

ENSCAPE TUTORIAL:

Using Materialize to create more realistic materials.

Programs used:

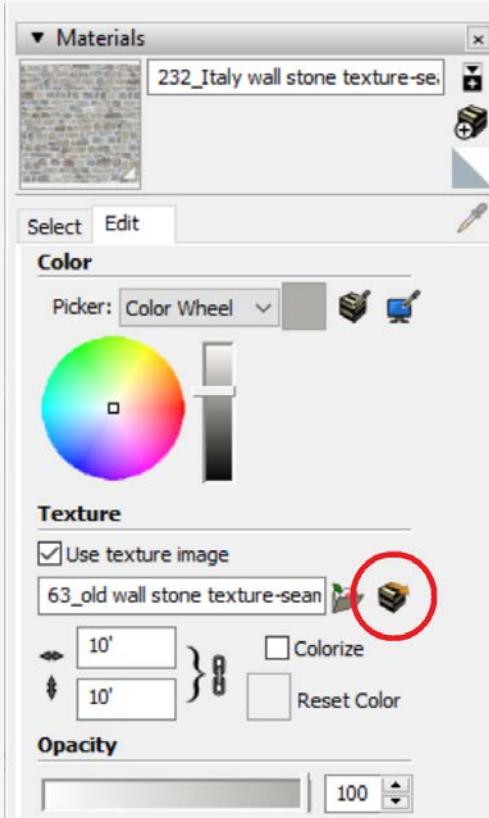
- Materialize (Free, no-install program)
 - <http://boundingboxsoftware.com/materialize/index.php>
- Sketchup



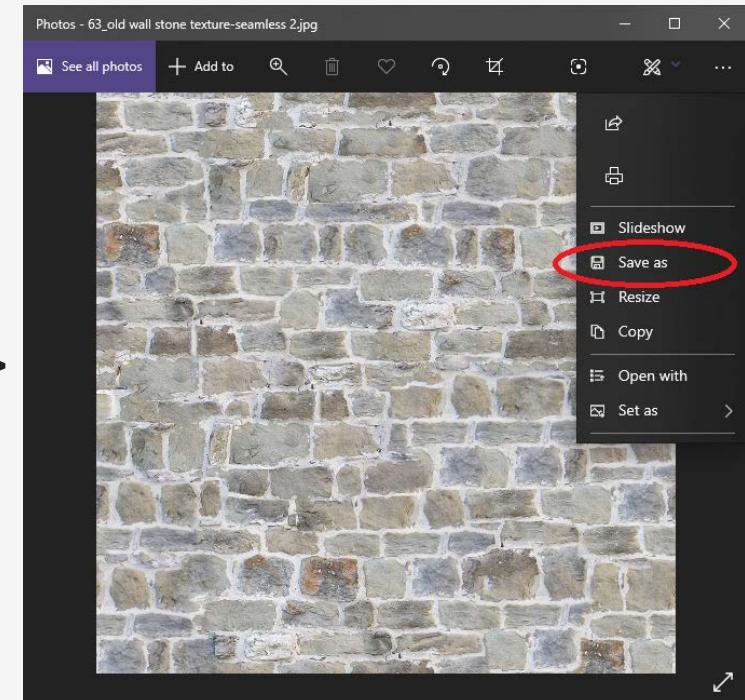
Find the material you want to use.

I will be using materials from Sketchup, but any texture will work.

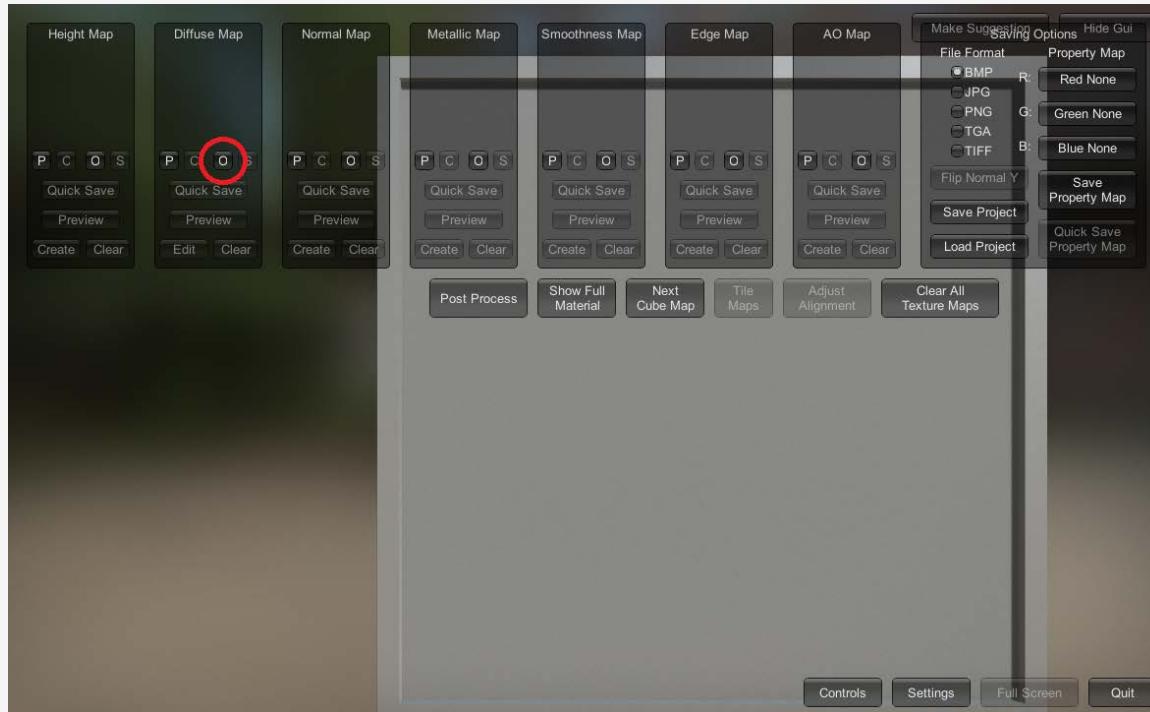
Open your Sketchup model and select the material you want to modify using the material dropper. Open that Material and save it out somewhere in your project directory.



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Open the material in Materialize



Open Materialize and set the material you just saved as the Diffuse Map. Then, select Height Map > Create.

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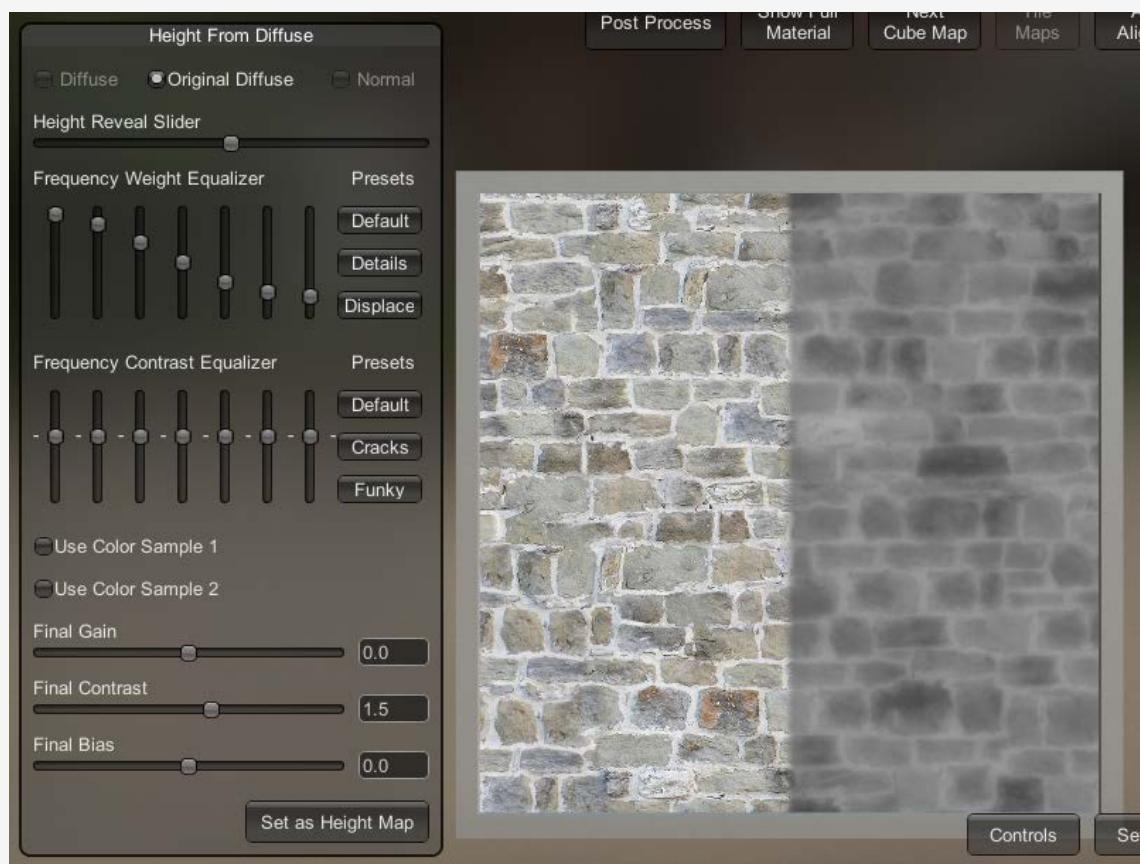


