time. Like most aspects of rendering, this is a give and take between speed and quality.

Material type

V2+ now offers users a choice between two distinct material types: Default or Metallic.

In reality, objects reflected on metallic materials are tinted by the local color of the metal, while objects reflected on materials such as plastic or ceramic should retain their own original color in reflections.

This means a white sheet reflected on a gold object should appear with a gold tint. However, that same sheet reflecting on a gold-colored plastic object will remain white when reflected. Podium’s new material types take this physical phenomenon into account when calculating and rendering reflections.



That being said, the metallic option will only be noticeably visible with colored metals. Materials such as aluminum, galvanized steel, or chrome will not change the color of a reflected object as their local-color is typically a shade of grey. This option is best used with colored metals such as copper, gold, brass, etc.

Please note that in order to get the same amount of visible reflection with the metallic preset, the reflection value will need to be significantly higher.

Selecting the metallic option will gray out the transparency slider as metal cannot be transparent (aside from a few rare exceptions).

The two renders below illustrate the difference between a classic V2 material (left) and the new V2+ gold material (right), which can be found in the Podium Browser.



Settings for the left hand material are 80/0/20 (Diffuse/Transparency/Reflections) with blurred reflections. V2+ gold settings (pictured right) are 1/0/99 (DTR), also with blurred reflections. You can notice here how a convincing gold effect can only be achieved with V2+.

Artificial Light

LEM (Light Emitting Material)

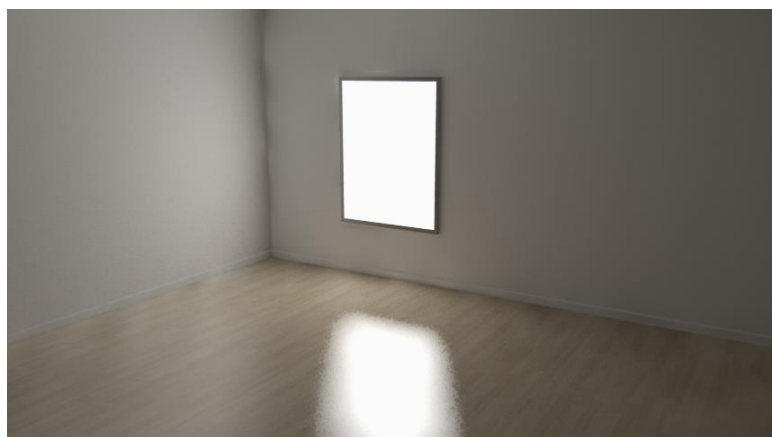
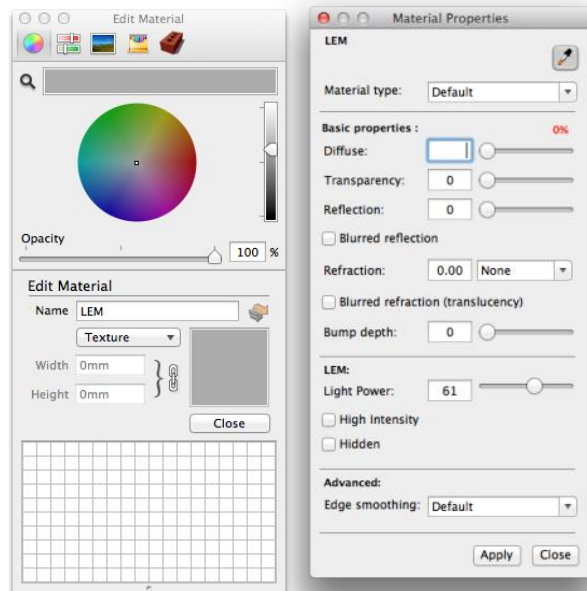
This first type of artificial lighting can be used to convert a surface or face into a light source. Simply create a new texture and apply a luminescent value in the “Light Power” section, found in the SU Podium Material dialog.

Tip: To avoid potential problems, you should paint the material to the normal or front side of the SketchUp face. The default color of a SketchUp face is white on the normal or front side and blue on the reverse or back side.

The “**High Intensity**” button significantly increases the light intensity of the LEM; typically you will not want to check High Intensity for an interior LEM light. Because high intensity greatly increases the light power, the light tends to create noise in close quarters and is used to best effect in exterior lighting situations.

The “**Hidden LEM**” button hides the surface that the LEM material is applied to, so that it does not show up in the rendered image. The color of the light can be modified by changing the color of the SketchUp texture assigned to the LEM. If a material (a texture with Podium material properties) is used, the main color will not change but the surface will be noticeably bleached.

LEMs are essential in producing realistic lighting, because they produce soft and natural light. It should be noted, however, that powerful LEMs may create unwanted



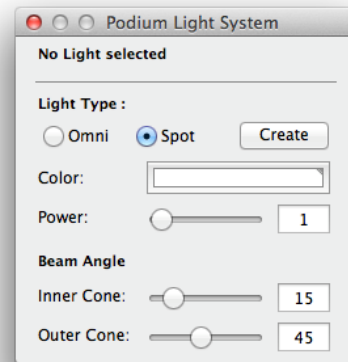
noise.

Podium Light System

The user interface for Podium's light system is found in the toolbar and allows you to insert and modify both Omni Lights and Spotlights. The user interface is called Podium Light System or PLS for short.

Omni

Podium's Omni light is an omni-directional, point light source. Simply choose the “*Omni*” option from the PLS user interface. Then select your strength and color, and press “*Create*” to apply your changes. An inference point will appear. Choose an inference point, and a 3D axis crosshair will appear to help you position the light. Holding the *Shift* key will lock the movement of the 3D crosshair to one of the axis lines.



Click once to set the inference point. Move the 3D crosshair and then click a second time to insert the omni light. *The light is inserted as a SketchUp group called <light-point-##>*

To edit an existing light, you must select it, open the PLS dialog and make sure that you see Point Light at the top of the interface. You need to click twice on the omni light/point light group if the value of the point light is a decimal value. Once the Point Light message is displayed, you can change the power or color settings. Remember that you can edit more than one light at a time simply by selecting multiple lights. Point lights can have a value less than one (such as .25 or any fractional decimal value). You can also use SketchUp's Outliner to select the omni light/point light.

Try to avoid placing lights too close to faces as this can create unwanted glare. In this case, either move the omni lights or reduce the light power.



Example of Omni-directional lighting - Light Power: 8

Spotlight

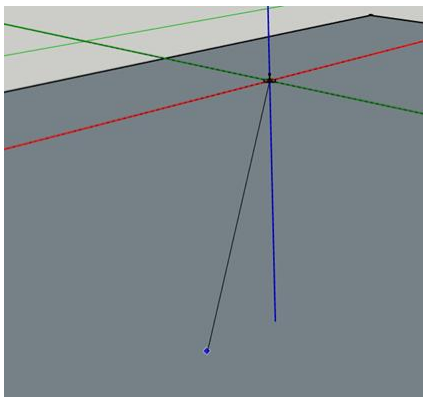
Podium's last light type is called a "Spotlight," which is a directional light with an adjustable, cone shaped light spread.

Inserting a spotlight is like inserting an omni light, but requires one additional step. To insert a spotlight, choose "*Spot*" and adjust the power and color to your liking. After pressing the "*Create*" button, pick an inference point in the SketchUp viewport and click once. A 3D crosshair will appear. Move the crosshair along one of the axis lines. Hold the *Shift* key to lock the crosshair to an axis line. The second click will position the spotlight. Your third click should be on the face or surface that the spot light will illuminate. This third click will determine the direction of the beam of light.

Use the options under "Beam Angle" to determine the size of the inner and outer cones of light.

Inner Cone: This is the fully illuminated region of the spot light in your rendered image.

Outer Cone: This setting determines the light fall-off area. Within the fall-off area, illumination decreases and becomes gradually more diffuse between the inner cone and the outer edge of the outer cone. The greater the outer cone's diameter in relation to the inner cone, the greater the fall-off area. A tighter fall-off will yield a relatively hard-edged spotlight, while a large fall-off will produce a spotlight with a softer edge.



Spot lights require an additional step to define the direction of spotlights.

Podium Panoramas

SU Podium V2.5.1 Plus (and above) includes a Panorama feature that allows users to create 360 degree, panoramic VR presentations from a rendered equirectangular image. This enables you and your clients to view the final panorama VR in an interactive 360° environment. The final panorama VR is an HTML (.htm) file that can be viewed in any browser that supports HTML5, including Internet Explorer, Safari, Chrome and Firefox.

The Panorama VR HTML file can be sent to your clients via email, hosted on your web site, or uploaded and stored on the Podium Panorama Server.

Creating a Panorama VR presentation in SU Podium requires two basic steps:

1. Render an equirectangular panoramic image by selecting “*Panorama*” in the output tab of the SU Podium options dialog. An equirectangular image is a flattened representation of your scene rendered with a **2:1 aspect ratio**:



2. Automatically convert the image to a Pano VR presentation using Podium Image Editor if you plan on hosting the presentation on your website or sending to a client via email.
3. Alternately, you may upload your equirectangular image to the free Podium Panorama server (<http://panopdm.com>) to make the presentation available at a unique URL that you can easily share.

These steps are covered in the following sections.

Rendering an Equirectangular Panoramic image in V2.5.1 and above:

The first step in creating a Panorama VR is to render an equirectangular image using SU Podium V2.5.1. This process is almost identical to rendering any SketchUp model except you will select Panorama mode for image size. The equirectangular image you want to render is a flat projection of a sphere.

To render a scene as an equirectangular panorama, simply chose "Panorama" from the options dialog.

This equirectangular image will need to be "mapped" to a 3D sphere in an HTML file using Podium Image Editor's Panorama feature. This is an automatic, one-step process with no messy stitching involved. The conversion process is extremely simple.

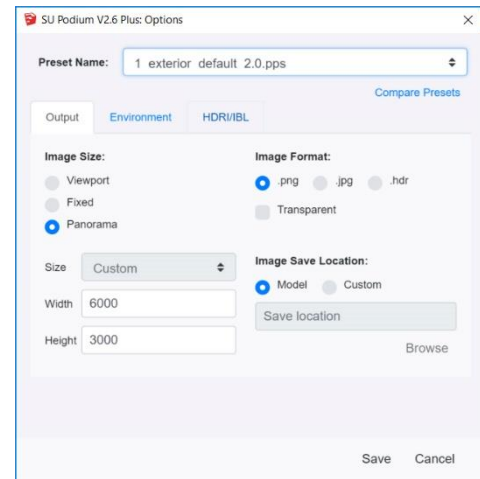


Image Settings and Presets:

1. **Resolution and aspect ratio :** When you select Panorama in Options, the aspect ratio of Width to Height is automatically converted to a 2:1 ratio. You can change the Width pixel resolution but the Height will always be 50% of the width. This is because for panorama spheres the field of view is 360° X 180°. Any different aspect ratio will result in distorted final panoramic sphere.
2. **Recommended presets :** For best results the interior_high or exterior_high or the new bright 2.0_high are recommended. However, you may want to experiment with much lower resolutions and presets just so you can render faster to experiment with the results. You might reserve the higher quality presets for your final equirectangular image.
3. **Image format -** Save your equirectangular image as either .png or .jpg. PNG will have a higher quality but we result in a larger file. At this point, .hdr is not a choice because Podium Image Editor does not read .hdr.

