



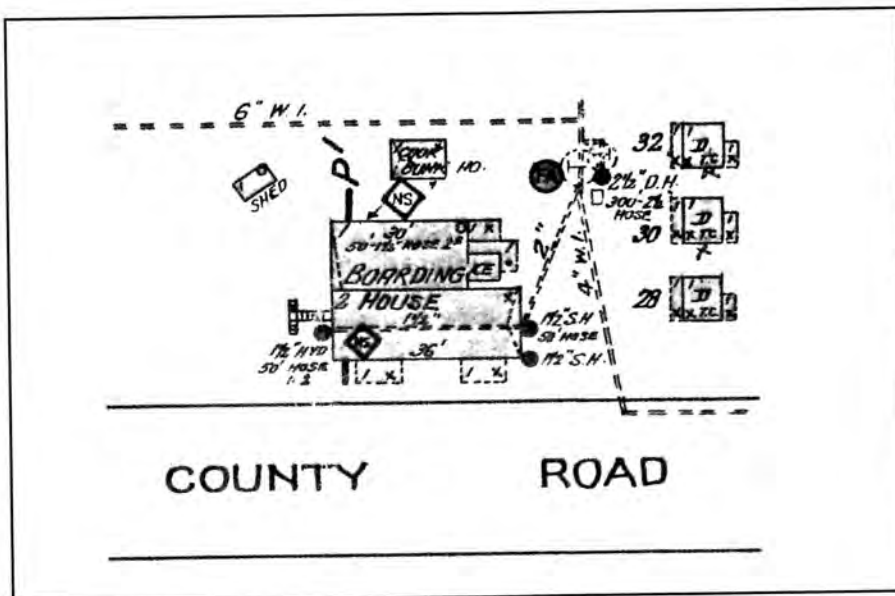
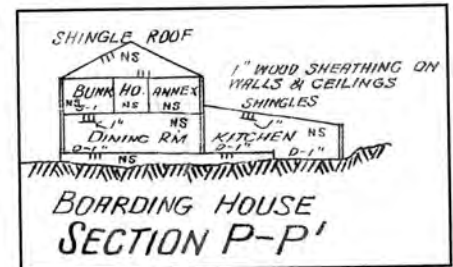
This single photo of the Yosemite Lumber Company dining room at Merced Falls is typical of the limited resources available for some

projects. However, with the width, length and height of the building from the Sanborn maps, working plans can be made for it.