Manipulate the heightmap

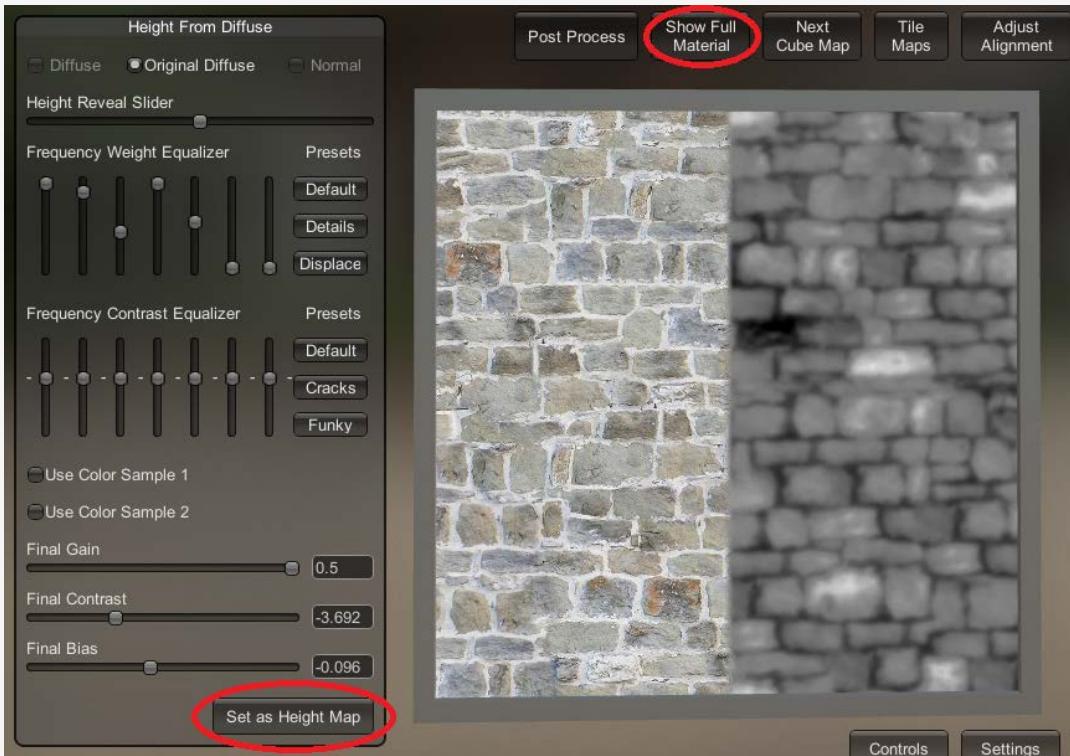
Most of this will come down to moving sliders and checking the outcome. A few important things to remember:

- *The Frequency Weight Equalizers adjust just levels of detail. The leftmost slider is large details, with the rightmost being small details. (See slides 13-14 for examples)*
- *The Frequency Contrast Equalizer will adjust how much weight is given to each layer of detail.*
- *Smoker surfaces will have fewer color changes to the heightmap (in this case, If the stones were smooth you'd want the stones to look like blobs of a single color with bands running between them to represent the grout.)*
- *The Final Gain can be used to invert the colors. In this case, the grout should be deeper in than the stone, so it needs to be darker while the stones need to be lighter.*
- *To view how your heightmap is looking, select Show Full Material*

Heightmaps are greyscale images. The lighter a pixel is the higher it is, darker is lower. These are the texture that Enscape uses to calculate shadows on surfaces



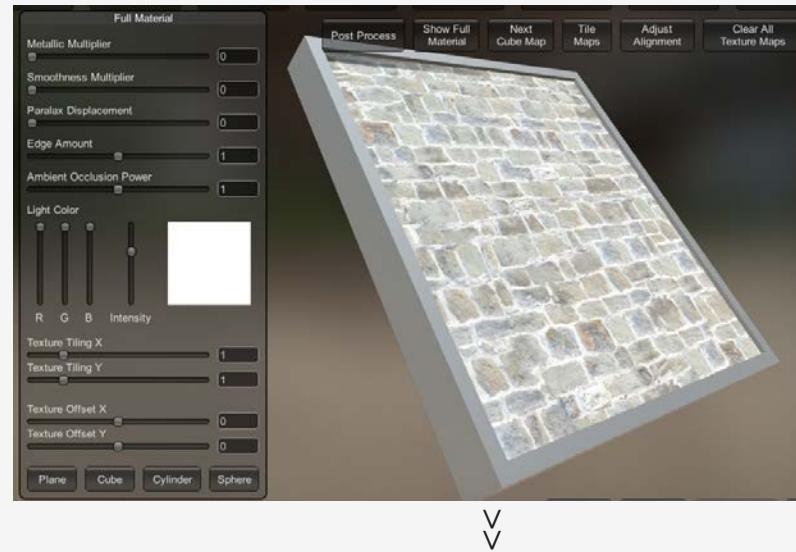
Manipulate the heightmap



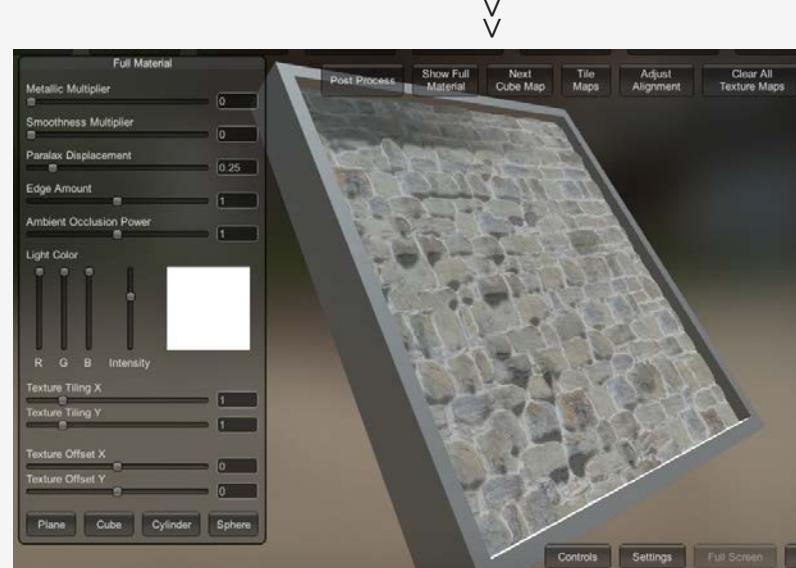
Note the changes to the Frequency Weight Equalizers to better-isolate the individual stones.
The final contrast is also set to a negative to invert the colors.

- When done, select “Set as Height Map”, then “Show Full Material” to view the map’s effect in 3D.

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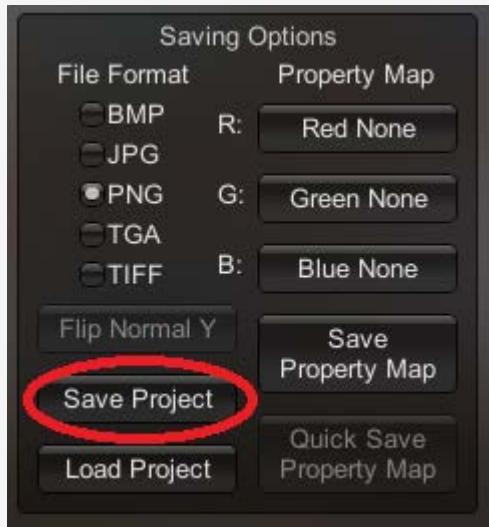


Parallax Displacement represents how strong the bump map is in the preview



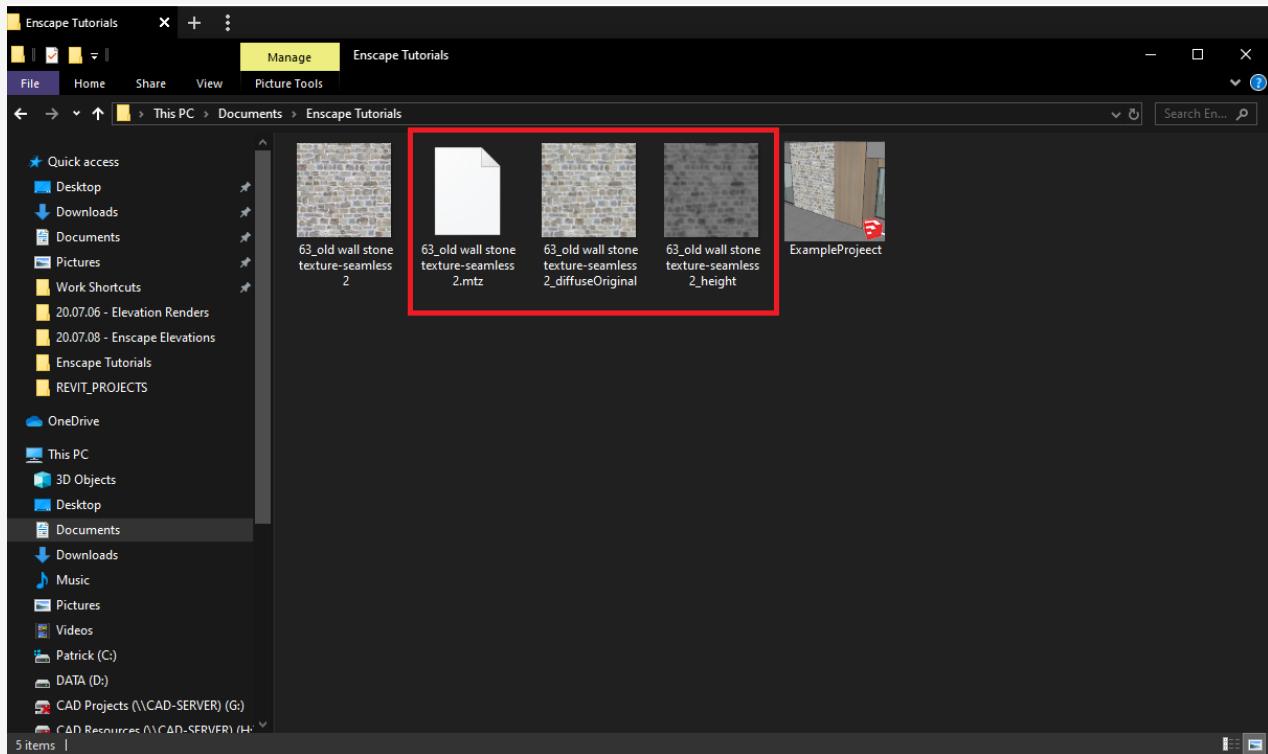
This bump map is exaggerated for effect.