Where is the equirectangular image saved?

The save location is exactly the same as it would be for any regular Podium render. By default, SU Podium V2.6 will save the final rendered image to the same folder

where the SketchUp model is saved.

However you can select “Custom” to save to a folder of your choice. After selecting custom, click on the Browse button to choose the folder on your computer where you would like to save the final rendered image.

Create your Panoramic VR experience with Podium Image Editor

Now that the rendered equirectangular image (EQ) is complete, you can create an interactive Panorama VR.

The easiest way is to upload your EQ image to the Podium panorama server at <http://panopdm.com>. However, if you’d rather host your Panorama presentations on your personal or company website, you can also convert the EQ image to Panorama VR in Podium image editor:

1. **Launch PIE from the Edit button in Podium Render Manager :** Highlight the rendered image name from OOPR and click on Edit. You can also launch PIE from the SU Podium V2.6 Tools menu. Once PIE is opened, use the Open file menu to load up the equirectangular image that you want to convert into a Panorama VR.
2. **Adjust brightness, contrast, etc. if necessary :** Podium Image Editor lets you make changes to your Panorama file before converting it to a VR presentation, and works exactly the same as it would for any other image. If you apply any of the filters such as light levels, make sure you click apply and save the image. *If you do not save before you create the Panorama HTML file, your changes will not be reflected in the panorama.*
3. **Create the Panorama VR HTML file :** Once you are ready to create the Panorama, go to PIE's file menu and select Panorama or click on the Panorama icon from PIE's toolbar.



The Export Web Panorama dialog box will pop up. When you select Create, this will create a Panorama VR. It may take a few seconds but the 360° sphere will display inside your default browser.



Any browser that supports HTML 5, which most modern browsers do, will work.

This means Internet Explorer, Safari, FireFox, Edge, or Chrome will work.

4. **Where are Panorama files saved? Same Folder as EQ image.** When you create a Panorama VR, an .htm file is automatically saved to the exact same folder where the .jpg or .png equirectangular image is stored. *The image file and the .htm file must be in the same folder because both are needed to create the Panorama VR.*

The Panorama program reads the equirectangular .jpg or .png file and maps this to a 360° virtual sphere and save this to an HTML (.htm) file. So both files must be in the same folder.

Sharing a Panorama With Your Clients

No doubt one of the main purposes in creating Panorama VRs of your photo-realistic renderings is to give your colleagues or your clients a better understanding of your design. Therefore, delivering the Panorama to other people will be very important. The below are the recommended methods of delivering.

1. **Upload to the Podium Panorama Server** - To bypass issues with offline rendering and make it as easy as possible for you to share Panorama presentations, we have set up a free web-based hosting platform. This can be used two ways:
 - a. **Upload from the website** - Go to panopdm.com, create a free account, and upload your EQ image using the web interface. This service will automatically convert your EQ image into a panorama VR, store your panoramas online, and generate a discreet URL that you can easily share with your clients.
 - b. **Upload directly from Podium Image Editor:** PIE now provides a way to upload a panoramic render directly to the Pano server. Read more below.
2. **Email to a client directly:** If your clients are using a Windows PC or a Mac, perhaps the simplest method is to email both the Panorama HTML file (a .htm file) and the equirectangular .jpg or .png image file. Both are needed by your client. Below is a suggested procedure.
 - a. Use a zip program to zip up both image file and the .htm file.
 - b. Email this zip file to your client with the instructions to unzip the file so

both the .htm and image file are extracted to the same folder.

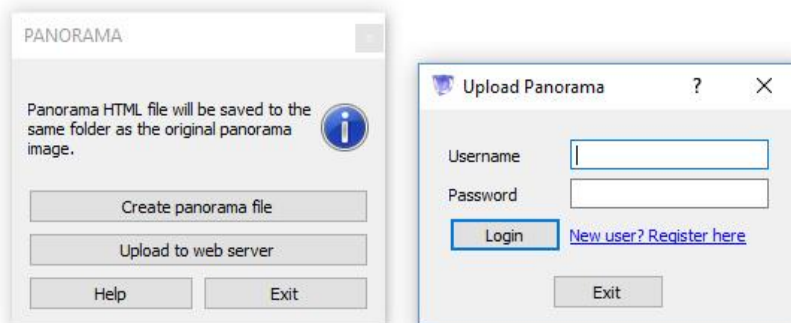
- c. Once this is done, the client should open the .htm file in a browser to display the Panorama VR. The client might adjust the size of his/ her browser to get a better resolution.
- d. **Chrome and MS Edge Issue:** Both of these browsers block WebGL rendering from offline file sources and fall back on (slower) HTML5 Canvas rendering for Panoramas. *We recommend you use Firefox or Safari for offline Panoramas.*

3. **Hosting on your website:** If you plan to upload and host your panorama presentations on a personal website, please keep this one thing in mind:

- a. **The panoramic EQ image and .html file must be uploaded to *the same directory* on your web server.** The .html file depends on the EQ image to work—if the two are not stored in the same folder, you will see only a black screen when you access your panorama VR.

Uploading to the Panorama Server from Podium Image Editor:

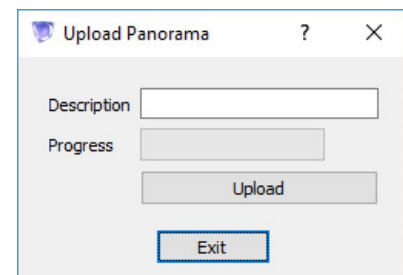
1. Inside PIE, click the Panorama  icon or choose **File -> Panorama**.



2. Choose “Upload to web server.” If you have already created a user account, enter your information and login, otherwise click “Register here.”

3. Once you are logged in, a second dialog will open. Add a description and press “upload”.

When the upload has finished, the Pano VR will automatically launch in your browser.



SU Podium Browser

The SU Podium Browser gives you access to over 20,000 components that will help populate and enhance your rendered scenes. SU Podium Browser is a web server based system and does not require you to install regular updates to access new components. Content is added regularly and is available to you immediately. You must have an internet connection to access the SU Podium Browser. You can launch SU Podium Browser from the Podium toolbar.

The library is divided into two sections. The first contains free content, and the second is a paid section which requires the purchase of a paid license. Although you can view all the thumbnail images of the paid categories, you will not be able to use them in your scene without a license. The paid license provides access to the entire library, including new content as it becomes available.

Note - As of the V2.6 upgrade, Podium Browser is fully included with an SU Podium V2.6 license. There is no longer any division between free and paid content. Podium Browser can still be purchased separately by anyone not using SU Podium V2.6.

To view all free content check ***“Show only free files”*** in the top left corner. To view the newest additions to the Podium Browser, check ***“Show only recent files.”***

The independent Browser licence can be entered in the options menu. Click on the ***gear icon*** in the Browser interface to enter your license key. Contrary to Podium itself, PDM Browser does not require you to restart SketchUp for licensing changes to become effective. The ***insert mode*** option allows you to choose whether components will dismiss after being inserted one time, or will let you place multiples copies.



Let's take a quick look at the first few categories:

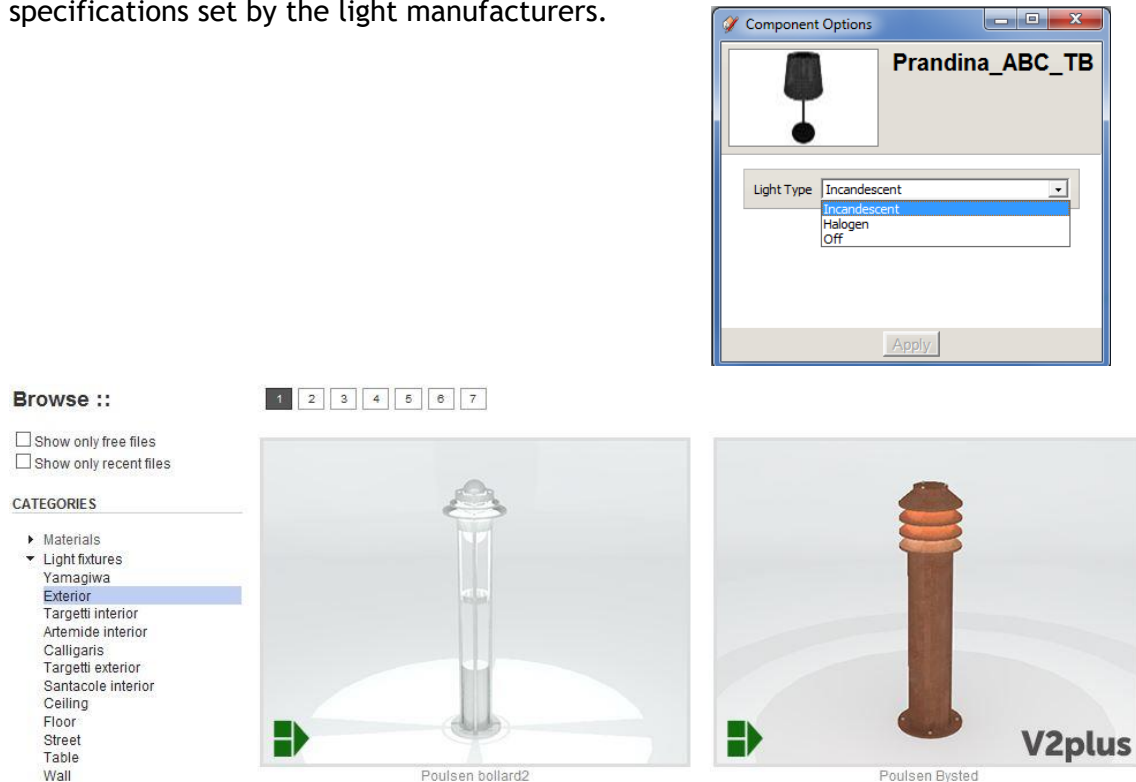
Podium Materials

Podium materials are textures with Podium material properties attached to them. Technically, the only way that these could be provided from an external library was to attach the Podium materials to a cube component. When you choose a cube, it will be downloaded directly into your SketchUp scene. You may then use the SketchUp eye-dropper to paint the

material to faces. Podium materials have various properties ranging from reflections to bumps.

