Match Photo: Modeling from photos

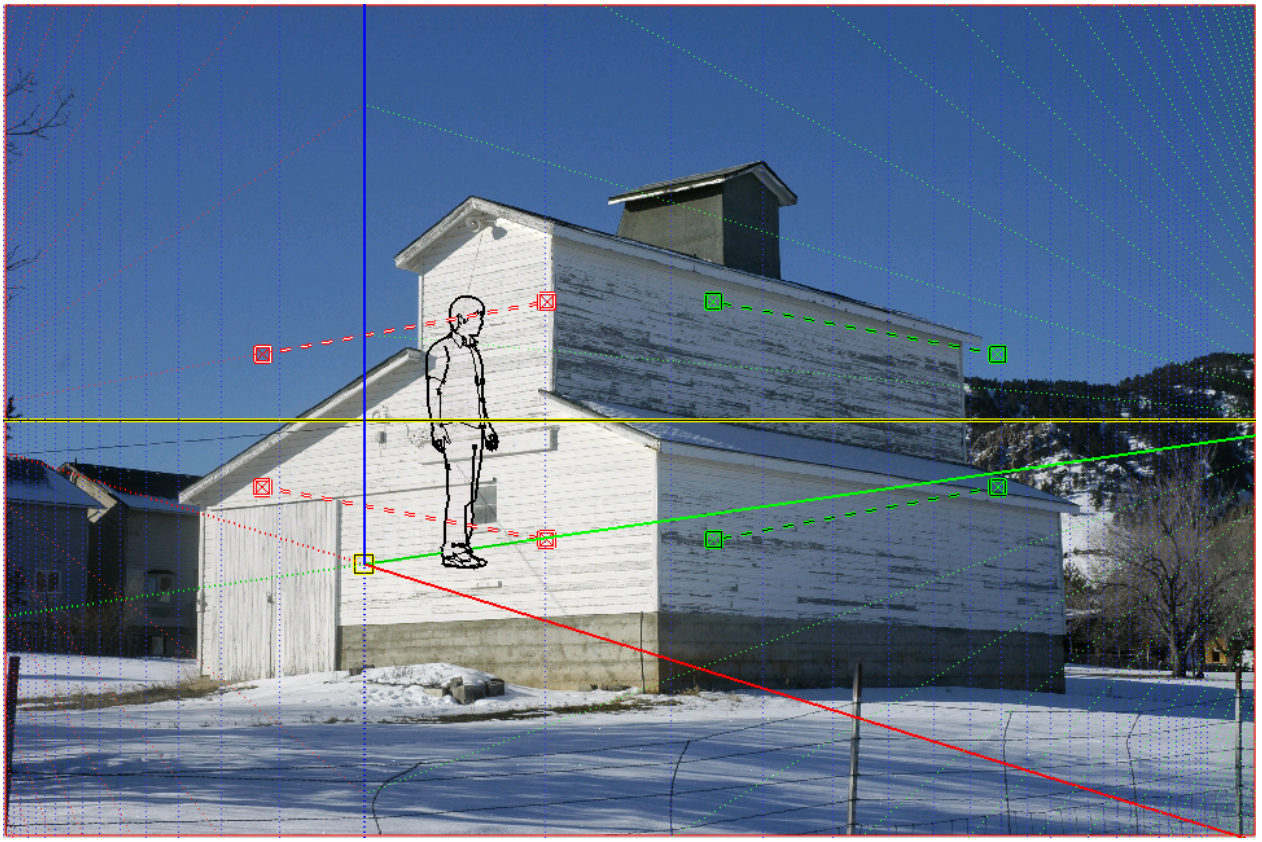
Creating a 3D model to match a photo

Use the matching process to create a 3D model to match one or more photos of a building or structure. This process is best suited for making models of images of structures containing features representing parallel lines, such as the top and bottom of a square window.