Export for Sketchup / Revit



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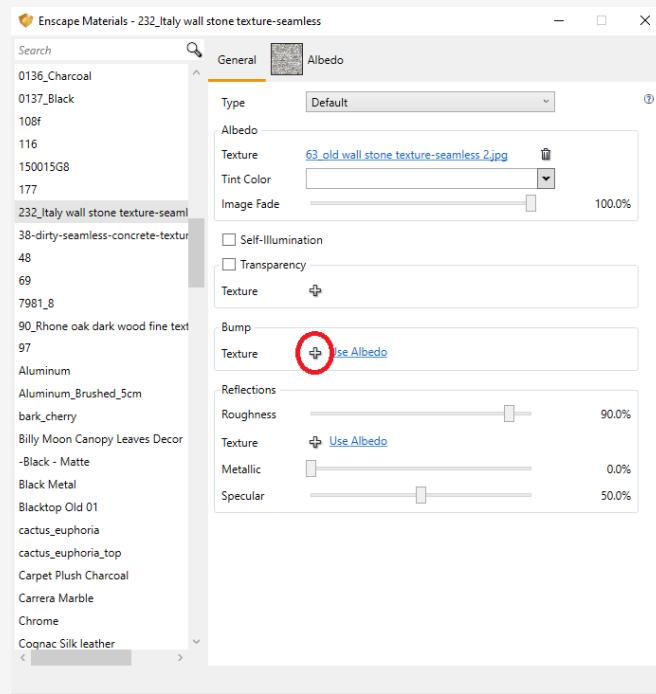
Once you've gotten the heightmap where you want it, select "Save Project" and save it to your project directory. This will create three new files (or more if you've created other maps)



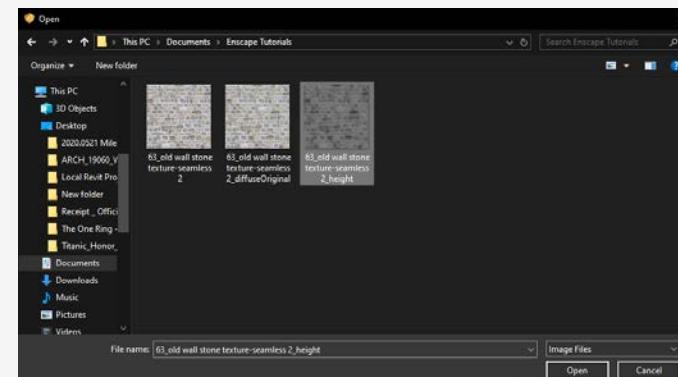
Setup material in Sketchup



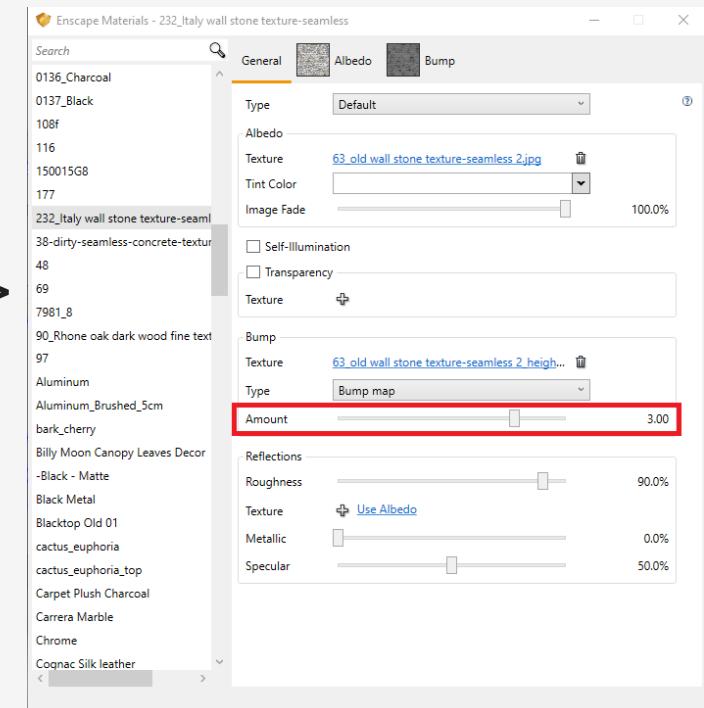
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In Sketchup, open the Enscape material editor and select the material you're modifying. Hit the "+" under Bump, and select your heightmap. Once that's done you can modify the strength of the bump with the "Amount" slider.

Plain Material

Here is what the material looks like without a heightmap



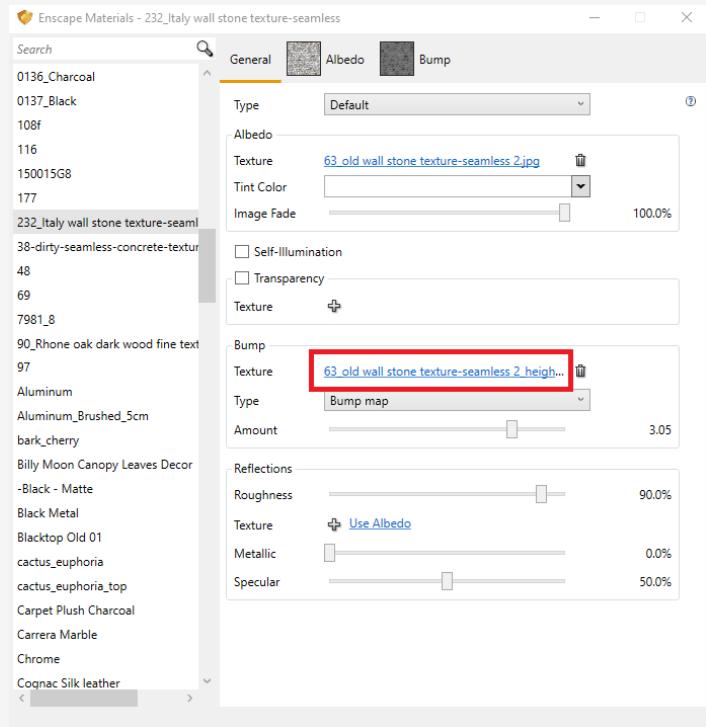
Troubleshooting

When you load in the map from slide 8 and adjust its strength, you see that the map is inverted and the stones are sunk into the wall. (I didn't invert this map as shown on slide 6)

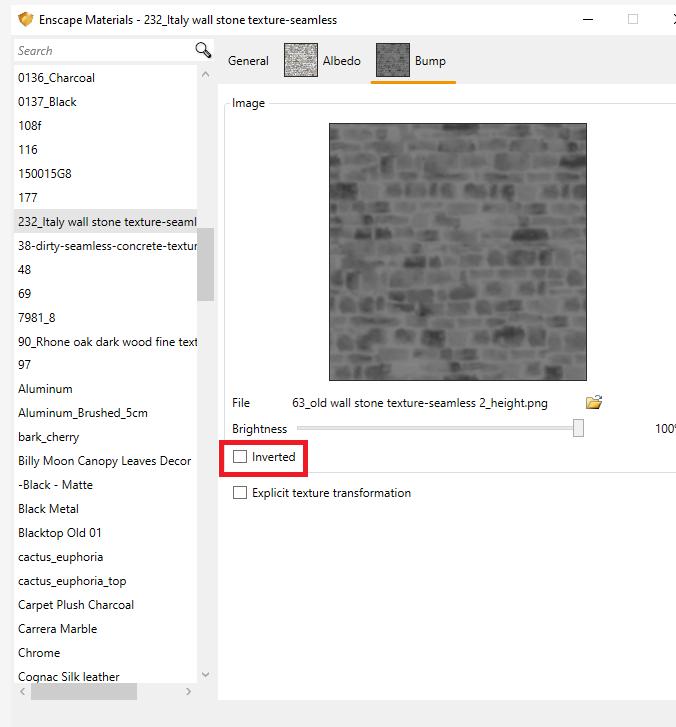


Troubleshooting

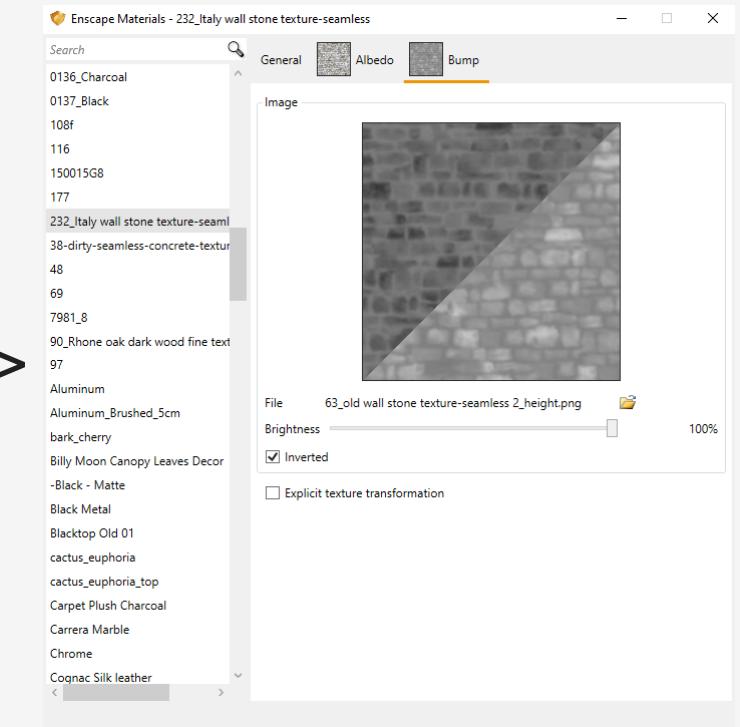
There are two ways to fix this. You can invert the heightmap, or select a negative strength for "Amount."



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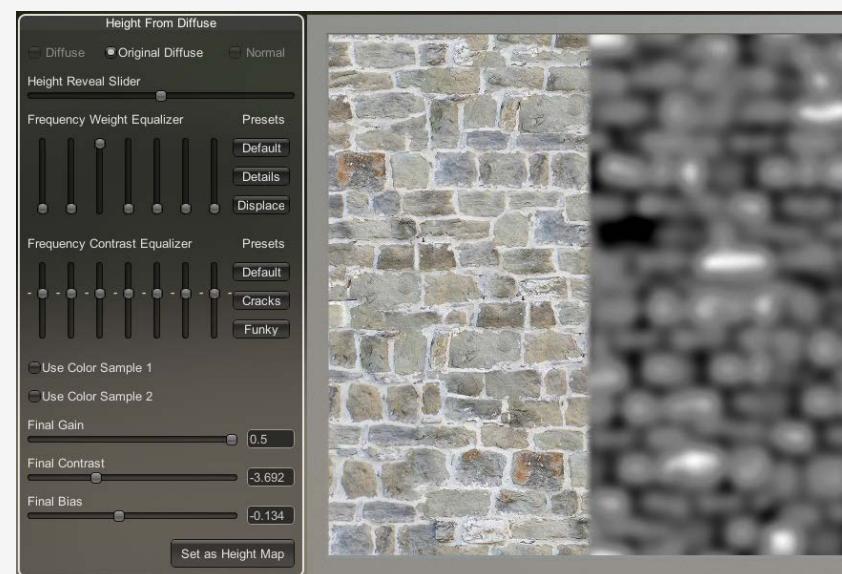
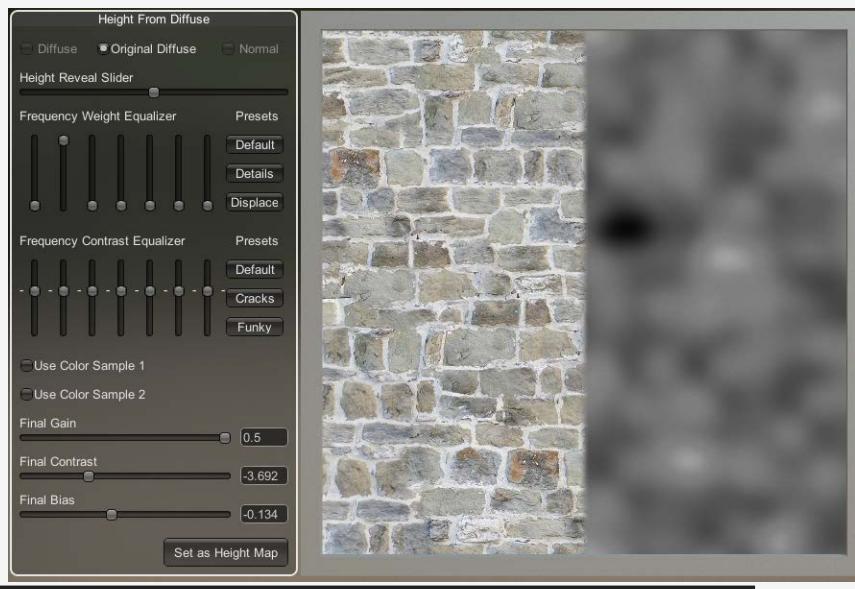
Troubleshooting

Once the map is inverted, or the “Amount” slider set to a negative number, we see that the stones are now proud of the wall rather than inset.