Light Fixtures

Podium offers a wide variety of pre-calibrated light fixtures in both the Free and Paid sections. The power and choice of bulbs are configured according to the individual specifications set by the light manufacturers.

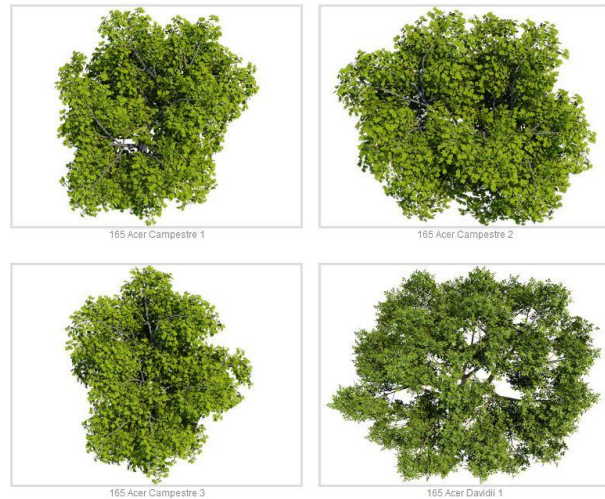


The light fixtures are downloaded as components. You can turn off or change the type of light bulb by using the SketchUp Dynamic options dialog box.

Vegetation: Plants and Trees

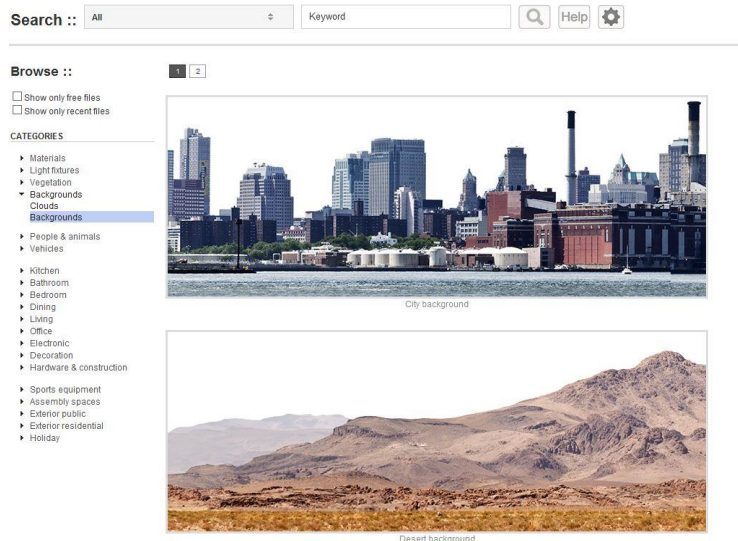
The use of 3D vegetation is often discouraged because it contains complex geometry and can dramatically slow down a rendering if overused. Podium provides you with a large 2D face-me library, so that you can add multiple trees and plants to your scene without the risk of a slowdown. These are most useful and realistic when rendered from a distance.

Despite the risk of slowing down rendering, realistic 3D vegetation is also available to you with a paid Browser license. The vegetation in the 3D library is useful for realistic close-ups, making it a viable option for small-scale scenery.



Backgrounds

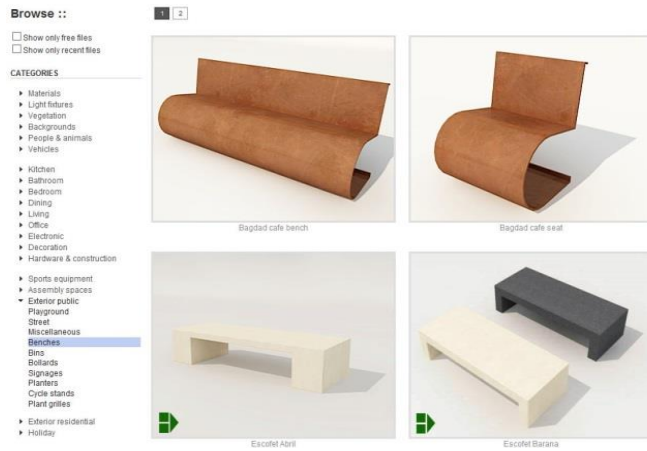
The background category provides a spread of skies, clouds, cityscapes, and landscapes to use as backdrops for your renders. By adding these directly into your model, you ensure a realistically rendered environment without having to add anything in post processing. This is also a great way to add a “glazing” plane to add realistic reflections to glass and metal materials in your scene. All backgrounds and curved cloud planes are seamless, meaning they can be copied and placed next to one another without any visible transition between them.



Render Ready Components

Whether you are dealing with people, cars, furniture, or accessories, Podium Browser

components are optimized and ready to render immediately out of the box. Podium Browser makes it easy to populate your scene with great looking components at the click of a button.



Analyse Model

The analyse model tool has been designed to give useful insight to you and the Podium support team regarding model complexity and possible fatal errors. Due to its importance, analyse model has now an icon in the Podium toolbar.

This tool will look at your SketchUp file to determine the number of point lights, LEMs, and reflective surfaces in the model. Additionally, it will indicate which textures cannot be rendered, and provide an explanation for each error. Analyse model will let you know if your file names are too long, or if you're using file extensions that are unrecognized or unsupported.

For example, your model may contain a .jpg image texture that has no file extension, or an image file format like .psd, which is not supported. In each of these cases, Analyse Model will display an *“unsupported file format”* message. The texture file format problem can be fixed by exporting the specific texture from SketchUp, renaming it to a supported file format (.jpg, .png, and all bitmap file-types) and then reimporting the texture into SketchUp.

Analyse Model will also tell you when LEM properties have been assigned to a texture that also contains Podium reflection or refraction properties—a case which may cause the render engine to crash.

Podium Tools

Along with *Analyse Model*, additional Podium Tools can be found in the SketchUp Plugins pull down menu under *SU Podium V2.6* ➡ *Tools*. There are several tools that will greatly aid you in both detecting and solving problems:

Reset Tilt

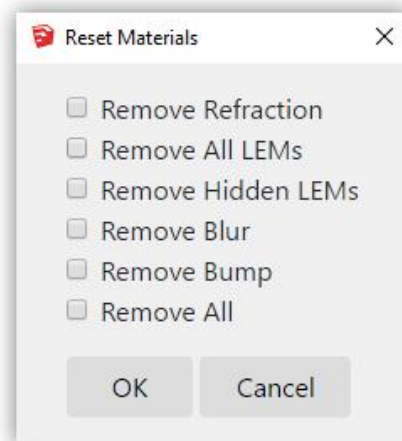
Resets the vertical tilt of your SketchUp camera to zero. This provides the same utility as turning on the two-point perspective option in SketchUp, and is a useful way to eliminate perspective distortion on the vertical axis.

Tip: We strongly recommend using the Reset Tilt option every time you render a 360 degree panoramic image to reduce distortion and camera tilt around the edges of the presentation.

Reset Materials

This tool provides a way to quickly remove Podium material properties from your entire drawing. Select one or multiple options to remove specific material properties, or select “Remove All” to completely purge all Podium material properties from your entire model.

This action cannot be reversed, so we recommend that you use it only on a copy of your SketchUp file.



Toggle Point Lights

This tool acts as a toggle switch for every point light in your scene, allowing you to simultaneously turn them on or off with a single button press. Unlike Reset Materials, Toggle Point Light is reversible. However, if you save the model with Point Lights toggled off and reopen it, you will not be able to toggle the lights back on.

Toggling lights off and then rendering is a good way to troubleshoot the model to see if

the number of omni lights in your scene is the cause of very slow rendering or crashes. A high number of omni lights will slow down Podium's rendering speed.

Toggle Spot Lights

This tool has the same utility as described in the section above but affects spotlights instead of point lights.

Podium Extras

Cubic VR

Cubic VR is a plugin that can capture a non-photorealistic 360 degree panoramic image directly from your SketchUp viewport. Cubic VR produces a cube-map of the SketchUp scene and provides a way to stitch these images into an equirectangular projection of the scene that matches Podium's panoramic output format.

Tip - Cubic VR is the best way to add a line-overlay to Podium panoramic renders.

Reset Edge Smoothing

Provides a way to change the edge-smoothing material property for every material in your model. Reset edge smoothing has three options:

- Reset default edge smoothing - Sets the edge smoothing attribute to 'default' for every material in your model.
- Reset low edge smoothing - Sets the edge smoothing attribute to 'low' for every material in your model.
- Undo low edge smoothing - Reverses the above action; the edge smoothing attribute for every material will revert to its original value.

Generate All

Generate All creates a render .scrip file for some or all scenes in your model; this is an ideal way to queue several scenes to be rendered at a later time or on a different computer. Read more about GenerateAll here: <http://suplugins.com/podium/pdm-tools/generateAll.php>

Light Fixture Outliner

The Light Fixture Outliner (LFO) is a streamlined version of the SketchUp outliner, which only shows Podium omni lights, spotlights, and light emitting materials. The light fixture outliner provides a much faster way to find, select, and edit the Podium lights in a model.

Render All

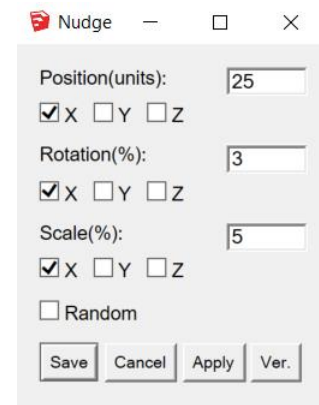
Render All is a batch rendering tool to allow you to queue some or all scenes in your model. It serves the same purpose as GenerateAll, but because of stability issues we

recommend using GenerateAll instead of Render All for batch rendering.

Nudge

Nudge is a useful tool that allows you to perform both uniform and random transformations to a selection of objects. Select any number of groups or components in your SketchUp model, adjust the nudge settings in the dialog box, and then click apply.

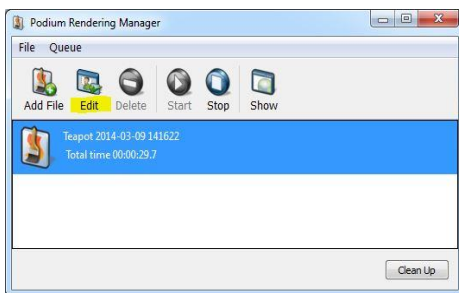
When the 'random' box is checked, any rotation, translation, or scale adjustments will be applied randomly within the range you have specified. For example: if Position (z) is specified with a value of 10 units, the objects you have selected will be translated along the z axis with a random value between 0 and 10 units (+-).



Post-Production and Podium Image Editor (PIE)

Post-production (PP) is widely used by designers and artists in the 3D industry, allowing you to make fine changes and add polish to an image after rendering has completed. Several software packages, including Adobe Photoshop, Gimp, and Paint Shop Pro can be used, however exporting to a third party image editor can be inefficient and slow if the scope of your post-processing is relatively basic.