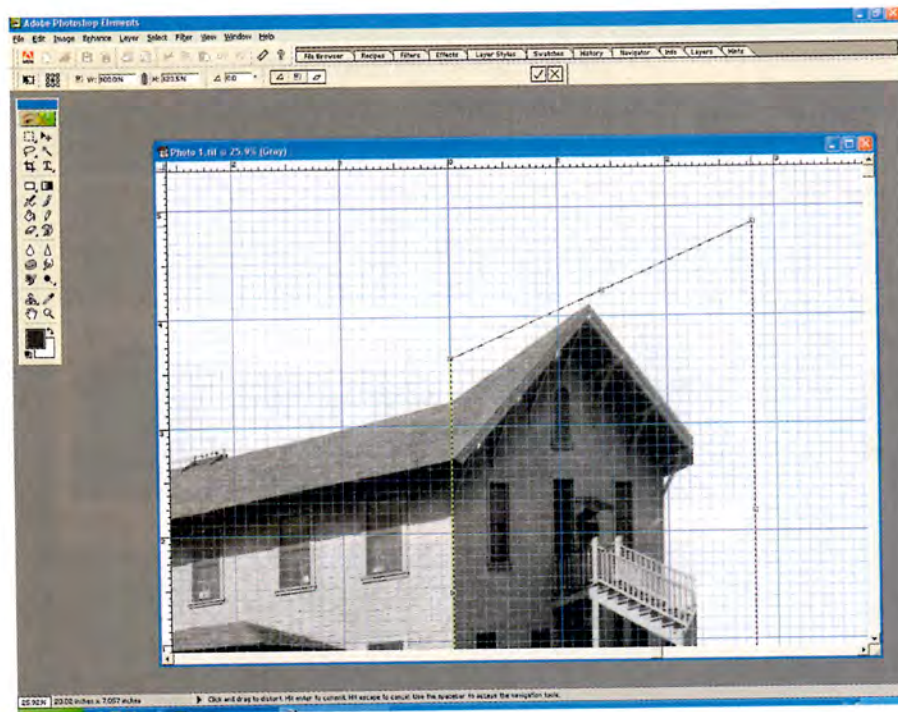
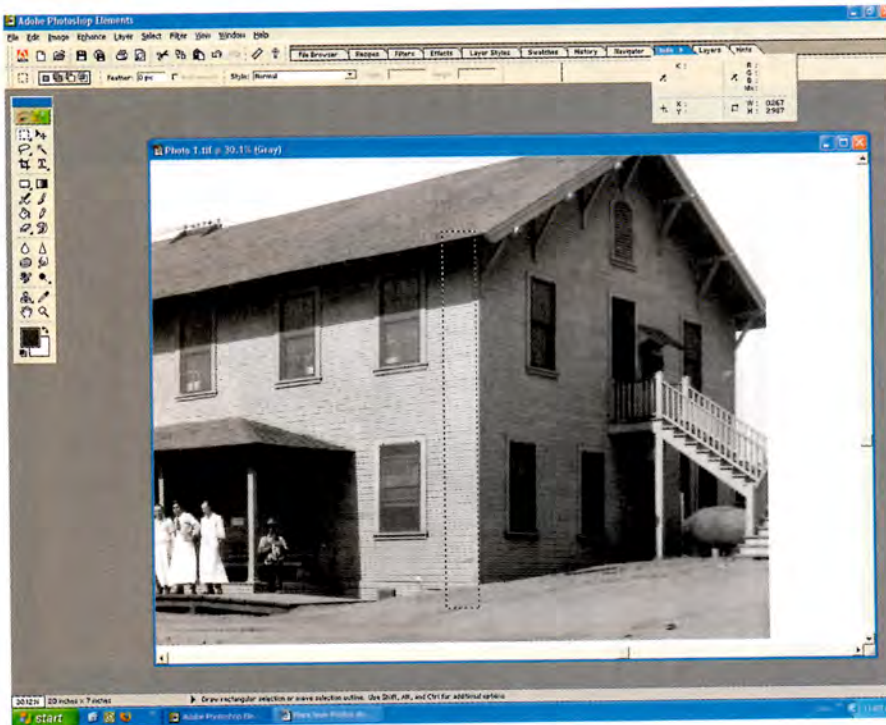
# Plans from photos

An approach for making simple, scale "working photos" from an oblique photo/**Jack Burgess**

**S**cratchbuilding a unique building for your layout based on a prototype photo can be a rewarding experience, but how do you approach such a project without detailed plans? If you have some head-on photos of each side of the building, the solution is fairly straightforward, but in many cases,



The D.A. Sanborn Co. began offering fire insurance maps on a national level in 1867. The maps were intended to help agents determine the risks involved in providing insurance for various properties. They showed building outlines and heights, construction materials used, and local water mains and fire hydrants. This reproduction for a portion of Merced Falls (left) shows the dining room (labeled as a Boarding House) used in our example. The front porches could be scaled from the drawing, but the stairway on the end of the building is shown on the wrong end. Merced Falls had a lumber mill, box factory, planing mill and several large drying yards. The inclusion of the cross-sections for the largest buildings was unusual and printed on a separate sheet.



The height of the rectangular marquee (top) is shown under the Info tab (2.987") and can be used to resize the photo to HO scale. Note the need to estimate the bottom and top of the "near corner" of the building. The perspective on the top edge of the building is adjusted with the skew tool until the tops of the windows are level when compared to the grid (above).

only three-quarter views are available. However, even such a view may be enough if you have a few critical dimensions, can make some general assumptions if needed, and have a photo-processing program such as Adobe Photoshop Elements®. This software is a simplified version of the professional-

grade Photoshop® and is available for around \$80.00 at Costco and Amazon.

Many times the basic dimensions needed for a building project can be gleaned from ICC inventories, railroad drawings, or Sanborn maps. I have also developed general dimensions by counting boards and assuming a standard

board width or by counting bricks. Heights can be compared to standard door heights or by assuming a typical nominal building height of ten feet per floor. In the case of the Yosemite Lumber Company dining room at Merced Falls, I had a Sanborn map which gave me the width and length of the building and another Sanborn map that had a cross-section of the structure that provided the height. In my experience the latter is unusual for Sanborn maps.

To get started, open the scanned photo in Adobe Photoshop Elements and straighten it if necessary. While Photoshop Elements has a "Straighten Image" choice under "Image/Rotate," I prefer to do it manually by displaying a reference grid (View/Show Grid) and then rotating the photo so that the near corner of the building (the corner of the building closest to the photographer) is vertical when compared to the grid. Then I can crop the photo tight to the structure.