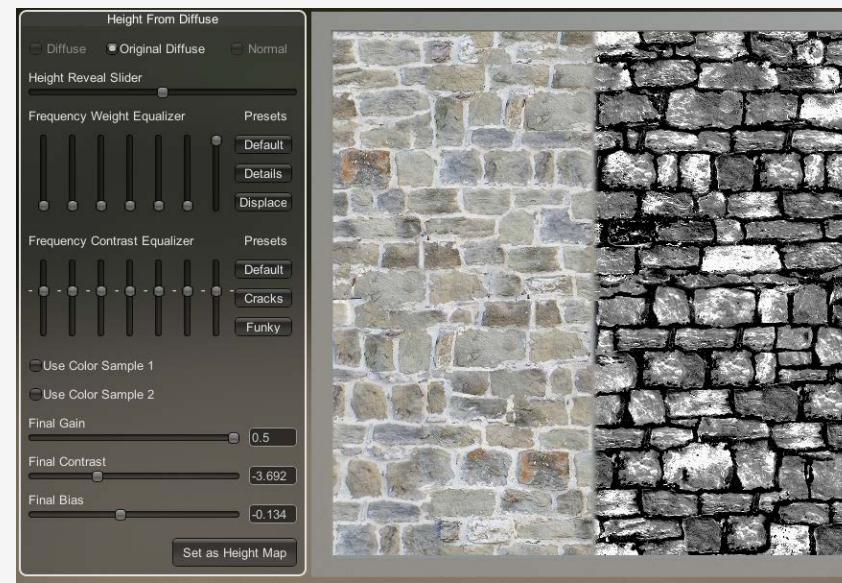
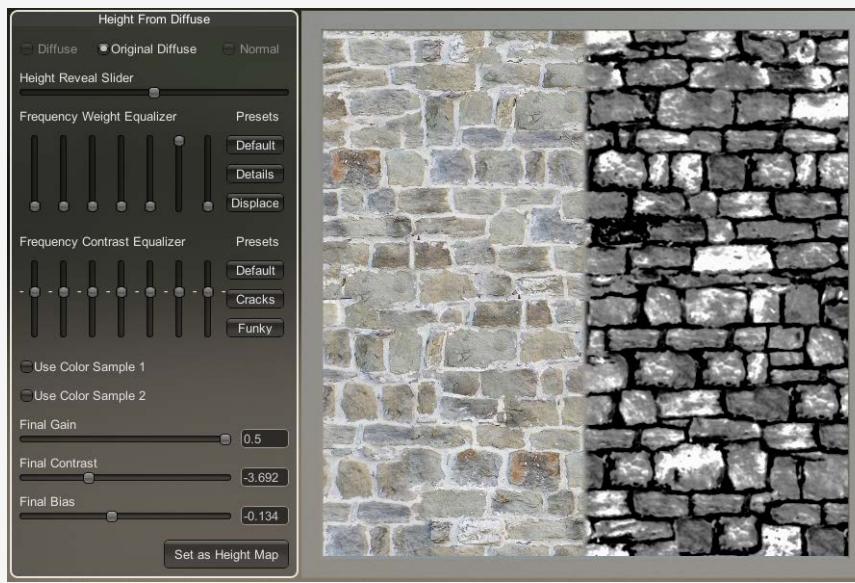
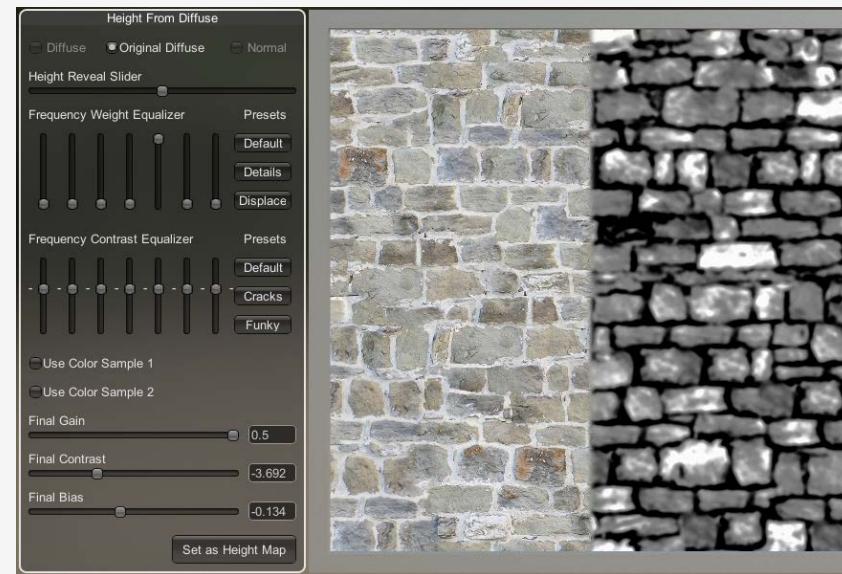
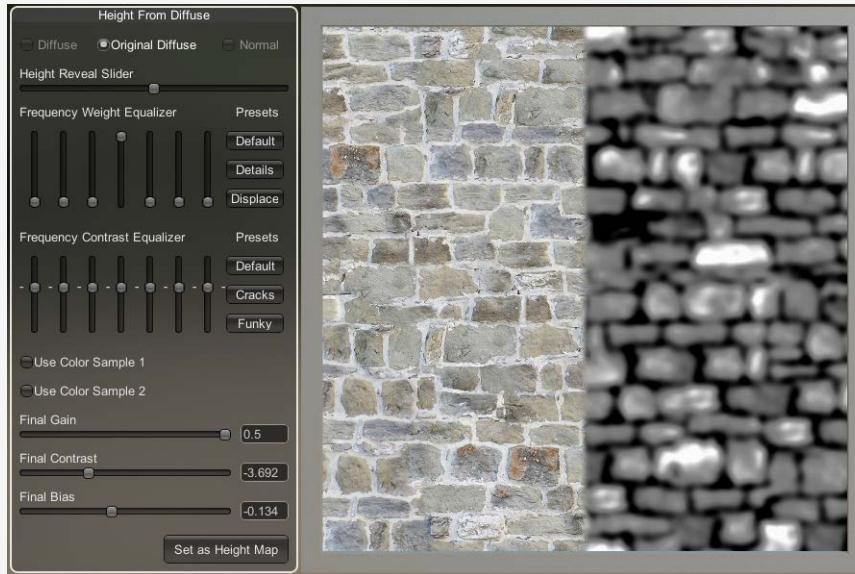
Heightmap Frequencies