SU Podium V2+ now features its own built in image editor (PIE) to help you enhance your renders via post-processing. The purpose of PIE is to provide a means to adjust your

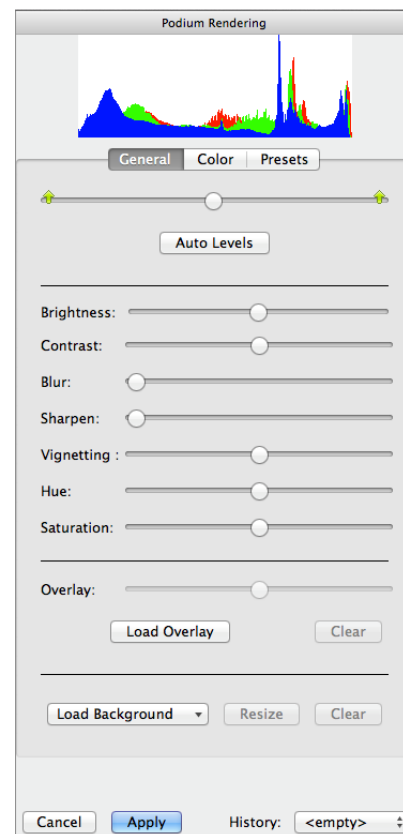


rendered images with greater precision, control, and speed, and allows you to make quick image adjustments without ever leaving Podium. This method is significantly more time-effective than rendering over and over to fine-tune tiny adjustments within Podium itself.

To access Podium Image Editor (PIE), select a finished render in the OOPR window and click on the edit button. You can also access PIE via the plugin drop-down menu in SketchUp. In this case you will need to manually load the image.

PIE's filters are divided into three tabs; General, Color and Presets. If any changes are made on one tab, you must click "**Apply**" in order to change tabs without losing your edit. At the top of the interface is an image histogram presenting a visual representation of the red, blue and green color channels.

Histogram - The histogram is there to help you analyze the distribution of each color channel in your image. The left hand side of the graph correlates with dark tones and the right side covers the light end of the spectrum. A histogram with higher values on the left side indicates



a darker image, while an image with high values on the right side illustrates a brighter (possibly overexposed) image.

Even though the histogram is meant to be an informational tool, it can sometimes help achieve image balance. A more balanced image typically has the majority of its graph values distributed near the center of the histogram.

Apply & Cancel - The bottom left corner of the UI holds the Apply, Cancel, and History buttons. When a slider is moved or a filter is selected, changes will be pre visualized on the image but won't actually be applied until the **"Apply"** button is clicked. If you want to undo any changes, prior to clicking the apply button you can simply click cancel to revert back to the previous applied state.

History - The history drop-down maintains a change-log and allows you undo changes to a precise point in the editing process. However once the **"Apply"** button is clicked, history is cleared and you will no longer be able to reverse changes using the **"History"** or **"Cancel"** buttons. In this case, you would need to close the file and reload an older version from the OOPR or manually from the file menu of the Podium Image Editor.

Zoom - The bar at the bottom of the UI controls the zoom. Slide the bar or click the arrows to manually zoom in and out, or use the best fit or true size options.

Tools - The Tools menu holds the remainder of PIE's editing options. The pointer tool is active by default, and does nothing if the image is clicked.

- **Dynamic zoom** will zoom in and out when you move the mouse up and down while holding the left mouse button.
- **The grab tool** will pan the image if it is zoomed in; hold the left mouse button and drag to move the image.
- **Crop Image** is particularly useful for reframing images or cropping out the info bar. Once selected, left click and drag across the screen to draw a rectangular box containing the portion of your image that you want to keep. Once drawn, you can move the crop-zone by left clicking and dragging, or you can discard by clicking outside the rectangle. When you are done, click the **apply** button.
- **Finally**, you can move an inserted background image to position it beneath a transparent .png render. This works just like the Grab tool.

When you are happy with the changes you've made to your render, don't forget to save

the image otherwise the changes will not be kept. You can do so using the file menu.

General tab

The first tab of the PIE holds the main selection of tools and filters available to you for quick and easy image modifications. These are very similar to the tools in other image manipulation software—if you already have a basic familiarity with Photoshop, Gimp, or Paint Shop Pro, you should intuitively understand how to operate the PIE.

Post-processing is particularly effective for adjusting lighting and colors. Appropriate lighting is a crucial aspect of good rendering. Though it can be difficult to achieve an exact result using Podium alone, it is easy to fine-tune an image to reach a desired look in PP. The standard workflow is to create an acceptable/natural level of brightness using real light sources in your SketchUp scene with Podium, and then adjusting the brightness to your personal taste using PP.

Tip: If a rendered image is too dark, it is very easy to lighten in post-processing, while an image that is too bright is much harder, if not impossible to adjust.

Therefore, it is usually a good idea to err on the darker side of your desired result. Create a slightly darker image in Podium, and then normalize it through post-processing if necessary.



Before: a Podium image, almost too dark to be used.



After: Using PP, levels were adjusted to add background and match color to exterior.

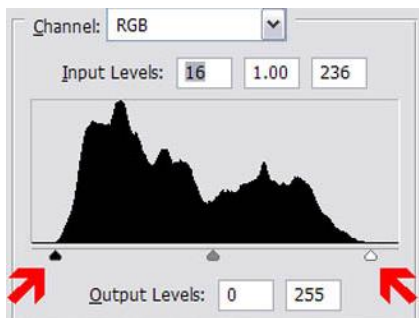


Example of an overblown image, far too bright to be fixed.

Levels

The levels tool is the best way to fine-tune the lighting in your render. The levels tool has three sliders that you can move to the left or right to adjust brightness levels. *Move the right slider to the left* to increase lighting, *drag the left slider to the right* to add depth to your image. The levels tool in PIE is located at the very top of the general tab.

The auto level option will suggest a higher contrast image by altering the levels sliders in conjunction with the brightness and contrast sliders below. If you are not quite happy with the automatic settings, you can modify the sliders to reach your desired result. You can also cancel auto levels with the cancel button.



If the channel graph indicates low values, the sliders can be centered without losing too much information. In these circumstances, the levels will often need to be adjusted.

Brightness and Contrast

The brightness slider allows you to easily dim or brighten your image, and the contrast slider lets you adjust the overall balance between light and dark values in a render. The brightness/contrast sliders can often be easier and quicker to use than the levels tool, but also offer less control (sometimes making it harder to reach your desired result). Levels are a more precise and effective way of modifying the lighting in your renders.

Moving the brightness control to the right will add more light. The more light you add, the less contrast your image will have—balance this by moving the contrast slider to the right. Be careful not to push your brightness and contrast values too far; abusing these controls can quickly make the image grainy and contribute to quality loss.

Blur and Sharpen

The blur slider will make an image look softer. Blur can be used very slightly to attenuate noise, but it will also soften the edges in your render.

The sharpen slider will crisp up contrasting edges, making fine details more clearly visible in your image. It will also bring out the grain (noise) in the render.

Vignetting

The Vignetting slider will darken or brighten the corners and periphery of your image to simulate vignetting effects from a real-world photographic lens. A negative value will make the perimeter of the image darker and a positive value will make it brighter.

Hue and Saturation

The hue slider shifts all the colors of an image uniformly, while saturation can boost or attenuate the colors in your image. If you want to make the image black and white, simply move the saturation slider all the way to the left.

Overlay

This filter is used to overlay another image on top of a render. It is typically used to overlay an edge/line render to give the finished image a sketchy, hand-drawn look. *Consult our [Line overlay tutorial](#) in the tips and tricks section of this guide.*

Background.

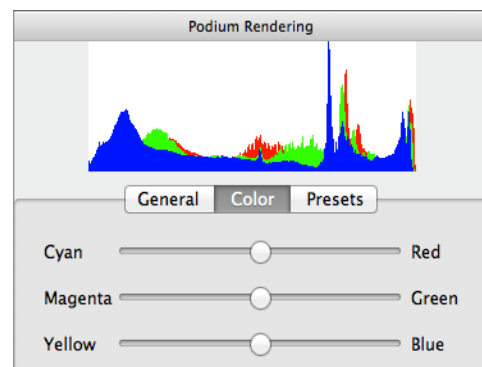
For this option to work, you will need to render using the transparent PNG option. Click on the “*Load Background*” button to import a background from Cadalog’s online image library, or from your computer. You can use the resize option to enlarge or reduce the image size, and the Move Background tool (CTRL+M) to alter its position.

Color balance

This is a tool you will find in many image editing packages. It is a great way to quickly make large-scale changes to the color of a render using RGB color pairs. Color balance lets you adjust each color channel separately, and affords far more control than simply using PIE’s hue slider.

There are three sliders, one for each RGB pair—*red/cyan*, *green/magenta*, and *yellow/blue*.

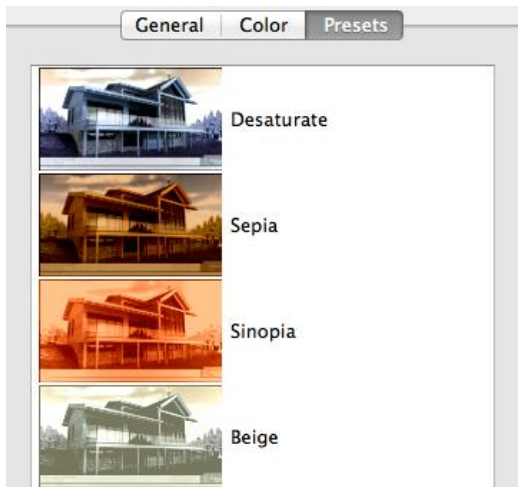
Moving the sliders away from the middle position will intensify the target color



throughout the entire image. If your image looks too green for example, simply move the green/magenta slider toward magenta until the render looks more balanced. Similarly, if your image is too blue (like many exterior renders), move the blue slider to the left to introduce a yellow tint. When you are done, *click “Apply.”*

Presets

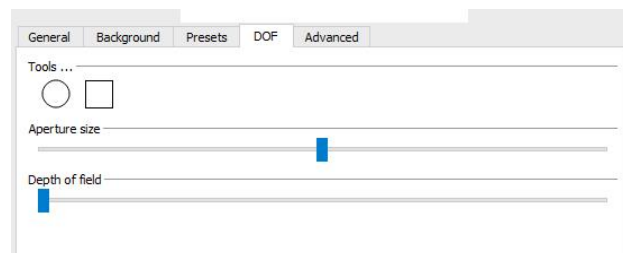
Presets are predefined filter sets that will apply a specific look to your render very quickly. Select a preset to preview it in PIE, and click the *apply* button when you are happy with the outcome.