Since we are going to stretch the image in both directions, we need to then increase the canvas size to give us some room. Select "Image/Resize/Canvas," and size and type in a generous canvas size. The operator can crop back to a print size when this is done. Unless the photograph is incredibly sharp, use "Filter/Sharpen/Unsharp" mask to produce a sharper image. Adjust the "Amount" as needed to result in an acceptable image.

Since we want to produce a final photo that is to scale (HO in this example), we need to start the scaling process by setting the near corner of the building to scale. Based on my Sanborn map, this building is about 22 feet high from the ground to the underside of the eaves. This is 3.035" high in HO scale (22 feet times 12 equals 264" divided by 87, which equals 3.035").

Photoshop Elements doesn't have a way to scale directly on a photo but there is a simple way to do this. Zoom in on the near corner and use the "Rectangular Marquee" tool and draw a box with one leg of the box coinciding with the height of the near corner. Since both the top and bottom corners of the building are obstructed in the photo you'll need to estimate their locations. Click on the "Info Tab" to see the height of this box. Divide the scale height of the building in inches by the height of this box to determine the amount of scaling needed. For our example, this is 3.035"/2.987", or 101.6 percent. Select all of the image (Select/All) and then use "Image/Resize/Scale" to rescale the image by the calculated percentage.

Before removing the perspective in the sides of the building, it is worthwhile to set up a custom grid and ruler system. Use "Edit/Preferences/Grid" and choose blue or another color visible

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against the black and white photo for the color of the grid with ten subdivisions per inch. Turn on the "Rulers;" position the mouse pointer over the intersection of the rulers in the upper left corner of the window, and drag diagonally down onto the image to reset the "zero origin". Set the new ruler zero origin at the bottom of the near corner of the building. Now, turn on the "Grid." You will now have a grid line coinciding with the near corner which will prove very worthwhile while dragging marquee boxes in the following steps.

Drag a "Rectangular Marquee" box to encompass the end of the building. The left side of this box should coincide nicely with the near corner. Now Use "Image/Transform/Skew" and drag the top and bottom right handles as needed to straighten this portion of the photo.

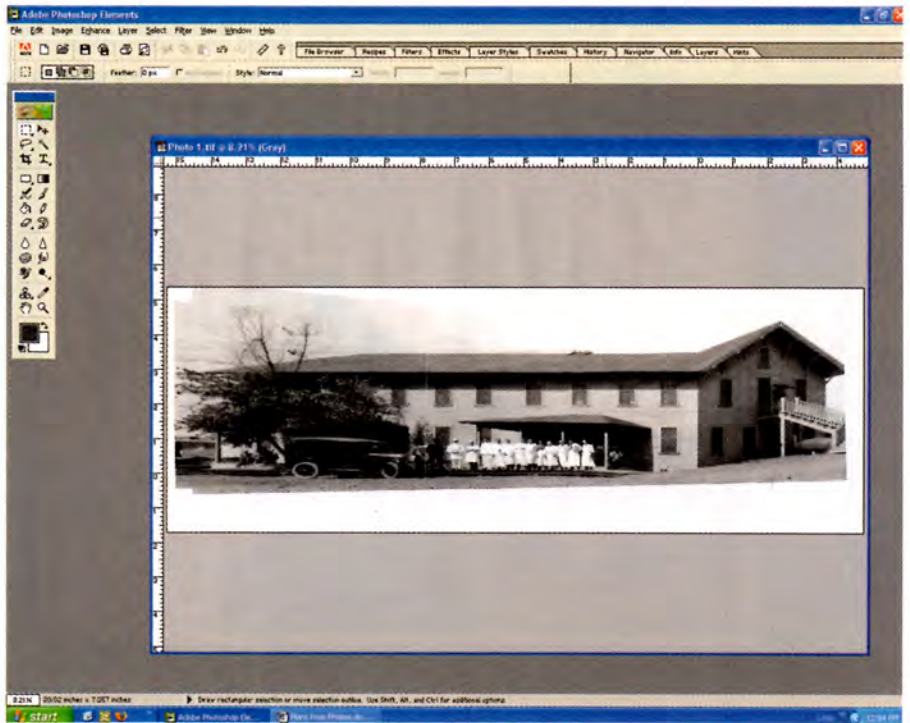
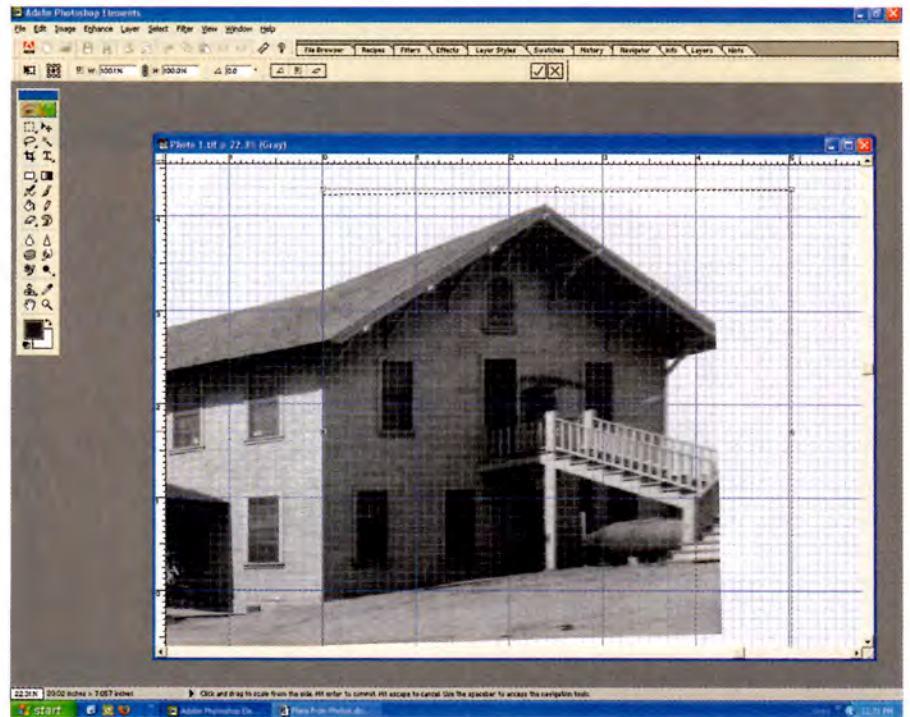
Compare the tops/bottoms of the windows to the grid to determine when the building is square. Get as close as possible but remember that you can repeat this step later if needed after stretching the building end.