Here's a look at what each frequency does to a heightmap



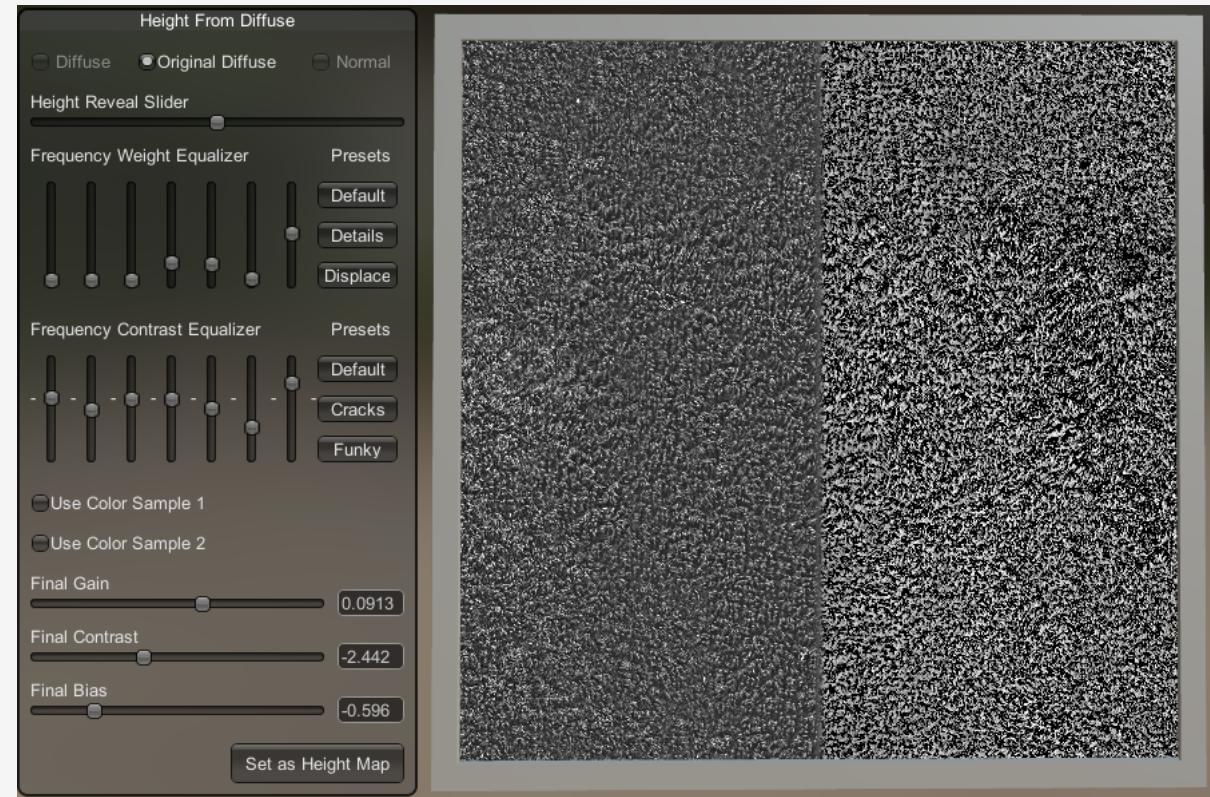
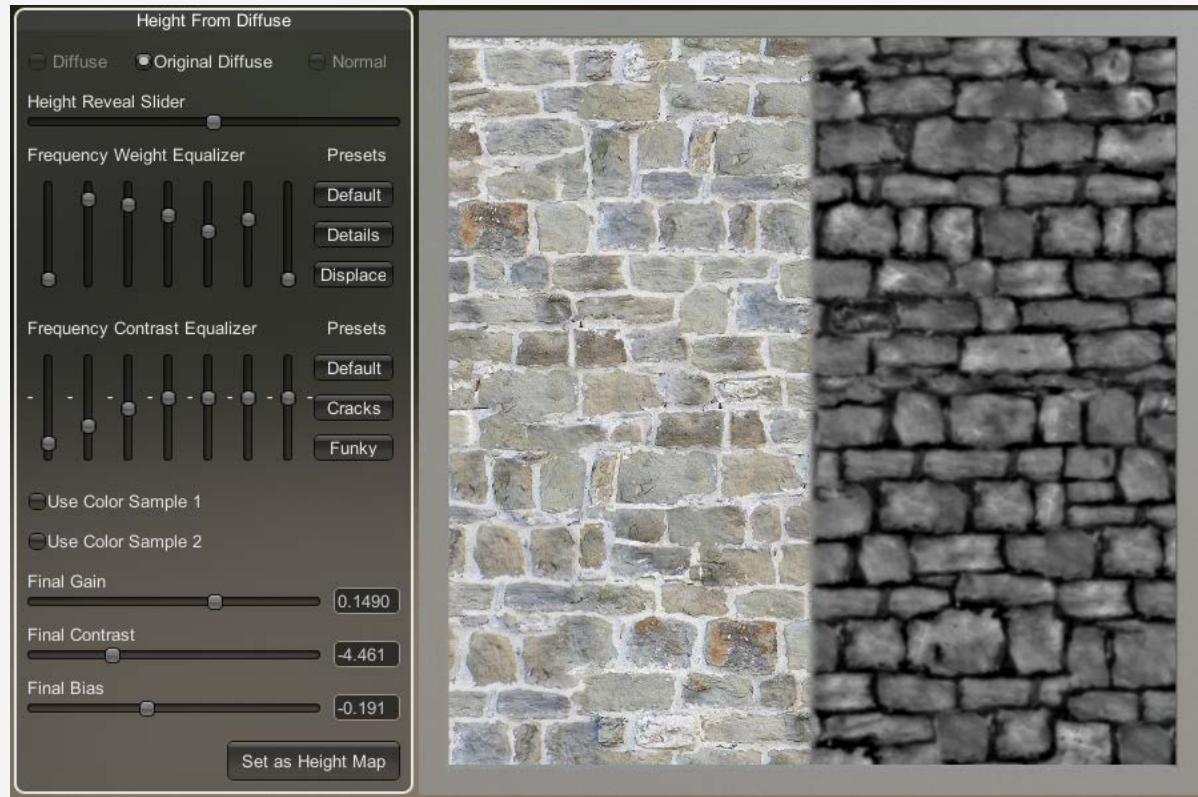
Heightmap Frequencies

Here's a look at what each frequency does to a heightmap



Heightmap Frequencies

By adjusting each of the frequency and contrast sliders you can isolate the shapes you're wanting to emphasize with the bump map. This allows you to create maps for all kinds of materials.

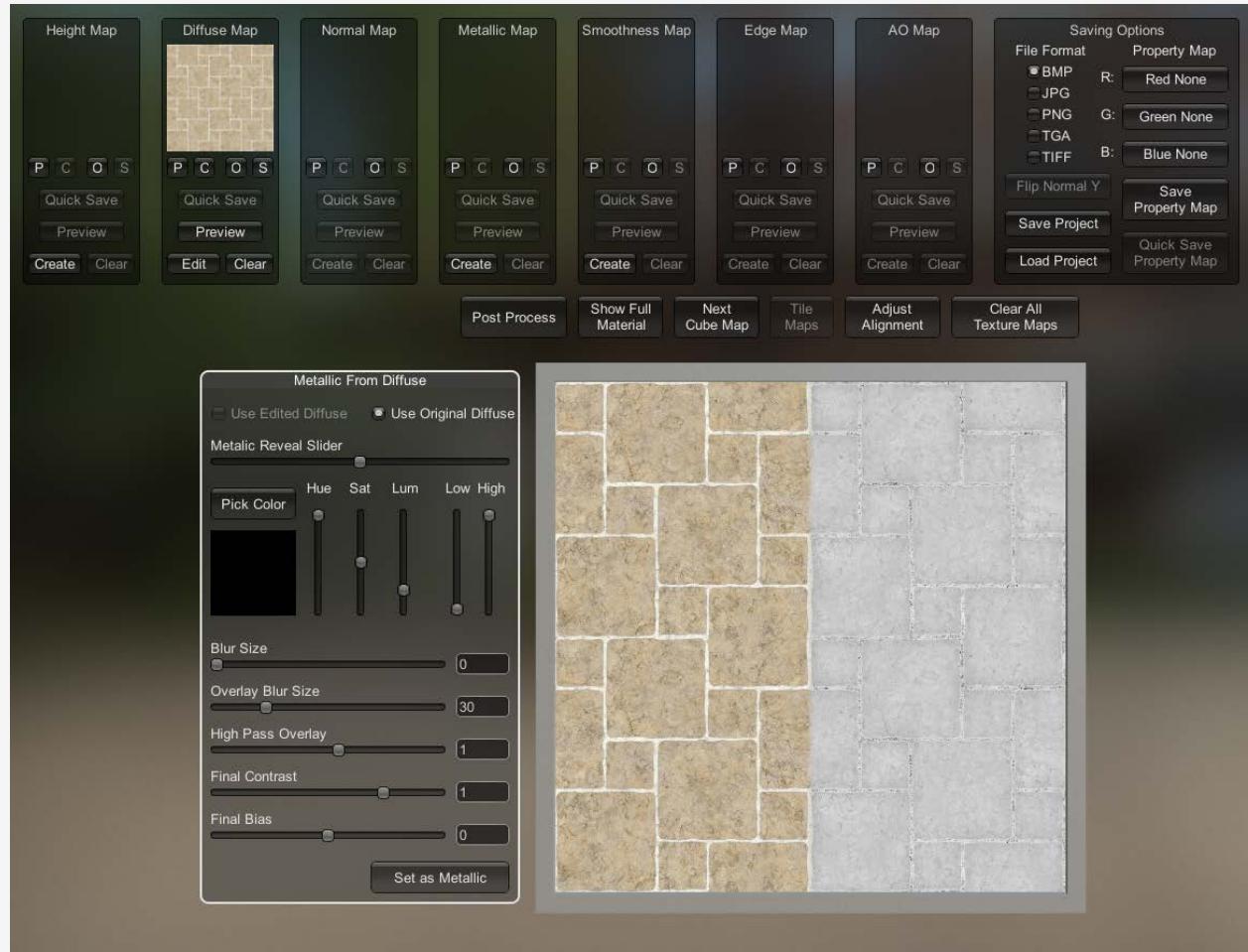


Isolating Reflections



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These same techniques can be used to isolate which surfaces have reflections and which don't. For this example, we want the stone to have a semi-reflective clear-coat, while the grout is completely non-reflective. For this, you want to use a Metallic Map. Load the file the same as before and create a new metallic map.



Example texture:

<https://www.sketchuptextureclub.com/textures/architecture/paving-outdoor/marble/marble-paving-outdoor-texture-seamless-17826>

Isolating Reflections

For reflections, white is non-reflective, black is reflective. Use “Pick Color” and select the grout for your base color. Adjust the sliders to isolate the grout.