There are a variety of tutorials on post-processing techniques that will help increase the quality of your images. Using PIE and other editing software, you can add depth, light rays, and other special effects. PP is an essential step in creating high quality images, and with practice it will save you valuable time and greatly increase the quality of your finished renders.

Depth of field (DOF)

The depth of field tab contains a post-process blurring tool to simulate photographic depth of field in your render.



- **Tools** - To apply depth of field to your image, click either the circle or square shape, and drag it onto your image. The blur tool will appear on your image with control points to change the size, shape, and placement of the camera blur.
- **Aperture size** - Controls the strength of the blur.

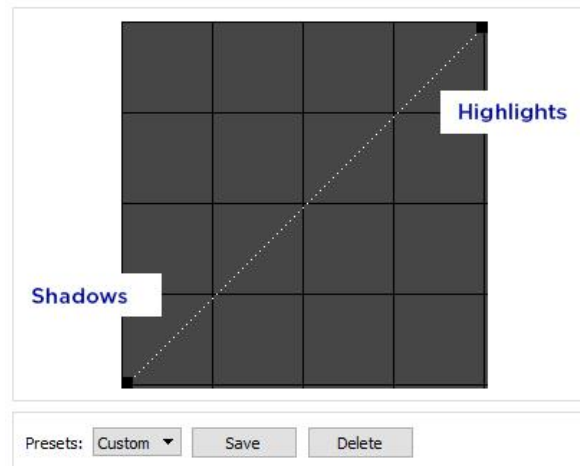
- **Depth of field** - Controls the softness/hardness of the edge of the blurred region. Move the slider to the right for a harder edge, or to the left for a softer falloff. Remember to click apply when you are finished.
- **Click apply when finished** - Click apply to finalize the depth of field. If you leave the tool without clicking 'apply' the blur effect will not be saved.

Advanced Tab

Curves

The curves tool gives users a more precise means to adjust brightness, contrast, and value distribution in an image. Curves allows you to target specific regions of a render based on the region of the graph you are manipulating.

Click anywhere on the curve to place a control point and then drag it up or down to increase/decrease the brightness of the image at that point on the curve. The curve itself represents the value range of the image: everything to the left of the centerpoint corresponds to parts of the image that are in shadow, while the right half of the curve controls the brightness of your highlights.



More info: <http://suplugins.com/podium/help/pie-whatsnew.php#curves>

Tips and Tricks

Illuminating Interior Scenes

Sunlight produces higher quality images and renders faster than artificial lighting. Therefore, sunlight should be your primary light source, even in most interior lighting situations. Make openings as large as possible and orient the sun so that it is properly targeted into the room. Don't hesitate to remove or hide a wall outside of the camera's view if it helps you produce a better image.

Change the orientation of the sun so that it creates more ambient light in the interior. If you use the SketchUp sun, don't forget to adjust the "Intensity" and "Exposure" settings using the sliders found in the "Environment" tab. Make sure that the physical sky is activated when using this feature.

To create more light in a room without much exposure to the sun, set the intensity and exposure sliders to full power. These techniques are easy to apply and result in quick renderings.

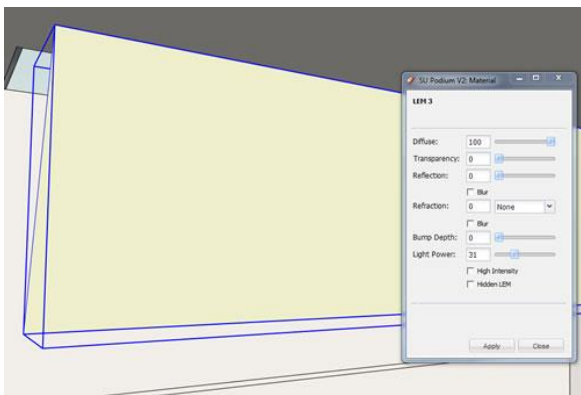
In most cases, sunlight used effectively will produce enough light to properly illuminate an interior setting, so it is generally recommended that you use the sun as your primary light source.



Example of sun and sky with "Intensity/Exposure" at 30%.

If sunlight alone does not create adequate lighting, you can use a light emitting material (LEM) behind the SketchUp camera to create a uniform interior light distribution. The LEM method is much easier to execute than adding and adjusting multiple point lights, and is the recommended workflow for adding ambient light to a model. You can also use LEMs to replace your windows and increase the amount of light in your scene. However, overuse of LEMs can create noise in your scene, so be wary when using the “High Intensity” option. It is better to increase the LEM material face size and reduce its strength.

Unlike SU Podium 1.x, *Podium V2 calculates LEMs faster than Omni lights*, so we strongly recommend that you use them.



LEM behind the Camera



Rendering with LEMs behind the windows and with several lights. Rendering with Interior QMC 1.0, reduced to 3x original size.

Don't forget to use the SU Podium Browser.

For the sake of realism, you should always consider using light fixtures when designing an interior scene, even if the scene is a daylight setting. You can turn off the omni lights in the light fixtures by using the *“Dynamic Options”* settings in SketchUp.

If you are working with a nighttime setting, you can use Browser fixtures to create most of your lighting. The SU Podium Browser lights are calibrated to function realistically. Just as a single 60-watt bulb does not sufficiently illuminate an entire room, a single SU Podium Browser light fixture will not produce enough light to illuminate an entire render.

It is essential to use realistic light sources in order to obtain high quality results. The sunken light fixtures are particularly useful. As mentioned previously, placing an LEM light behind the camera is always a viable option to bring additional illumination into the scene. However, omni lights can be quite useful in interior, nighttime settings.

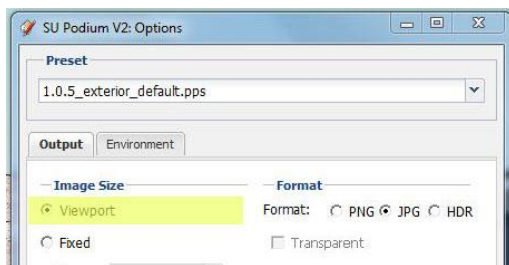
Tip: Remember, you can change the color of LEMs and Omni-lights. For example, a pale yellow will give your scene a warm, incandescent glow.

Line overlay

Superimposing lines over a rendered scene is a very fast and effective method to create a stylized or artistic final image. When you are having difficulties achieving photo-realism, it is often better to style your render as an abstract or artistic image than to present something that aims for realism but falls short. There are two main ways to create a line overlay; one quicker and one more accurate. Let's begin by exploring the latter:

SketchUp export technique

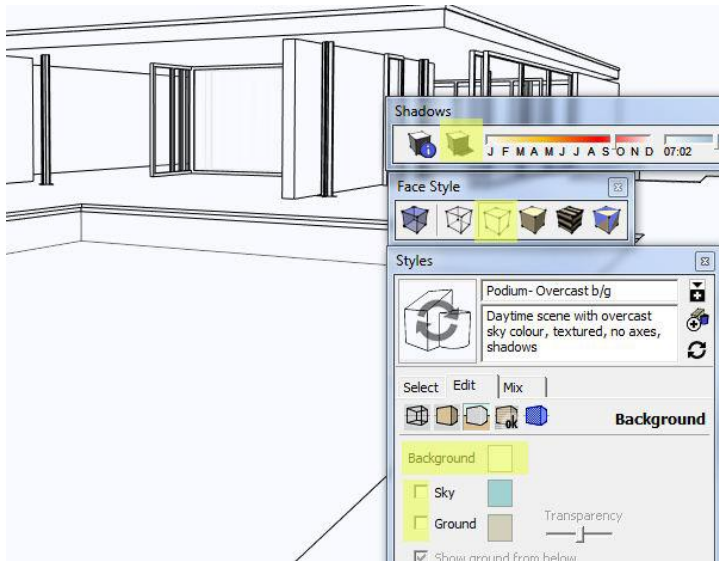
First, render the SketchUp scene using the “Viewport” resolution setting in Podium.



In order for lines to overlap correctly, you must keep the same view as your rendered image. Next, using the *same model and camera view*, create a SketchUp image without

rendering it in Podium. To do this, switch to a white SketchUp background without sky, ground, or shadows. A fast way to accomplish this is to go to *SketchUp Styles* and in the *Select tab* choose *Default SketchUp styles*. Then choose the “*Hidden Line*” style. Use the Edit tab to turn off Sky and Ground. Make sure you disable shadows.

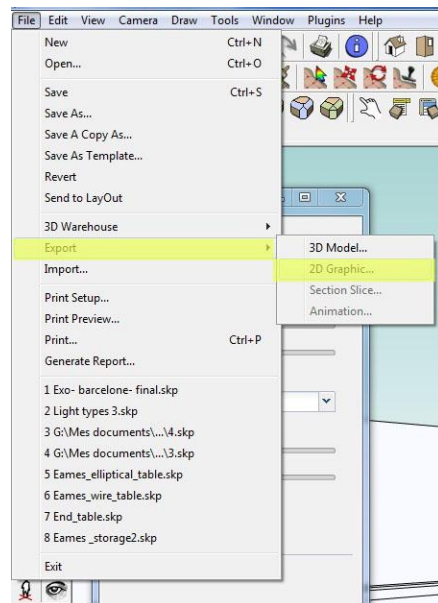
You can also use the Styles tool bar and select the “Hidden” icon.

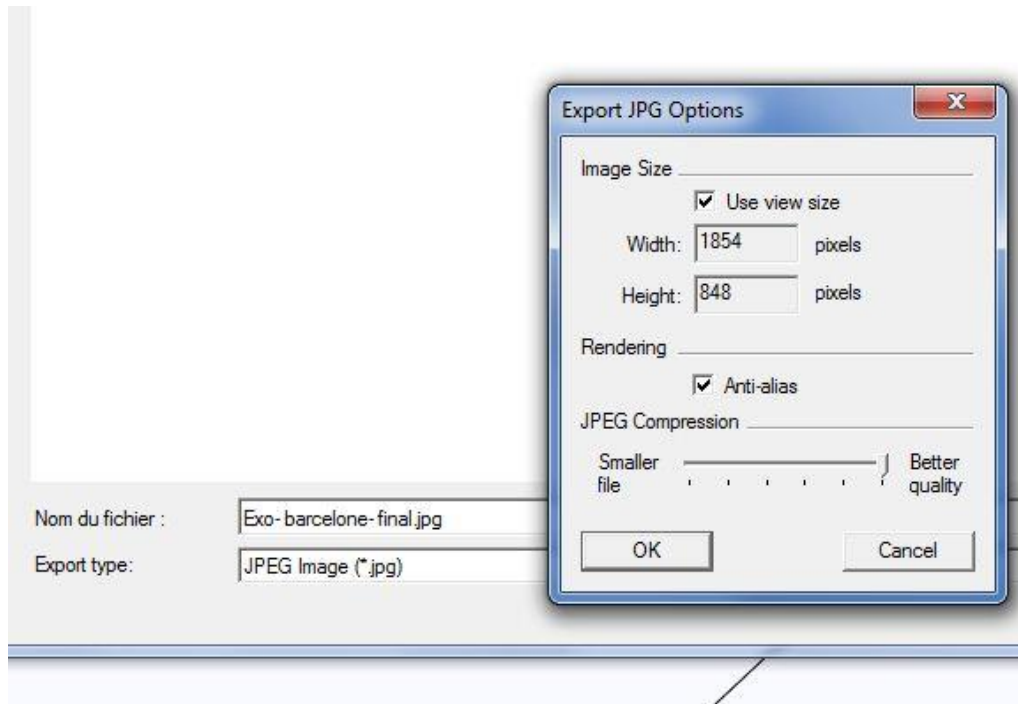


To export this scene to a 2D graphic format use the following path:

File ➡ Export Image ➡ 2D Graphic

Choose an image format such as .jpg or .png and make sure that anti-aliasing is checked in the Options dialog box so that your lines are crisp and well defined.