Reselect the building end with the "Rectangular Marquee" tool and select "Image/Transform/Free Transform." Drag the right center handle to the right to stretch the end of the building. According to my Sanborn map, this building was about 35 feet wide, which is 4.83" wide in HO scale. As you drag the handle to widen this end of the building, watch the ruler and grids to scale the building to match the prototype building width.

Follow the same steps for the front of the building. If, after printing a test of the results, you need to fine-tune the length of one of the sides, calculate the percentage needed and drag a box to encompass just that side. Then select "Image/Resize/Scale," and type the percentage into the box for the width, leaving the height at 100 percent.

If the final image is too long to print, make one or more duplicate copies of the file and then crop one image to include just the end and another with just the front of the building.

Since the resulting prints are fairly close to scale, measure directly on the prints to size the windows, locate doors, etc. as long as those elements are all in the same plane. For example, for our dining room, the width and location of the porch overhang should be measured at the point where it attaches to the front wall (based on shadows) rather than at its outside eave. The prints can also be used to prepare drawings if desired or as a guide when laying out the sides of the building during construction. Note that while the perspective was generally removed from the photo, the width of doors and



After eliminating the perspective from the end of the building (*top*), the width of the end is adjusted to scale by dragging the right handle of the Rectangular Marquee tool. The screen capture of the work is shown *above* and larger in the final print-out on *page 103*.

windows along a side will still vary somewhat as you get further from the near corner.

Some judgment and common sense are thus needed in interpreting the resulting photo. For example, compare the width of a window to the space directly adjacent to it rather than to the

space between windows further along the side.

Since the photo is to scale, you can also easily compare styrene castings directly to the photo to select the appropriate castings. I use a lot of Grandt Line castings on such projects and the Grandt Line website includes photos of



The resulting photo after completing the steps for both the end and front of the building are dramatic. Although skewed, note the

bottoms of the second floor windows are level on both the sides of the building and that each side has been resized for HO scale.

most of their line. For windows and doors, right click on the enlarged version of a possible casting, choose "Copy Image" and paste it into the scale photo. Use the Magic Wand to remove the excess background around the casting

photo and then scale the casting to match the scale of the photo. Note that Grandt Line includes the overall size of each casting, which provides the information needed for this last step.

While field measurements remain

the most exact means for preparing drawings for scratchbuilding a prototype building, there are many times when they are just not available. This method of working from an oblique photo may be the best alternative. 