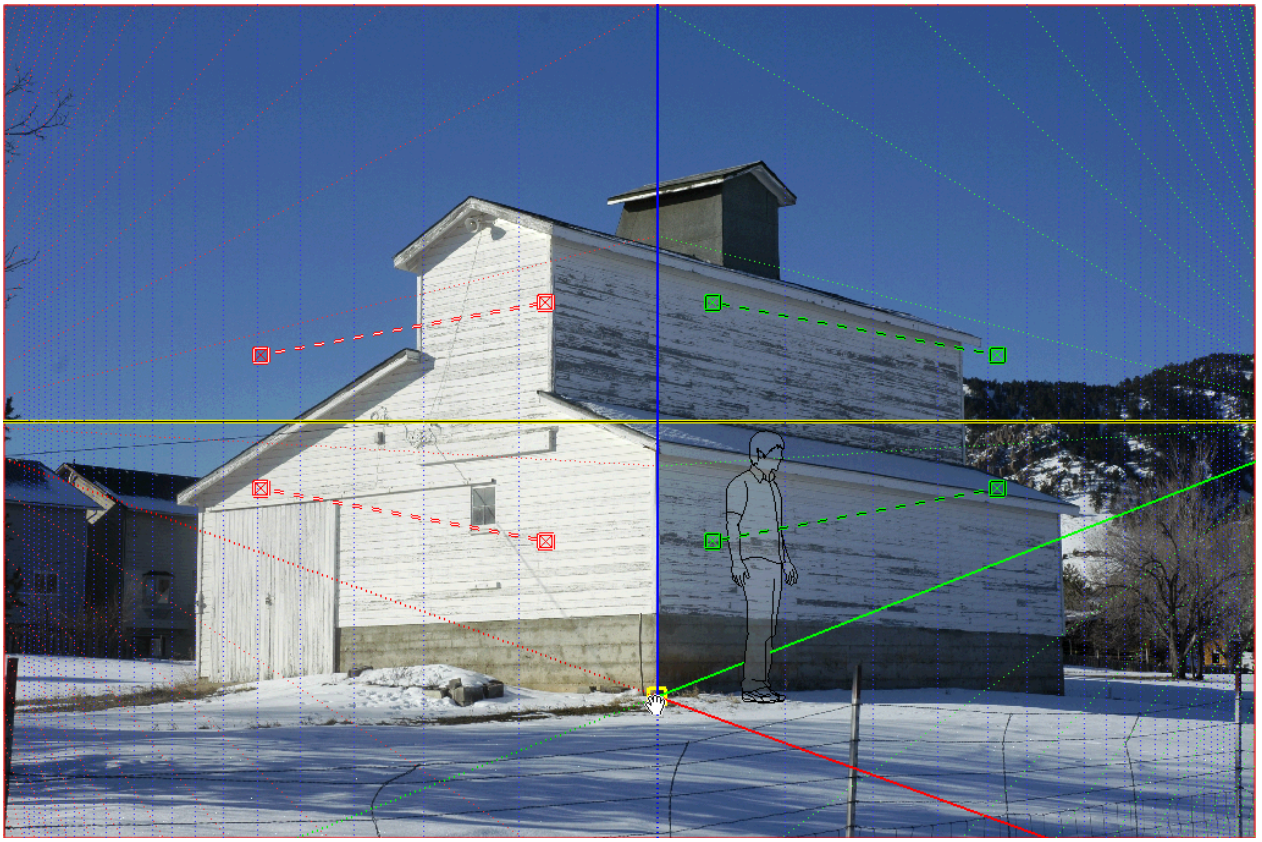
Note: There are several You Tube videos on the Match Photo feature, including two videos that use the same example found in this article. These videos might use an different version of SketchUp, but the process and Match Photo tools are exactly the same.