After exporting the SketchUp image, load the render in the Podium Image editor. In the overlay section, under the general tab select “*Load Overlay*” and pick the exported SketchUp image that you created. Then, using the overlay slider, adjust the opacity of the imported image. If you are using an external image editor such as Photoshop, you may have other blending modes available like “multiply” which will add the lines over your base image while negating the white background. You can also experiment with different SketchUp styles to achieve a wide range of artistic styles with your renders.

Once you have finished blending the two images crop the image to the size you want.



Original rendering



Final image, showing level adjustments, multiply blend and an added diffuse glow. Done with Photoshop.

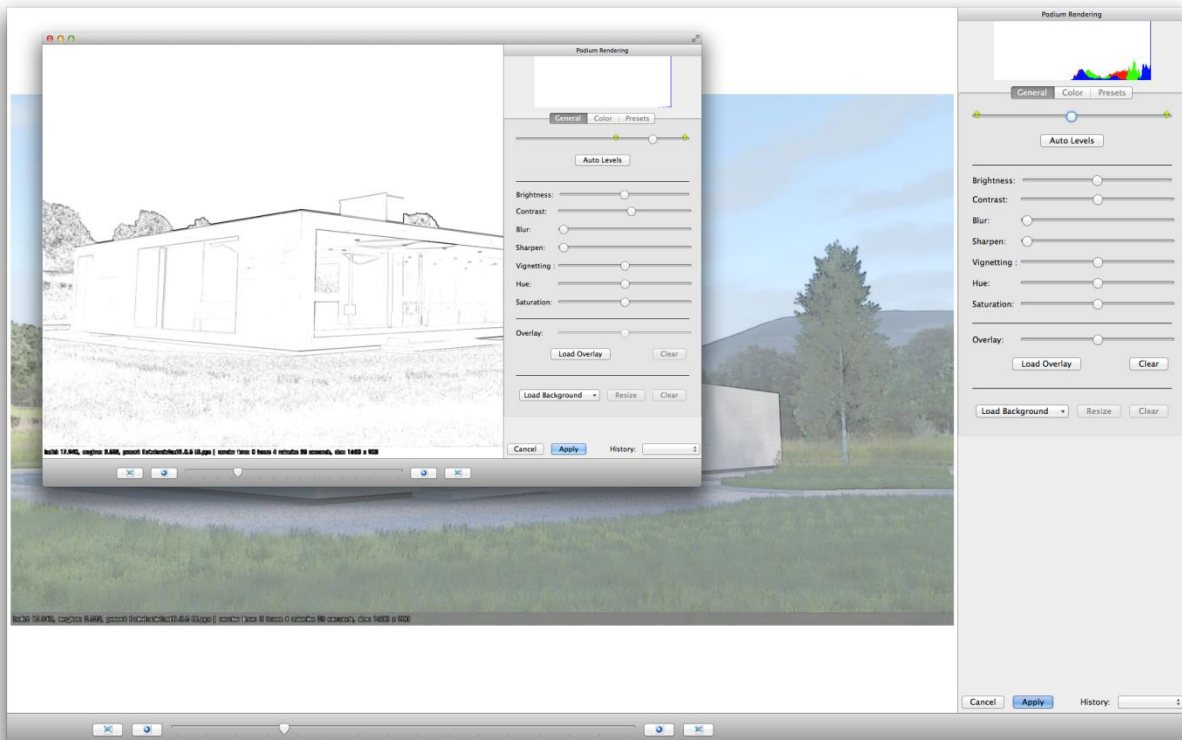
Pencil filter technique

***Note:** Even if this method does not produce a true line overlay like the previous technique, its flexibility and ease of use makes it very useful.*

Instead of a SketchUp image export, we will use an overlay from one of Podium Image Editor's built-in filters. The biggest advantage here is that you can use any render size or aspect ratio you see fit, rather than the viewport size. Additionally, you will not have to re-render your image if you decide to produce a line overlay at a later time.

Load your render into the Podium image editor and head over to the preset tab. Scroll down, select the **Pencil Filter** and click apply. If you click back to the General tab you can adjust the number of visible lines with the levels tool. Autolevels, along with the brightness and contrast sliders will help you settle on an appropriate amount of lines for your overlay layer. For best results, lines should be dark and clear against the white background. The sharpen and blur filters can also alter the look of the lines, so be sure to experiment with different settings until you find something you like.

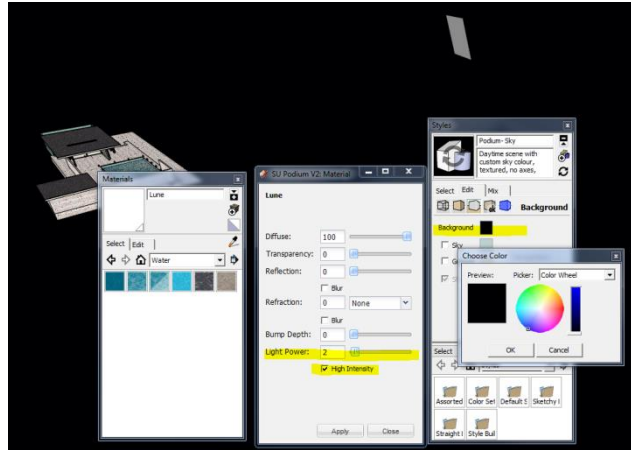
When you are done, save the image using the file menu and re-load the original render with the OOPR shortcut, through the PIE file menu, or revert to the original state with the history pull-down menu. Click on the **Load Overlay** button under the general tab, and adjust the opacity with the overlay slider.



Night Rendering

One method to render night scenes is to position a face in the sky, assign a color to it, and apply LEM properties to the color.

Use a black background style or color in SketchUp and check *High Intensity* for the LEM. Position the face so that the pool reflects its light. The overall tone will be determined by the color of the background.



Make sure Podium Physical Sky is turned off, turn on Podium's transparency option, and render to .PNG. Using an image editor, you will then be able to add your own night background image such as this starry night sky:



Night scene image created using the settings described above.

Parallel Projections for Elevation Plans

Podium supports SketchUp's parallel projections, which can be found in the SketchUp Camera menu.

Correct Level of Detail

In order to avoid delays and increased rendering time, it is important to pay attention to the level of detail in your scene. If the detail in your scene is too fine, the complexity of the design may cause rendering errors (especially if you are rendering on low-spec hardware). Before you begin the rendering process, it is important to determine the focus and point of view of your scene.

Here are several points that will help guide you:

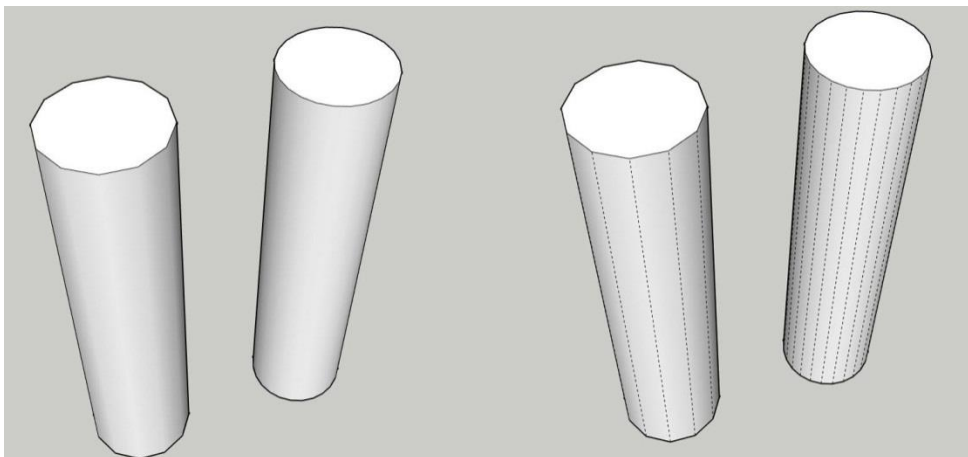
Model Only What You See for Rendering

It is highly recommended that you decide which views you want to present at the beginning of your project. By focusing only on what will be seen or shown, you will decrease rendering time and minimize file sizes. For example, it is a good idea to give extreme detail to only a few walls of a building from an outside perspective. For superior results, walls and floors that are not visible or will not be shown should be modeled with much less detail.

Cylinders and Small Details

When you are modeling cylinders in SketchUp, they will have 24 faces by default.

The number of polygons in your scene can dramatically increase when using cylinders with more sides than necessary (especially with repeating cylinders as in a fence or railing). If you are unable to see the profile of a cylindrical shape when rendering, reduce the number of sides as much as possible, or consider replacing cylinders with prisms. This example is also applicable to any other imperceptible details in your final image, and will save you a lot of time during the final rendering process.



Grouping or creating components out of SketchUp geometry has no impact on rendering time.