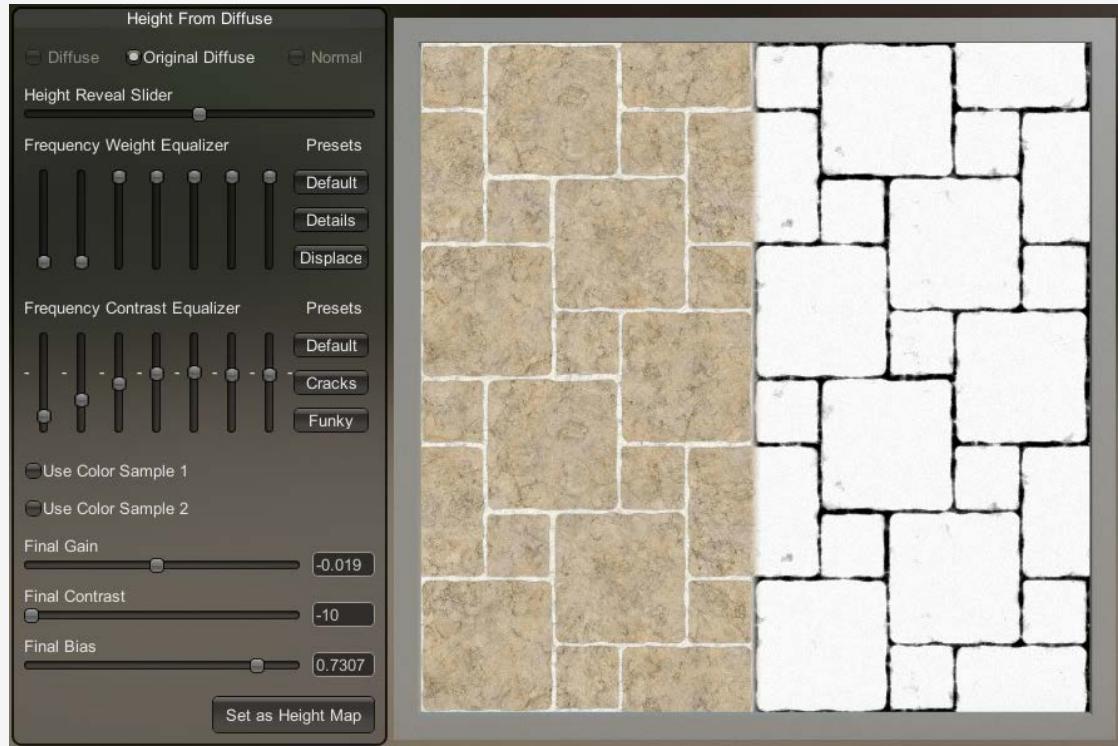


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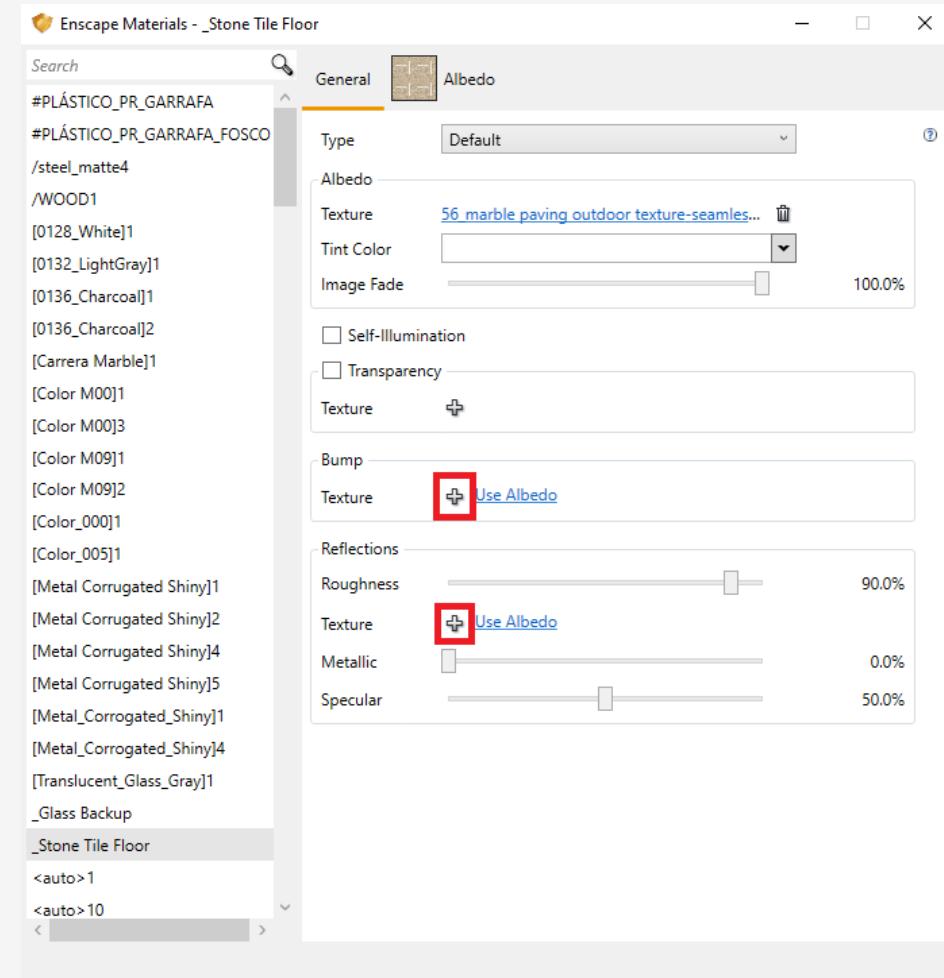


Isolating Reflections

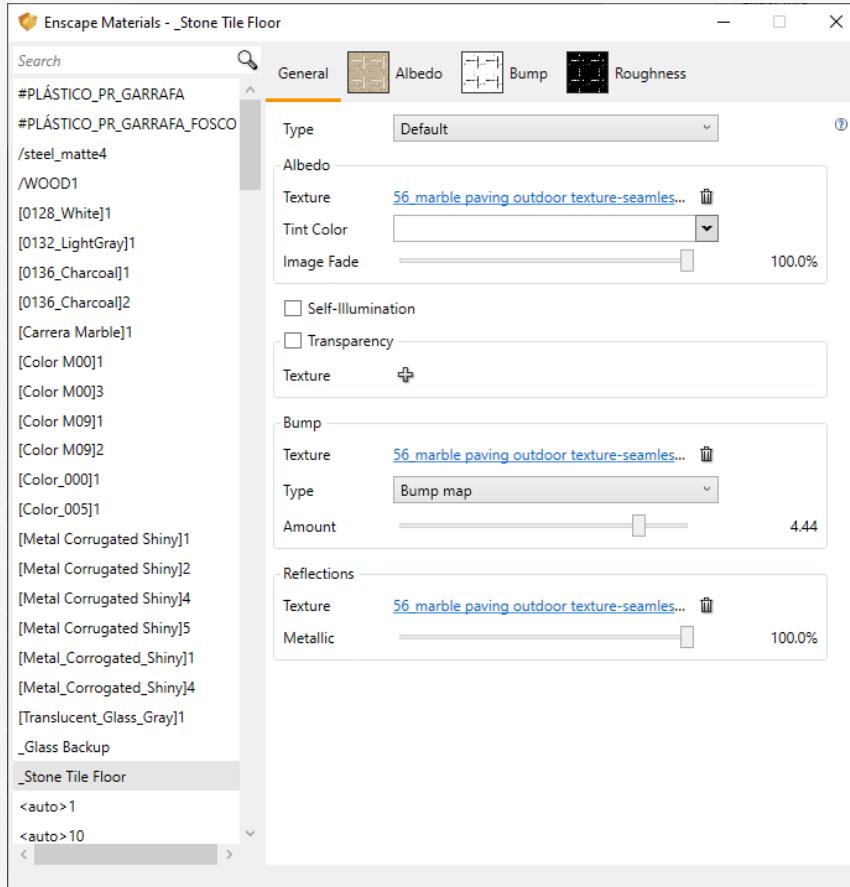
I also created a heightmap to give the grout some depth. Once that's all done, save the file and switch back to Sketchup. Open the material menu and assign your new maps.



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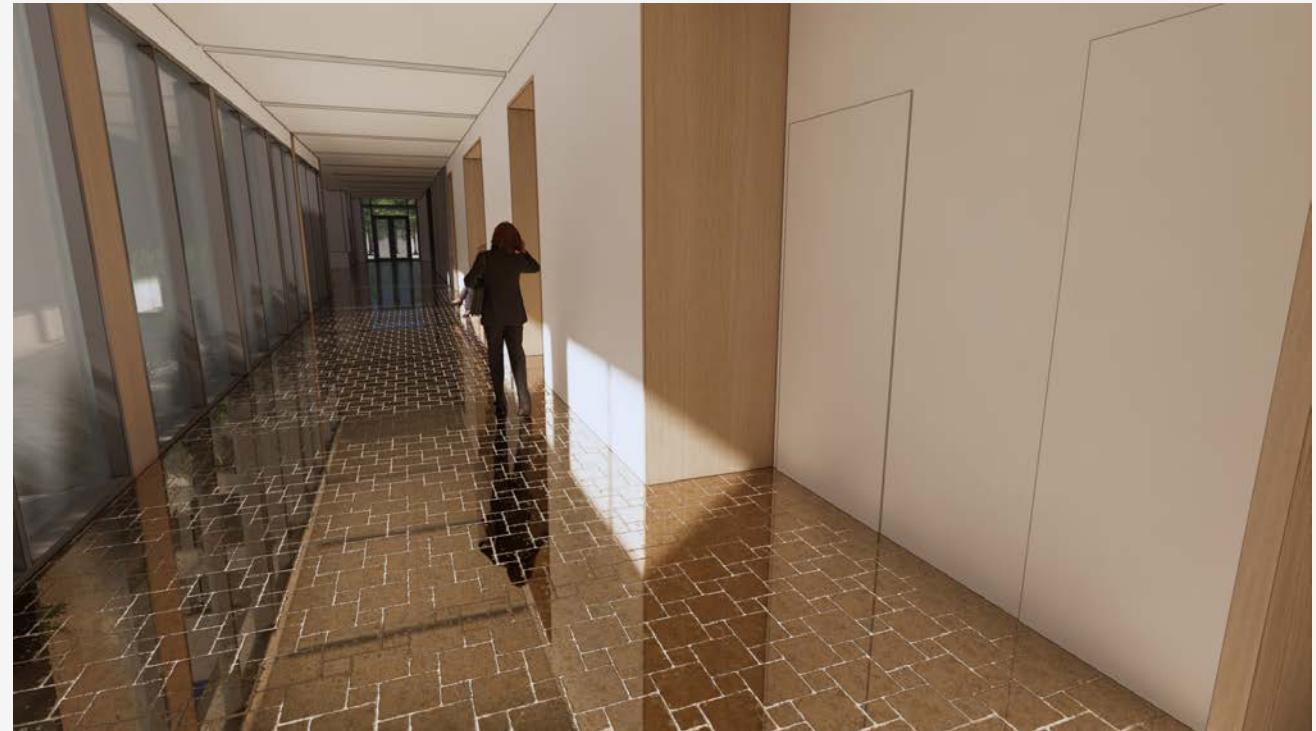


Isolating Reflections



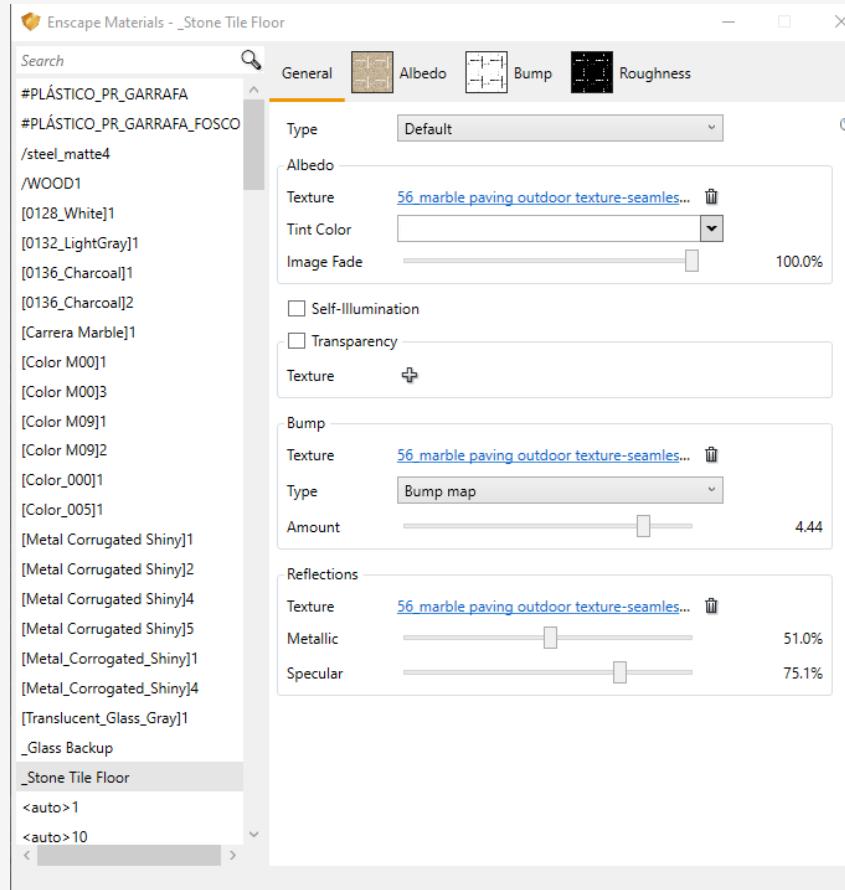
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By setting the “Metallic” slider to 100% you can isolate your reflective surfaces to make sure everything is working correctly. Here, the stone surfaces are reflective while the grout is not, so our map is working as intended.