To create a 3D model to match photos of a building or structure:

1. Take digital pictures of the building or structure. See 'Taking Digital Photos for Use When Matching' for further information.
2. Select the **Camera > Match New Photo**. The Select background image file dialog box is displayed.
3. Navigate to the first photo in the series of photos for your building or structure.
4. Click on the first photo in the series of photos for your building or structure. The photo is selected.
5. Click the **Open** button. The photo will appear in the drawing area on its own scene in SketchUp. You are also placed in a matching mode where you will calibrate SketchUp's camera to duplicate the position and focal length of the camera used to take the actual photo. The words 'Match Photo' appear in the upper-left of the drawing area. Finally, the Match Photo dialog box appears. Refer to Matching Controls and Context-Menu Items[1] for further information. Following is a picture of match photo mode with a photo of a barn:



6. Move the cursor to a distinct origin-like point on photo (where three axes might intersect, such as bottom corner of building). Following is a picture of the origin adjusted to the lower corner of the image:



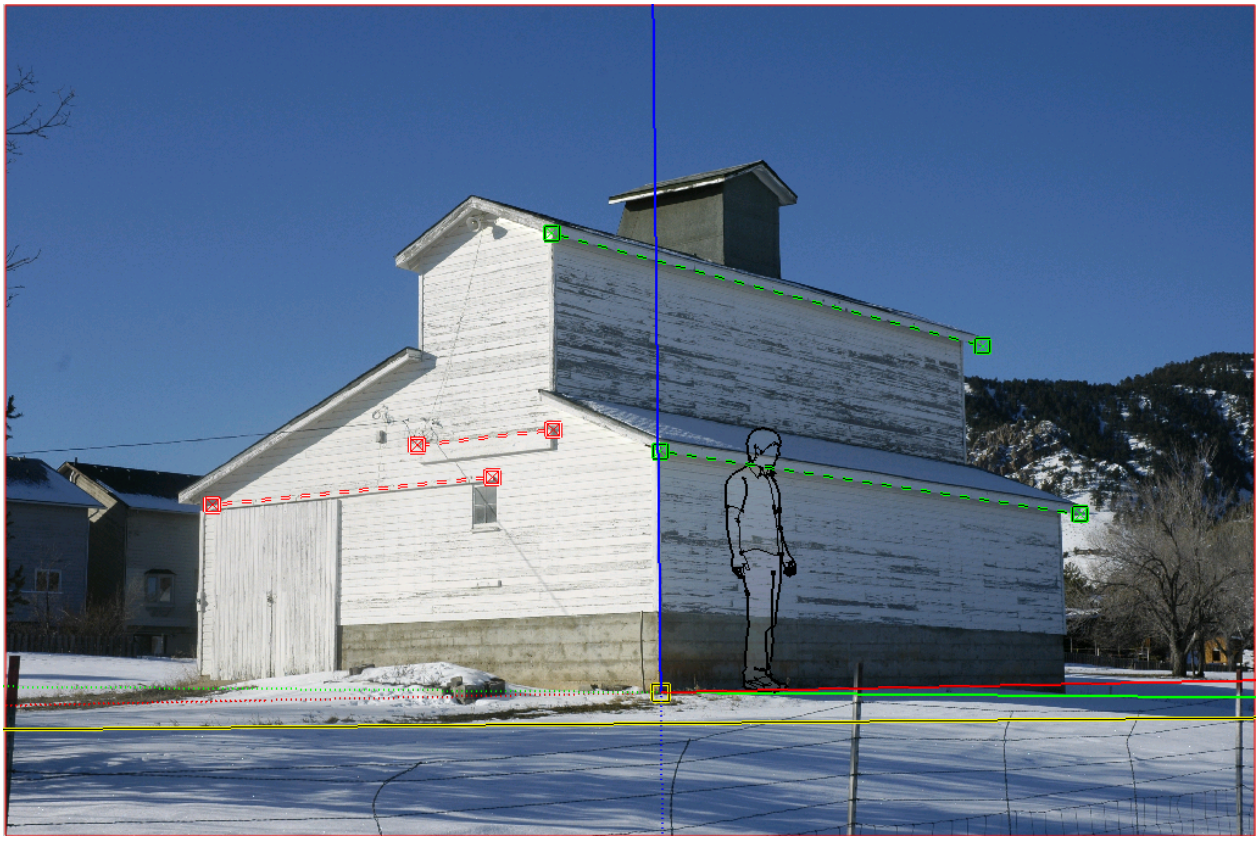
Note: The origin you use depends on the photo:

- For photos that are usually taken indoors where walls, ceiling, and floor of a

room meet at a corner, the origin is usually at the bottom corner where the walls, ceiling, and floor meet.
- For photos that are taken from a vantage point where you are looking down on the building or structure, the origin would be at the top corner of the building where roof and walls meet.
- For photos that are taken from a vantage point where you are standing on the ground, the origin would be the bottom corner where the walls and ground meet.