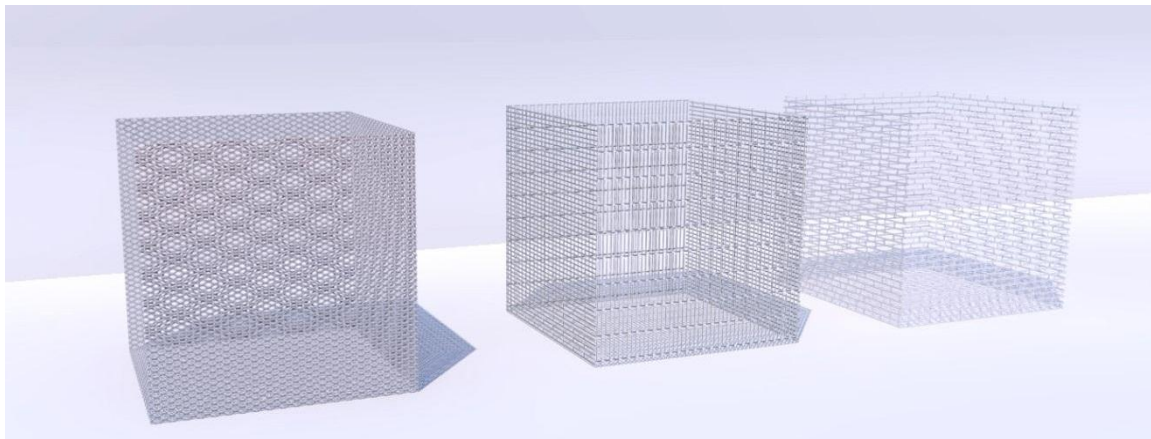
All geometry must be analyzed by Podium; even components on hidden layers will be analyzed despite their invisibility in the final image. It is very important to model your image efficiently, because the complexity of your modeling will determine the time required for geometric analysis. In SU Podium this analysis stage is referred to as “Processing Scene” in the OOPR. Highly complex geometry requires longer processing times, and in some cases this stage may even take longer than ray-tracing.

Texture vs. Model

Whenever possible, we recommend that you use textures to convey fine detail rather than putting it into the model itself. This method is more flexible and minimizes file sizes and render times. For example, it is counterproductive to model every panel in a floor when a texture can convey that detail more efficiently. If you’re unable to find a texture, you can create a tiling texture in an image editing software program such as Photoshop, and then use bump mapping to simulate seams or joints between panels.

In order to properly render metal siding or perforated materials, you should also use the above technique. If you model this kind of detail, geometry processing will be very slow even in small scenes, and can lead to errors or crashes with large complicated models. You can use materials, textures, or transparencies in .PNG to simulate metal siding or perforation. Some materials in the SU Podium Browser are useful for this purpose. Otherwise, we suggest that you draw an image in an editor, make appropriate areas transparent, and then save the image in a format that preserves transparency (PNG).

Mesh materials in SU Podium Browser



Reflection of Environment

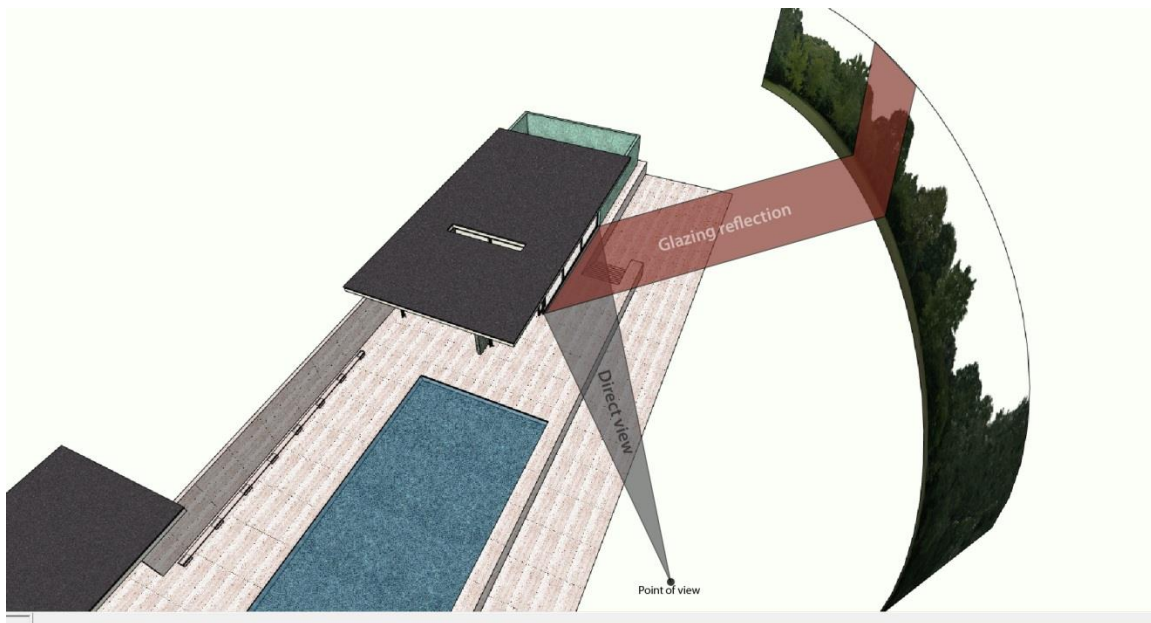
When you have reflective materials in your scene, reflections of the environment can create a very realistic effect. Depending on both context and perspective, it is very common for low windows to reflect the horizon and surroundings, while high windows reflect the sky. This is also applicable when creating a scene where only one side of the room is visible. Consider the following options for bringing realistic reflections into your scene:

Modeling an exterior environment

This method allows your interior renders to pick up reflections from the exterior environment. It can increase file size, but it is very realistic and is often your best option.

Reflection Plane

This technique involves inserting an image to be reflected, such as a line of trees or the face of a building. This method is very fast and gives great results.



If you choose to directly insert an image, don't forget to explode it to convert the image to textures.

Chrome

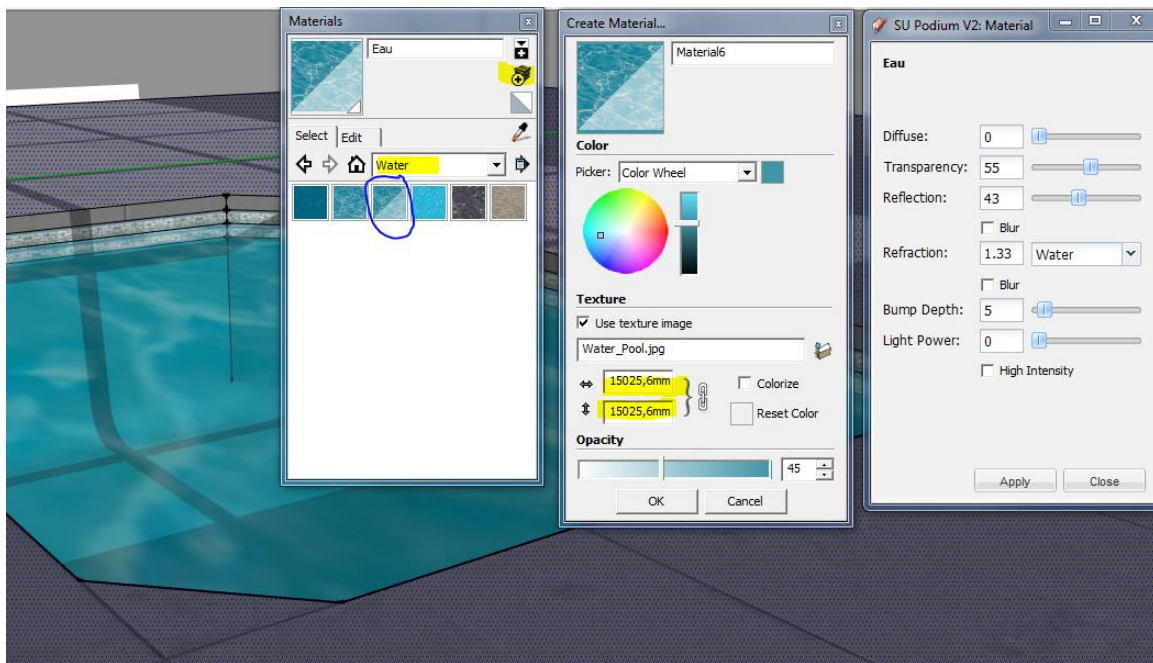
To create a chrome effect, simply apply a dark gray material to your model and set it at 100% reflection. Also, look in the SU Podium Browser for ready-made chrome materials.



Water

SU Podium offers a simple yet effective method for simulating water realistically. Please note that pre-configured water materials are available in the Podium Browser, however if you'd like to create your own please use the following procedure:

1. Use the SketchUp water texture and scale it to create waves.
2. Give it about 60% transparency and 40% reflection.
3. Add a bump value between 0 and 10 to determine wave height. If your waves are too high, they will not be realistic. A value of 5 was used in these examples.
4. You can increase refraction to create a more realistic effect.



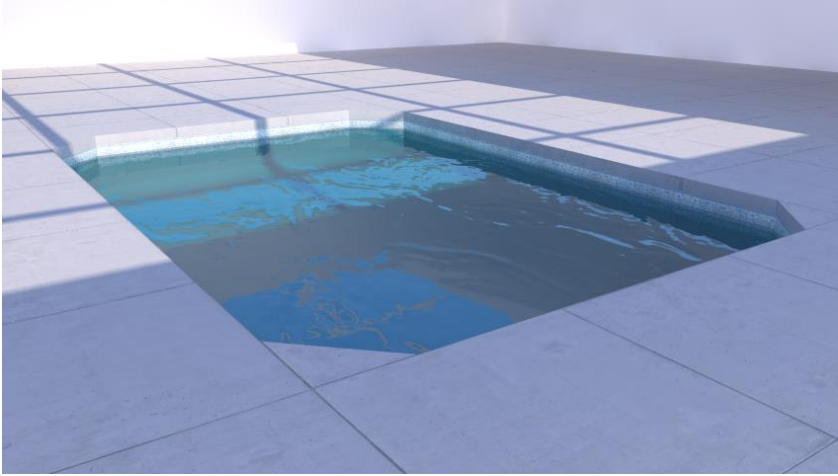
5. To simulate caustic reflections commonly seen at the bottom of a pool of water, the “Caustic” option is available to you. You must determine a refraction value when using this method.

