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# Entertainment and Lighting Design

## with Vectorworks Spotlight

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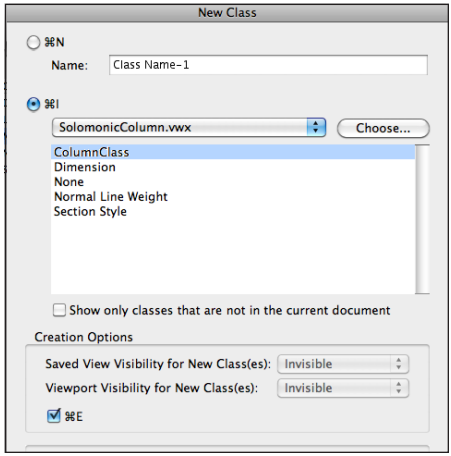
# The Central Unit

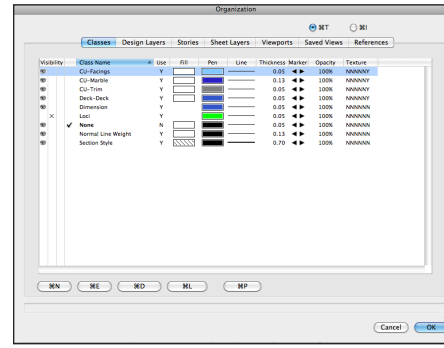
A production of *Romeo and Juliet* actually requires very little in the way of staging. It does require some pretty good acting, but that's not our focus here. Basically for the action of the play we need:

- a Balcony
- a Wall
- a Slab

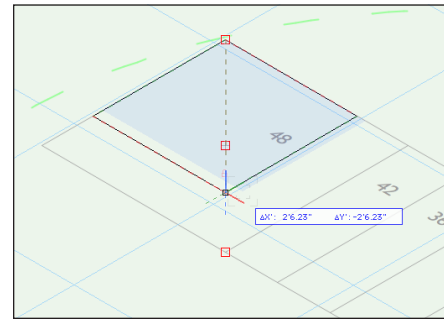
Scene changes often slow the pace of the production. In order to accommodate these specific needs and to swiftly move between locations, we're going to design a simple unit. In this case the movement would be controlled by winches, and there will be tracks in the Show Deck to control the movement and placement of the unit. Without the mechanics, the same unit could be moved by hand.

Go to either **Tools>Organization** or press the **Classes** button in the View bar to access the Classes Organization dialogue. Create a New Class and select **Import Classes** and then **Choose**. Select your SolomonicColumn file, and import the **Column** class. Rename that class as *CU-Marble*. Do the same with the classes for the Show Deck, and rename those as well. Importing the classes also imports the associated textures. Rename those textures with the CU prefix.

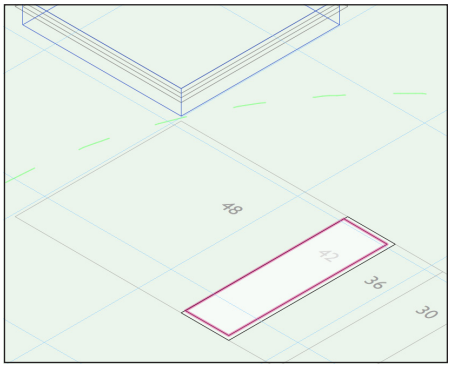



In the right isometric view, snap to the top (+48") square on the stage right of the unit and trace that square. Offset that square by 1" inside of the new square. Select both, and go to **Modify>Clip Surface**. Like with the show deck, you have made a surface and trim. In this case, the faces will not light up. With the **Push/Pull** tool, select the trim and extrude 2", and then extrude the surface and extrude 6" and go to the OIP. Set the classes and the bottom Z of each object. The top of each object needs to be at 48". Therefore the

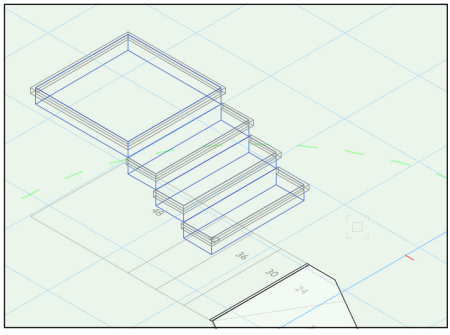


trim bottom Z should be 46", and the surface should be set to 42". (You'll have to do some simple subtraction, or you can let Vectorworks do the math by entering 48"-6" for the thickness of the surface.)