7. Release the mouse button. The origin is established.
8. There are four vanishing point bars in matching mode, two red bars and two green bars. Each bar is represented as a dashed line with square bar grips at the end. Click on a red vanishing point bar grip ( ). The cursor changes to a hand.
9. Move the cursor to the starting point of a position on the photo representing a line parallel to the red axis, such as the track for the barn door. Zoom in, if necessary, to ensure that the grip is over the upper-right corner of the barn door track.

10. Release the mouse button.
11. Click on the other red vanishing point bar grip. The cursor changes to a hand.
12. Move the cursor to the ending point of a position on the photo representing a line parallel to the red axis.
13. Release the mouse button. The first axis bar is aligned to the red axis, such as the track for the barn door. Zoom in, if necessary, to ensure that the grip is over the upper-left corner of the barn door track.
14. Repeat steps 14 through 19 for the remaining three (one red and two green) vanishing point bars. Following is an image of the matching mode after all of the vanishing point bars have been aligned to axis:

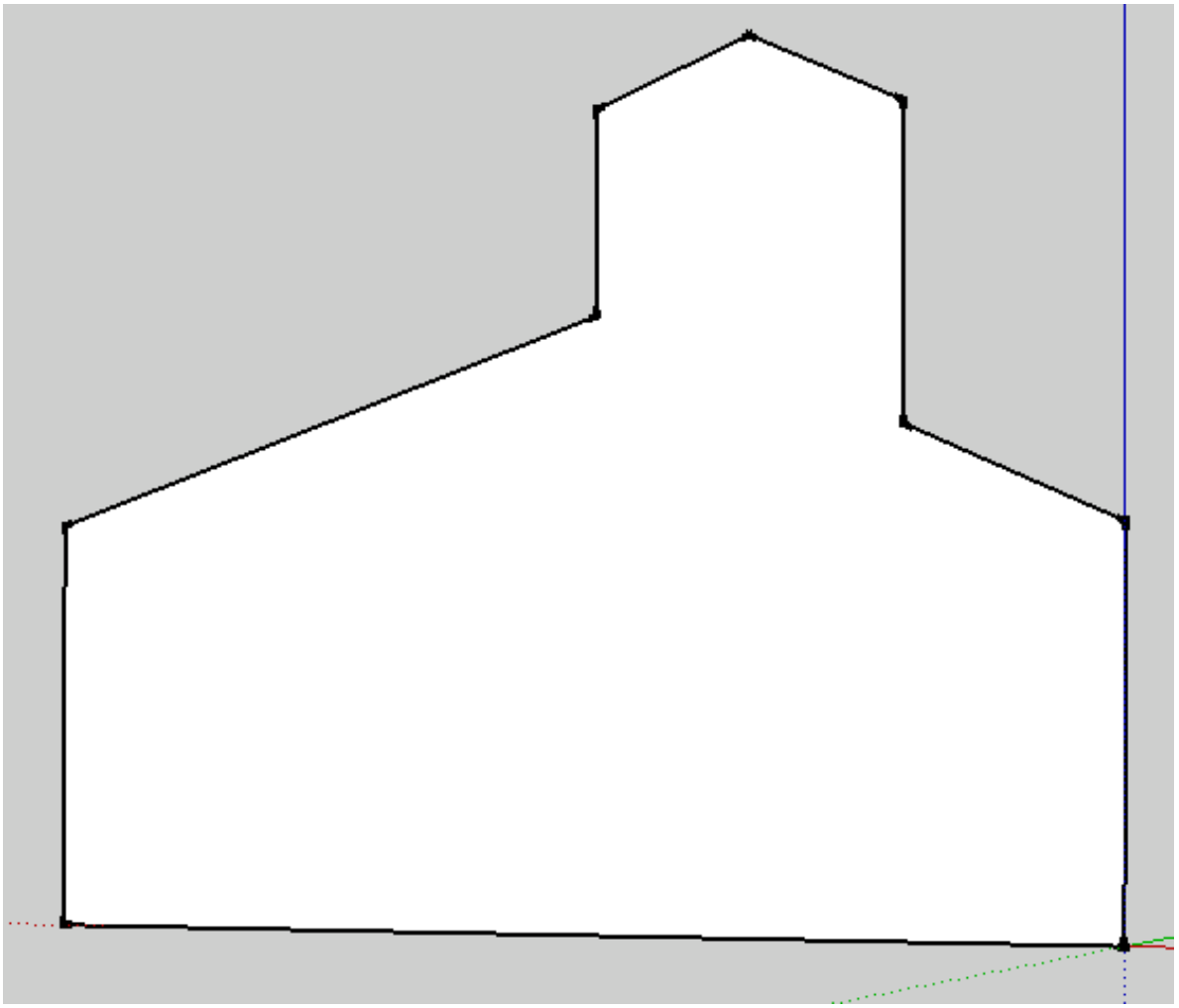


Note: Axis bars should be aligned to features that are parallel to their corresponding axis, such as window frames, roof lines, or door frames. Also, try to pick the longest features as this will increase precision.

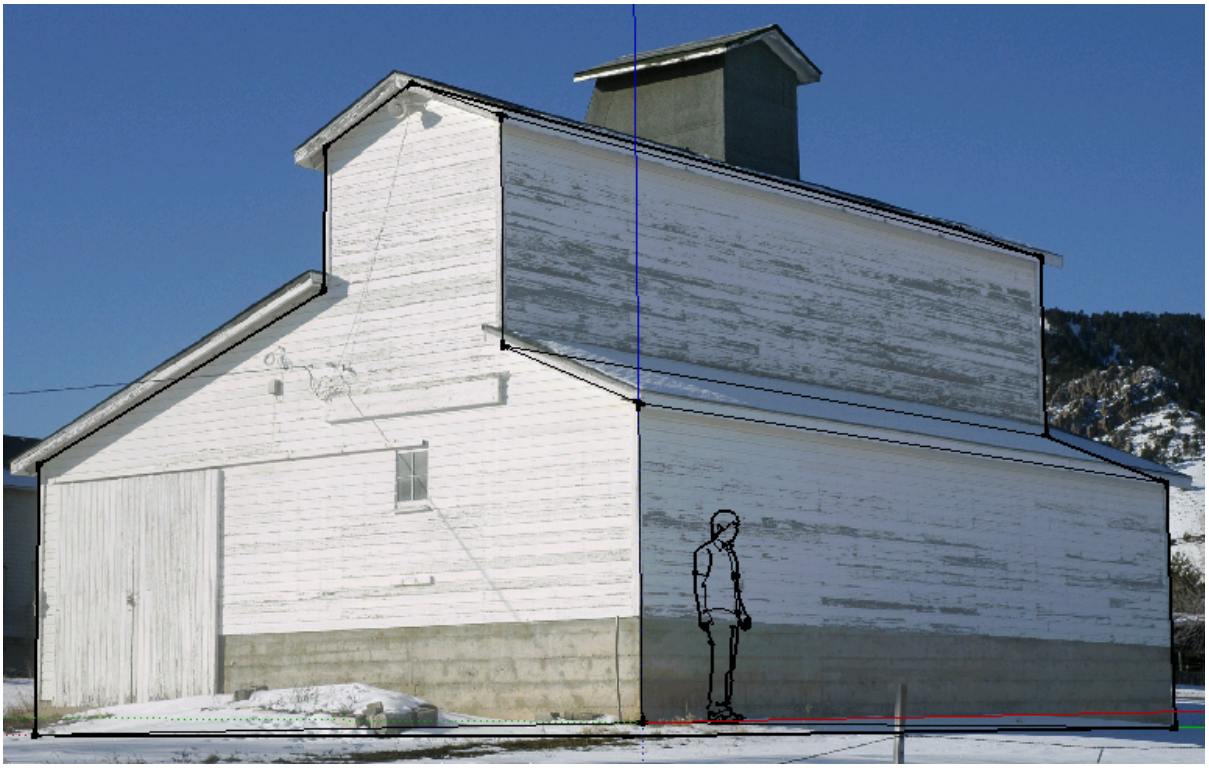
15. Click on the blue axis bar (Z axis). A two-way arrow appears.
16. Drag the cursor up to adjust the scale larger or down to adjust the scale smaller. Use the model of the 2D person as a guide (the person appears in all new SketchUp files). For example, if the model of the person is larger than a door, move the cursor down to adjust him to be smaller than the door - the size of an average person. Following is an image showing the adjusted scale (the model of the person is now the correct scale to the photo):