Isolating Reflections

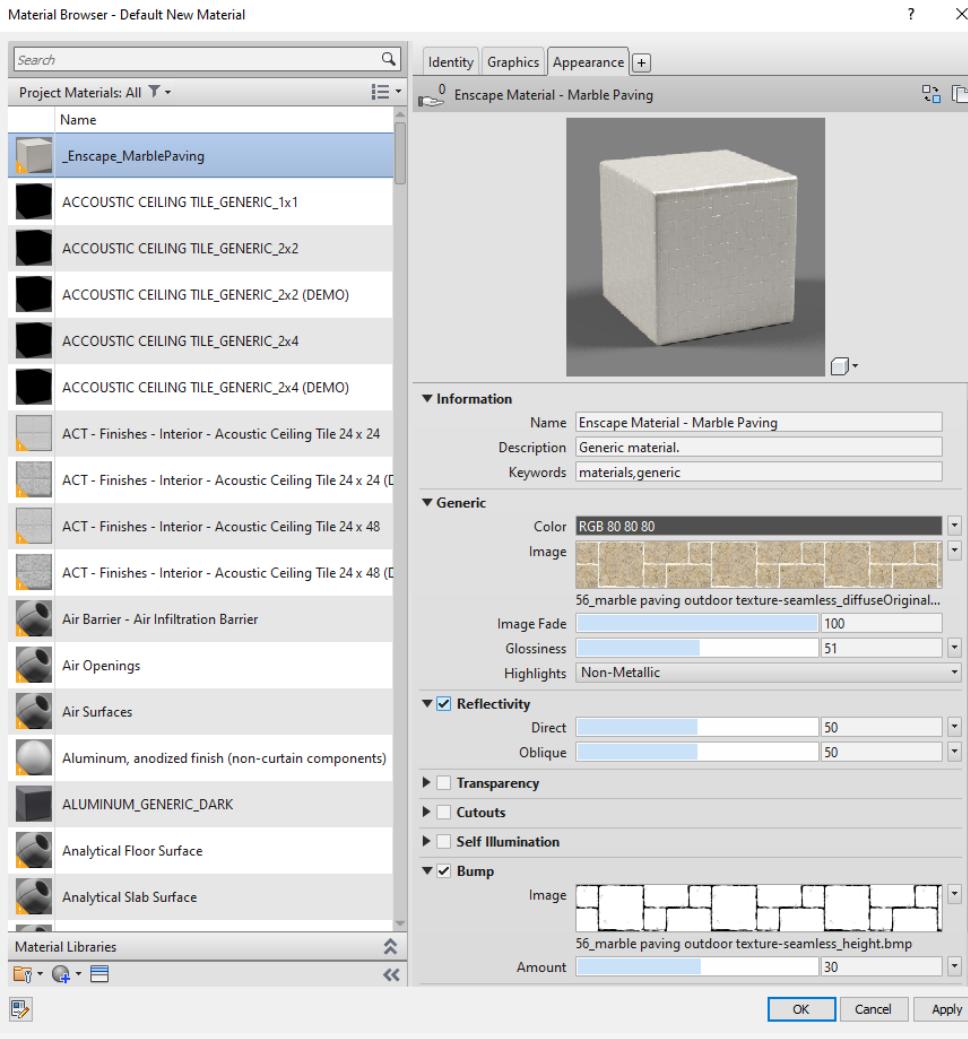
Once you've determined that the proper surfaces are reflecting, adjust the metallic and specular sliders to get the desired look.



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Revit Equivalents

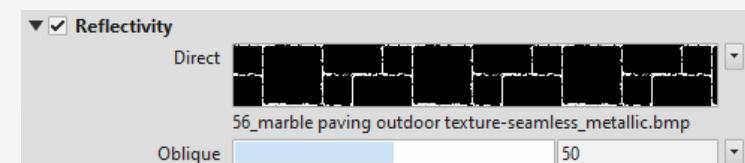
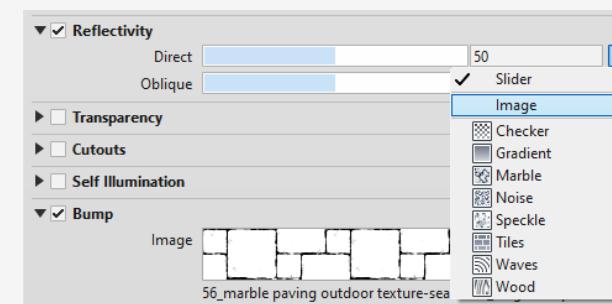


Sketchup	Revit
Albedo	Generic
Reflections	Reflectivity

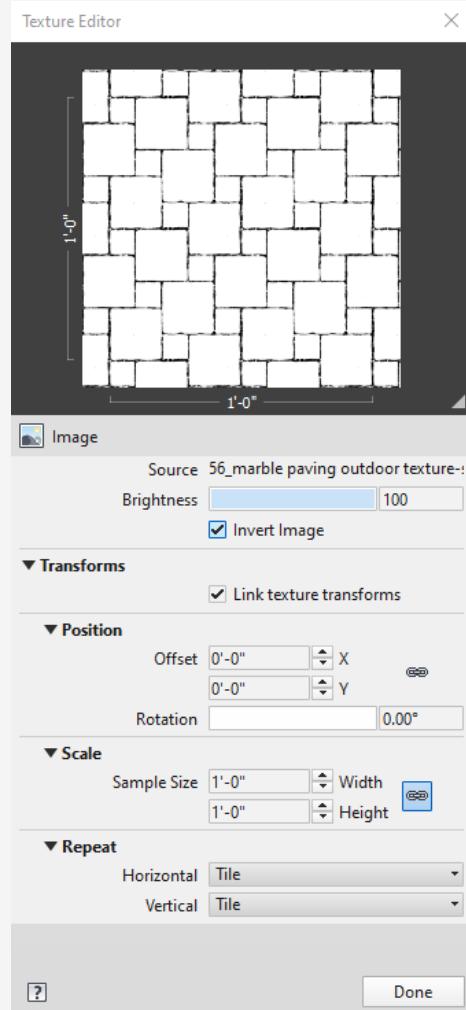
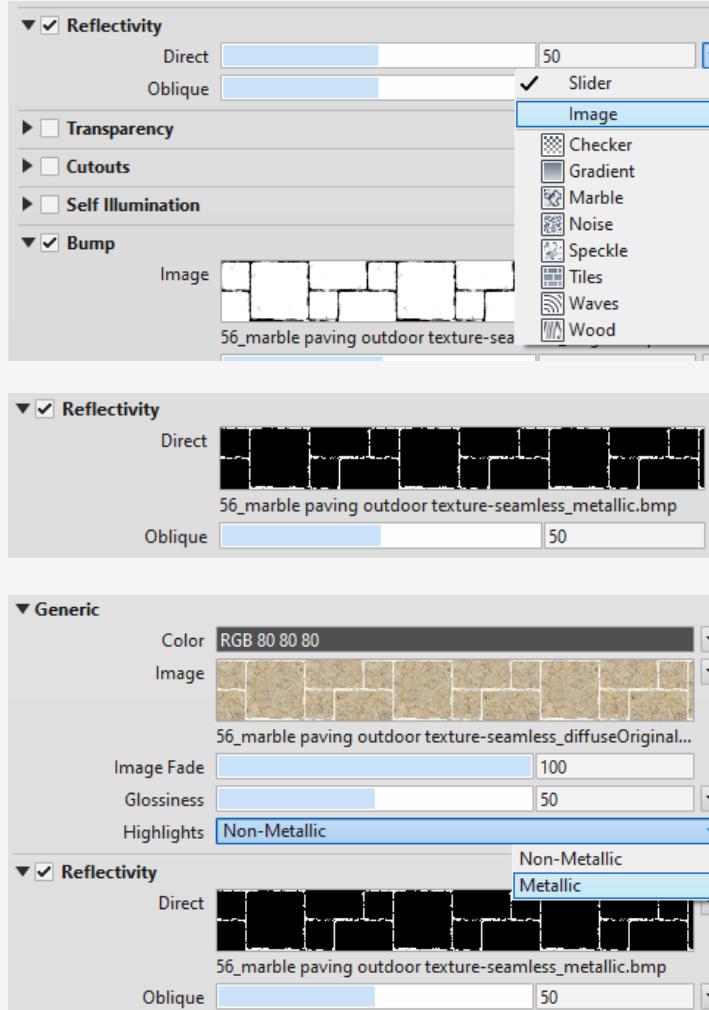
All other systems have the same name

A few things to keep in mind:

- All texture maps can be scaled individually. You can also link them together so they'll scale together.
- Reflection maps are inverted, with white being reflective and black being non-reflective.
- To set up a reflection map, hit the arrow next to the direct reflectivity slider and select image:



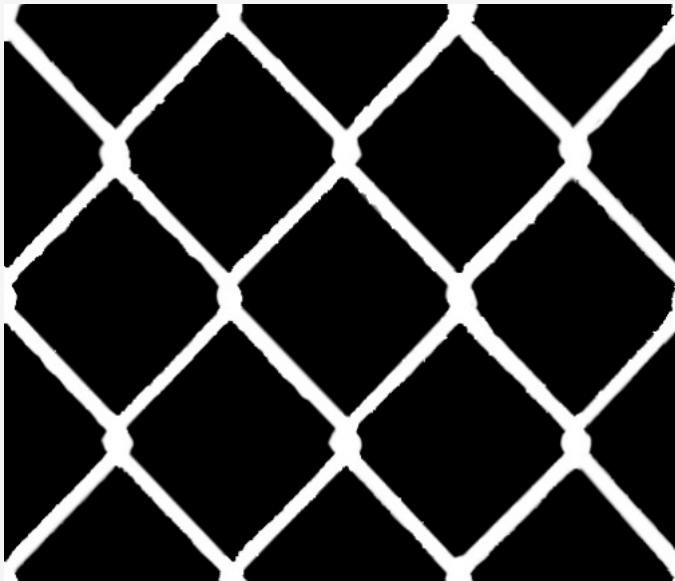
Revit Reflections



A few things to keep in mind:

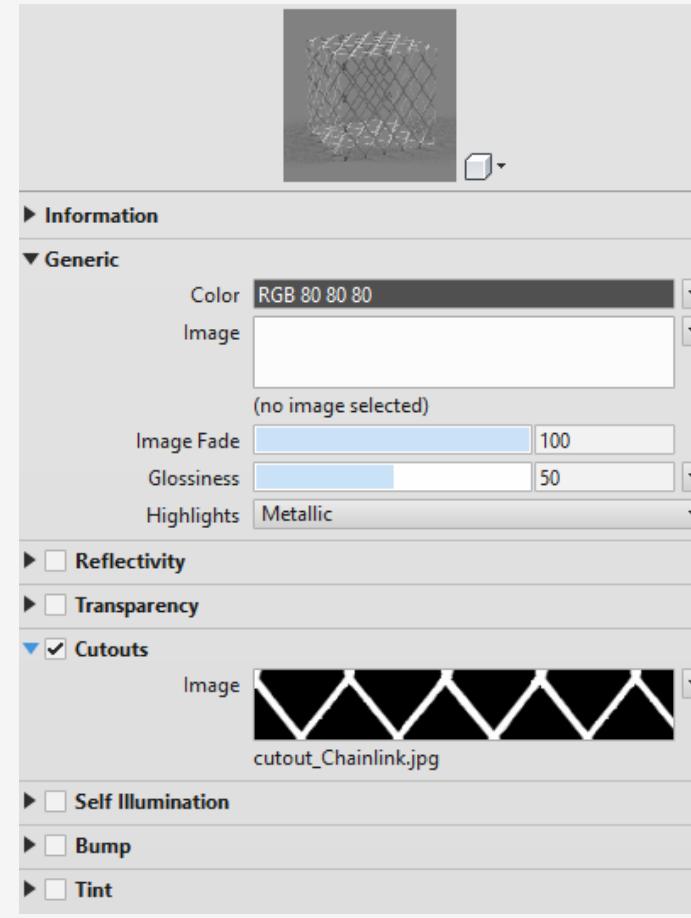
- To set up a reflection map, hit the arrow next to the direct reflectivity slider and select image.
- Reflection maps are inverted from Sketchup, with white being reflective and black being non-reflective. You can invert the image from the texture editor dialog (opened by clicking on the image in the image selector.)
- All texture maps can be scaled individually. You can also link them together so they'll scale together. (Select "Link texture transforms" from the Texture Editor. You have to do this for each image in a material.)
- Reflection strength is adjusted by setting Generic:Highlights to "Metallic" and adjusting the "Glossiness" Slider.

Revit Cutouts

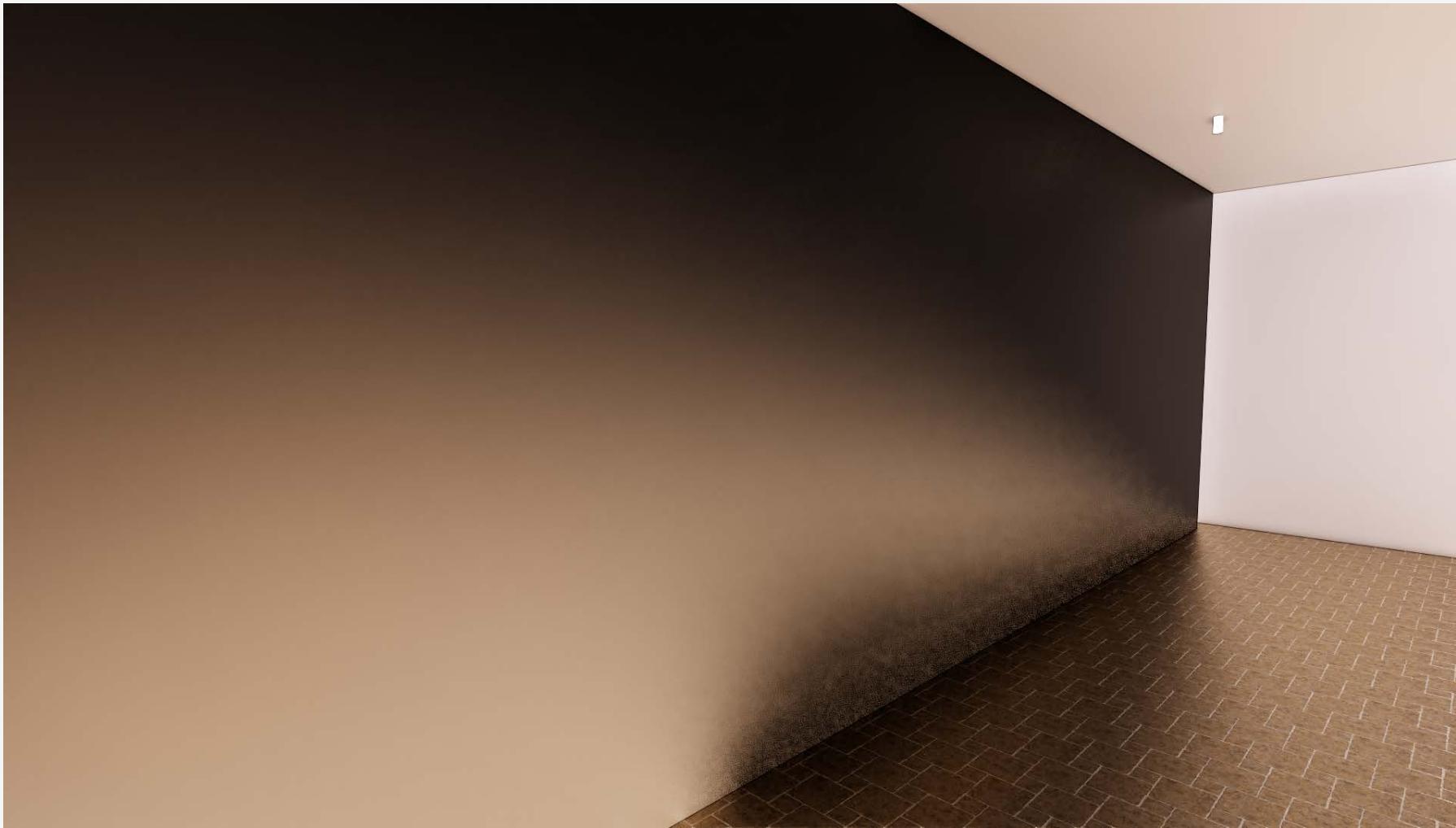


Cutouts can be used to simulate openings in a solid surface. This keeps file size minimal while allowing complex surfaces in renderings. As an example, I'll set up a material that renders as a chain link fence.

- Cutout materials are Black and white, with white being solid and black being void.
- Enable Cutouts and select your material.

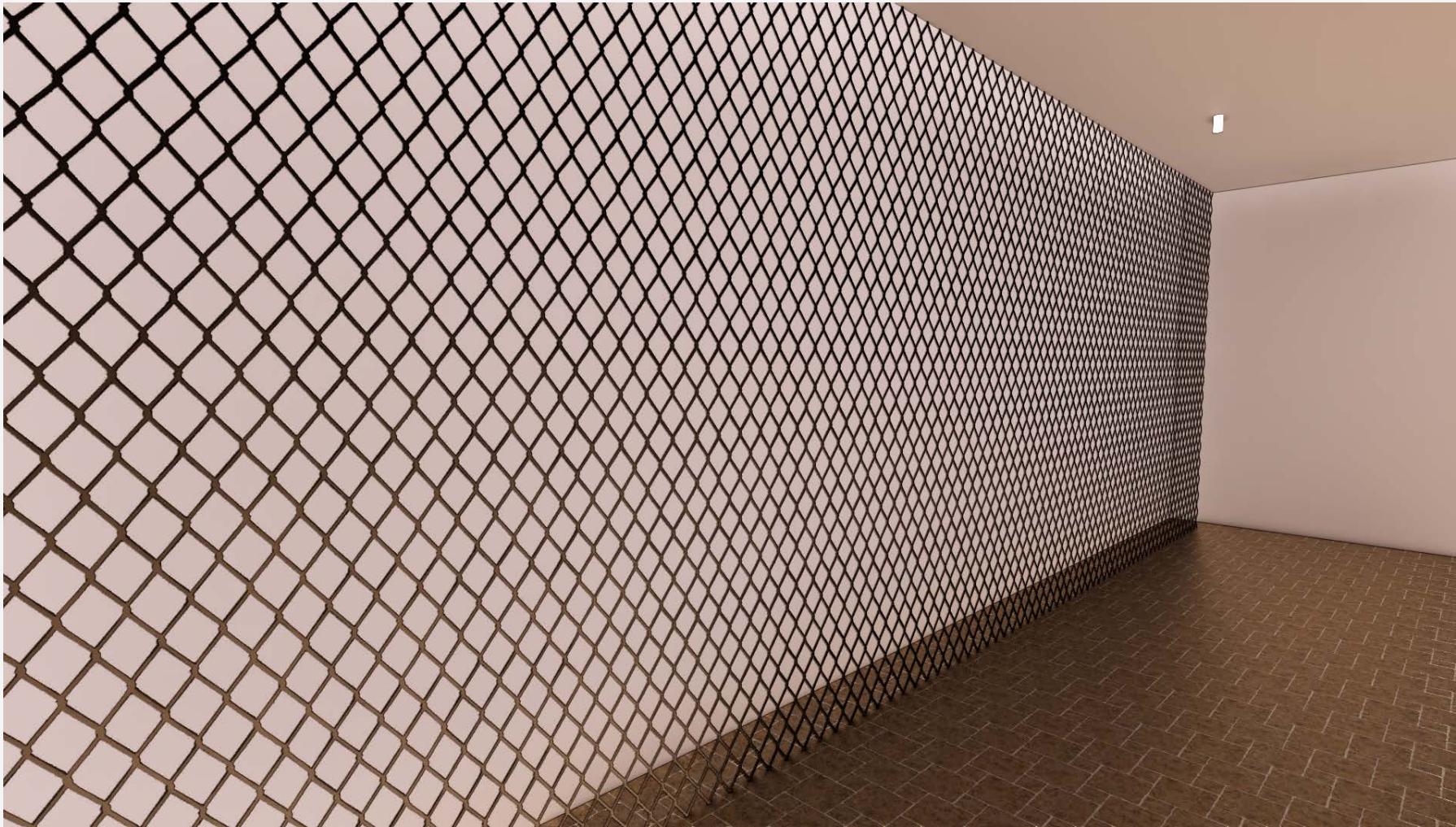


Revit Cutouts



Wall without cutout

Revit Cutouts



Wall with cutout