Options

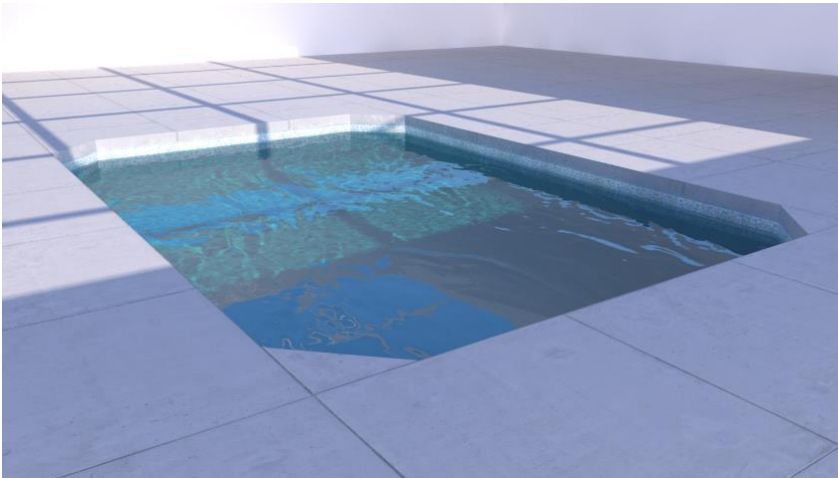
☐ Soft Omni Lights (Slower)

☒ Caustics

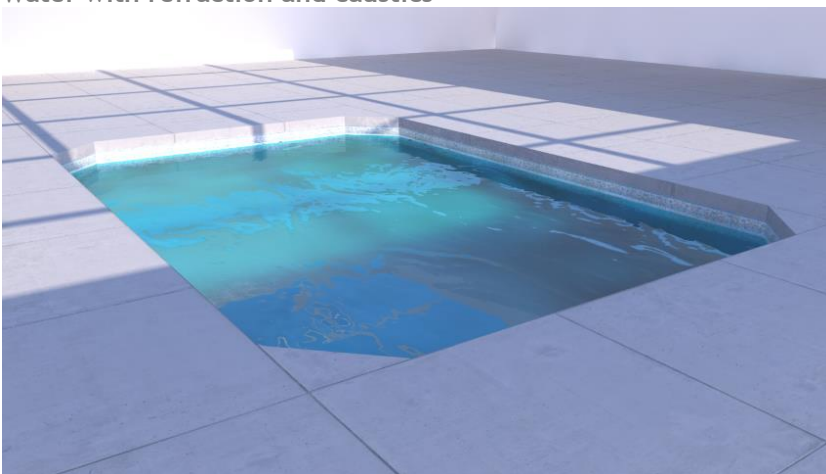
☐ Clay



Water with refraction



Water with refraction and caustics



Turbulent water, created through refractive blur

Framing an Image

Especially with exterior views, it is recommended that you adjust the view from the ground level and orient the SketchUp camera (your view) towards the sky. By revealing more sky, you give your scene a more expansive feel, thereby improving the overall image composition. The rule of thirds is a useful framework to ensure that your focal point is not centered, and occupies approximately one or two thirds of the entire image.



This view is improperly framed; the perspective is too high, pointing towards the ground, with no extra space around the focal point. Here, the focal point takes up all of the space in the image.



This view is properly framed; it is at eye level and points to the sky, leaving plenty of space around the focal point.

Computer Hardware

Before upgrading or purchasing a new computer, there are two things to consider in regards to Podium:

The processor (CPU) makes all of the calculations. The more powerful this is, the faster the rendering process will be. The more cores you have the better.

Memory (RAM) preserves information during the rendering process. Although memory has no effect on the speed of rendering, if there is not enough memory to process your model, your computer can crash during the rendering process.

Make sure that you have plenty of memory in order to create images from large models. A 64-bit operating system is strongly recommended, as it will be able to take advantage of far more memory than the 32-bit limit of 4 gigabytes. Podium is available for 64-bit Windows Vista, 7, 8 and all Mac OS-X versions 10.6.x and above.

Please note: The graphics card (GPU) has no effect on rendering in SU Podium. SketchUp requires a GPU of average quality in order to properly operate, however expensive graphics cards that are designed for computer-aided drafting will not help you when using SketchUp and Podium.

Important Things to Remember

Here are several general rules that will make the rendering process easier for you:

- It does not help to add elements such as reflection, refraction, or bump mapping to parts of the model that are not visible in the rendered image. Doing this will simply increase the rendering time.
- The above concept also applies to geometry. The more geometrically complex your scene is, the more time it will take to render. Be wary of imported components, as they are sometimes too large or incompatible with SketchUp and Podium. This can cause serious problems when rendering or even cause SketchUp to crash.
- Complete test renders at lower resolutions and with lower quality presets. Only switch to a high quality preset and render at full resolution after you're happy with the lower resolution result. To test details, target specific elements and textures and then render these as low-resolution close-ups.
- Podium will create a rendered image of only what is visible in the SketchUp viewport. However, it calculates everything in the SketchUp model whether or not you are using hidden layers. We recommend that you make use of hidden layers, but be aware, hidden layers will not save you rendering time.
- Do not use colors that are too saturated. They will contrast heavily against surrounding surfaces, making them seem unrealistic. Never use absolute white or black.
- Pay attention to the hour and date of your SketchUp model. Depending on environment conditions, a mid-day summer sun can create a washed-out effect, making some details invisible. To fix this, experiment with the sun's intensity settings.
- The presets have many uses. They determine the brightness of the sky, color, quality, loading time, and many other parameters that can greatly enhance an image. Do not assume that the *exterior_high* and *interior_high* presets will automatically create higher quality renderings. These two presets have higher anti-aliasing which will make edges appear very smooth but they do not change the overall quality. Each preset functions uniquely within an image.
- The [Podium forum](#) is a very useful tool at your disposal.

Problems and Solutions

Imperfections/ Blotches

If you notice any imperfections, blotches, pockets of light, or inconsistencies in your image, you should increase the quality of the preset. The *QMC* and *High* presets are designed to help eliminate these kinds of problems, which occur mainly in corners with pale light or in images that have very low geometric complexity. Be aware that QMC and High will both increase your render time by a significant amount.



Default Interior

QMC Interior

Crashing

It is possible that OOPR may suddenly quit during your rendering. Usually, this is caused by a lack of system RAM/memory. During the calculation period, Podium saves information, so if too much is stored, the rendering process stops completely. This can easily happen when rendering large SketchUp models on computers without enough memory.

You can make your file smaller by reducing the number of polygons, by removing any element or detail that is not visible, and by reducing the size of high resolution textures. Increasing your system RAM is an option as well. If you are using Windows, we highly recommend using a 64-bit version of the operating system, which allows you to utilize more than 4GB of RAM. (Mac OS-X is a 64 bit operating system.)

Texture has moved in the rendered image

If a texture appears to have shifted in the rendered image compared to its position in the SketchUp model, you can fix the problem by reapplying the texture to the SketchUp face. Occasionally, applying a texture to the reverse side of a face (the blue side is the reverse or back side) can increase the likelihood of this problem.

Distortion of Textures/Material

If a texture becomes completely distorted or black when rendered, it is likely that the texture or material is applied to a group and not to a face. Sometimes Podium will distort textures applied to a group, or render them as a solid black value. Exploding the group in question will usually solve this. Exploding will force SketchUp to paint the group's material to each face in the group.

Blank/Impossibly Fast Rendering

If Podium is rendering extremely quickly and is producing a blank image, make sure that "Geometry Caching" is not selected. Sometimes, Geometry Caching can "blank-out" images.

Missing objects

If an object or geometry does not appear in your rendered image, make sure that all layers, *especially layer 0*, are turned on. If the object in question is on two layers and one of the layers is hidden, the object will not be visible in the rendered image.

Poor LEM Illumination

If LEM is not working as it should, it is possible that the material you are working with has been applied to the back side or reverse side of a face. To fix this, reverse the surface and reapply the material.

File Saved Improperly

Sometimes, during a long period of use, SketchUp will not create .skb backup files as it normally does. If this happens, you will notice a loss of information the next time you open your file. Rename the latest .skb file with .skp and nothing will be lost.

Black Texture

There are a few reasons why Podium will render materials or textures black. One reason, discussed above, occurs when Podium does not properly recognize materials that are assigned to a group instead of a face. Explode the group so that materials get assigned to individual faces in the group. You can regroup after exploding.

Another reason is because the material has both reflections and LEM properties simultaneously assigned to it. This will often result in black textures. Use *Podium Tools* ➔ *Analyse Model* to detect this situation.

Check the FAQ page on www.suplugins.com periodically for additional black material/texture solutions.

OOPR Does Not Appear

If you cannot find OOPR, it is possible that a firewall or antivirus is blocking it. Temporarily disable all software of this type and try again. Allow OOPR.exe in your firewall or antivirus exceptions list.

Failed Rendering or Inconsistent Results

Before categorizing errors as a “bug,” first reboot your computer and restart SketchUp. Rebooting can often be a simple solution when you are having problems. You can also copy the contents of your design to a new SketchUp file and try re-rendering. These are both viable solutions if no other methods seem to work.

Documentation and Extra Help

The SU Podium website <http://www.suplugins.com> offers documentation, tutorials, and videos to help you get the most out of the software.

You can also [subscribe](#) to the SUPlugins e-news mailing list for periodic updates on new tips, features, and workflow explanations. Additionally, the [Podium forum](#) is a great place to get advice about any issues that you may be having.

Examples of Scene Configuration

The last section of this guide explains the various parameters used in the given examples. Use this as a guide for material properties and global settings. Please note that many of these models can already be found in the SU Podium Browser, along with most of the textures and Podium materials pictured below. There are no render presets in the SU Podium Browser.

Scene 1: Kitchen



Global Configuration:

Preset: Interior QMC 1.0 - 3x size reduction

Background: Physical sky

Sky: Intensity/Exposure 100%

Lighting: Sunlight only

Materials:

	Source	D	T	R	Advanced
Walls	SU Color: gray	100	0	0	
Wood	Arroway	85	0	15	Blurred Reflection
Countertop	SU Color: black	85	0	15	
Laminate	SU Color: black	85	0	15	Blurred Reflection
Chrome (sink)	SU Color: black	0	0	100	
Ceramic	PDM Browser	80	0	20	Bump: 5
Stainless Steel	PDM Browser	70	0	30	Blurred Reflection

D: Diffusion, T: Transparency, R: Reflection

Scene 2: Bedroom



Global Configuration:

Preset: Interior QMC 1.0 - 3x size reduction

Background: Physical sky

Sky: Intensity/Exposure 100%

Lighting: Sunlight and LEM behind camera

Materials:

	Source	D	T	R	Advanced
Walls	SU Color: light gray	100	0	0	
Hardwood Floor	Arroway	60	0	40	Blurred Reflection
Glass	SU Color: light gray	5	80	15	
Frosted glass	SU Color: light gray	55	30	15	Blurred Reflection
Blankets	SU Colors	100	0	0	
Concrete Walls	Arroway	98	0	2	Blurred Reflection, Bump 20
Concrete Slab	Arroway	80	0	20	Blurred Reflection
Hand rail and door frames	SU Color: black	85	0	15	Blurred Reflection

D: Diffusion, T: Transparency, R: Reflection

Scene 3: Integration with an exterior photo



Global Configuration:

Preset: Exterior 1.0

Background: Physical sky

Sky: Intensity/Exposure 100%

Lighting: Sunlight matching the original lighting of photo

It is important to model the exterior surroundings of the main model when doing photo-matches. This way you will get a more realistic simulation. In this case, a simple green color was used to simulate the lighting and color below the building. It is



important that your viewpoint does not change. A different viewpoint or a slightly different camera angle can make your final image very unrealistic.

Materials:

	Source	D	T	R	Advanced
Wood	Arroway	100	0	0	
Glass	SU Color: light gray	5	80	15	
Hand rail & door frames	SU Color: gray	70	0	30	Blurred Reflection

D: Diffusion, T: Transparency, R: Reflection

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