17. Context-click to invoke the matching context-menu.
18. Click the **Done** button. You are placed in a sketching mode. This mode, unlike normal SketchUp drawing mode, is a 2D drawing mode. The words 'Sketch Over' appear in the upper-left of the drawing area. The Pencil tool is active. Refer to Sketch-Over-Image Controls and Context-Menu Items [2] for further information.
19. Sketch on photo using the SketchUp drawing tools.
    1. Use the Pencil tool to trace over the edges that make up the left-most side of the barn in the photo. Following is an image showing the traced photo.

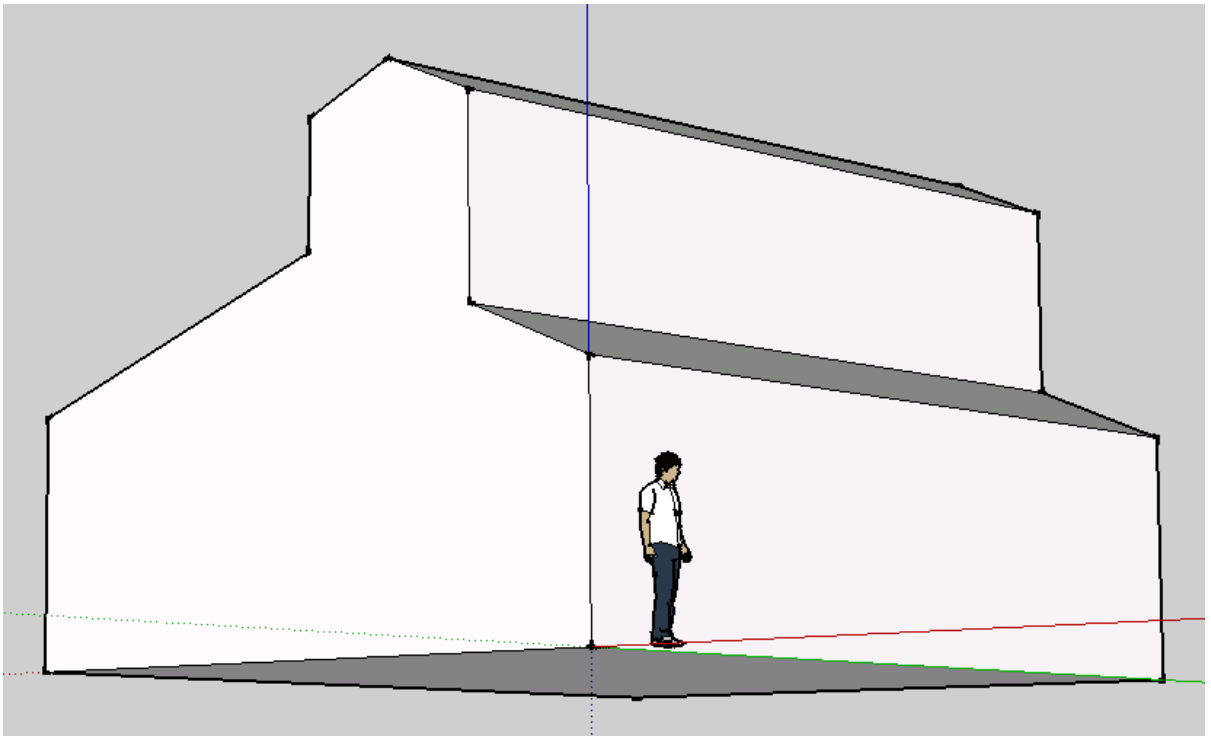
Following is an image showing the resulting face:



2. Use the Push/Pull tool to create a 3D barn. Following is an image showing the results of push/pull operation with the photo shown:

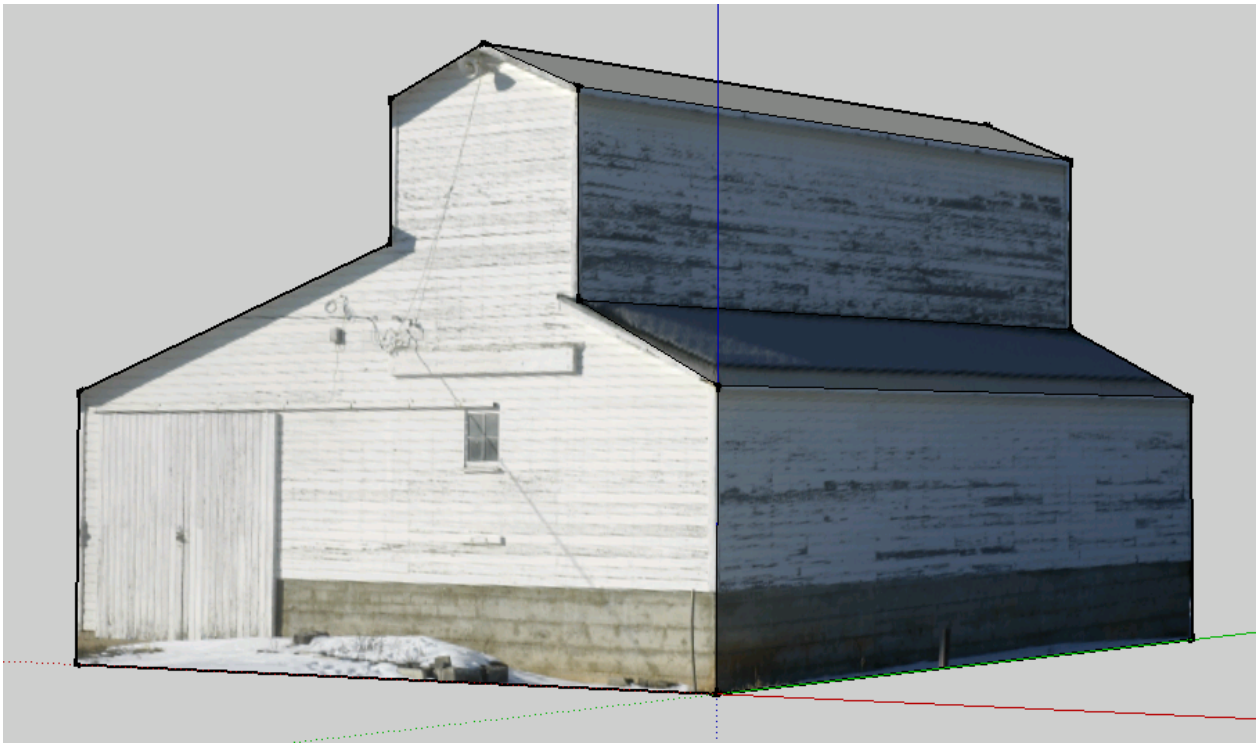


Following is an image showing the resulting model:



20. (optional) Add detail as necessary, such as roof overhangs.
21. (optional) Project the photo on the model of the building by selecting faces and clicking on the **Project textures from photo** button. The message "Trip partially visible faces?" appears.
    - Press the **Yes** button if you only want textures applied to the portion of faces that are shown in the image.
    - Press the **No** button if you want textures applied to the entire face, even if the face is only partially shown.

    The photo are projected on the faces of your model. Following is an image with a textured model:



Warning: Tools that manipulate your point of view force you out of Sketch-Over-Image mode into normal SketchUp drawing mode. These POV tools are the Orbit Tool, Position Camera Tool, Walk Tool, and Look Around tool. Click on the scene tab to return to Sketch Over mode.

Links

1. http://help.sketchup.com/en/article/94925
2. http://help.sketchup.com/en/article/94926