Repeat for the 42" step, except this time, before clipping the surface, select the outer rectangle. Then in the OIP change the width from 10" to 13" toward the back, and then select the inner rectangle. In the OIP change the width from 10" to 12" toward the back. Extrude, and set elevations.

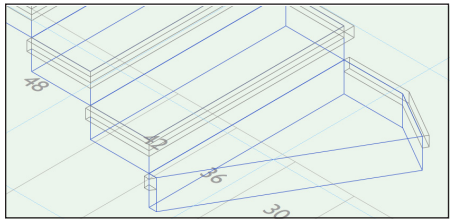
Select the trim and deck components of that step and go to **File>Duplicate Array**. In the Linear Array mode, duplicate those objects 12" on the X axis and -6" on the Z axis.



For the next step down, trace the outer perimeter with the Polygon tool from the Basic tool set and then add a 1" x 42" rectangle along the stage left edge as shown. Select both, and go to **Modify>Add Surface**, offset 1", and then add a 1" x 40" rectangle to the inner object before clipping.

In the Top/Plan view add some guidelines, and use the Reshape tool from the Basic Tool set to modify the interior polygon as shown.

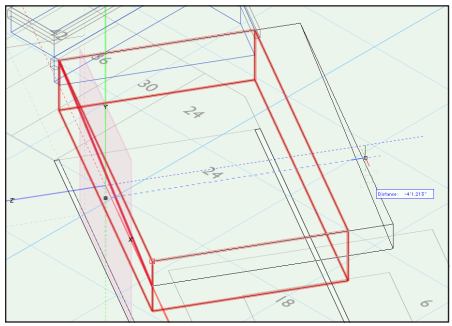
Extrude, elevate, and class as above so that the final result looks like this.



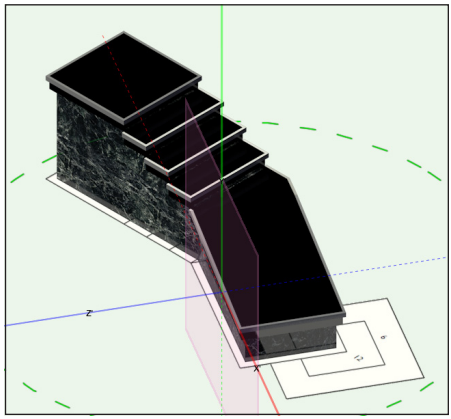

Use the Rectangle tool in the Angled Rectangle mode to draw the 3' 6" x 6' 0" rectangle for the rake (indicated by the two dimensions on the same plane). Offset and clip.

Extrude the Deck area to 12" and elevate to +12" in the OIP. Set the Working Plane to the front face of this object, and draw a line from the top center to the midpoint of the forward edge. Use the Push/Pull tool in the Sub Face Mode to subtract the top triangle.

Repeat this process to subtract the bottom triangle created by drawing a line from the bottom of the 24" step to the bottom of the ramp.



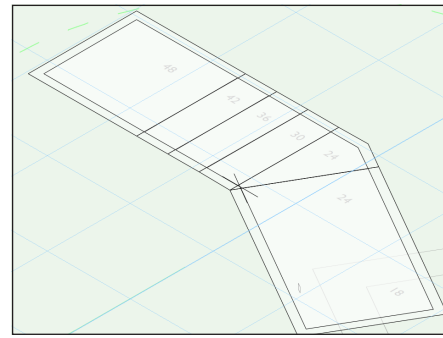

Extrude the Trim piece to 8" and set the bottom Z to 16". Repeat these steps to get the trim to the desired 2" height. Change the view, as needed, using the Flyover tool from the Basic Tool set. Toggle **Classes** and **Layers** on and off as needed.



Switch the Working Plane back to the Ground Plane by going to the Top/Plan and then back to the right isometric view. Turn off the Deck and Trim Classes. Use the Rectangle tool to retrace each of the steps and the rake we have made. Offset them inside by 3" add as needed. Extrude each to 6" below the height indicated, so they each reach the bottom of the now invisible steps.

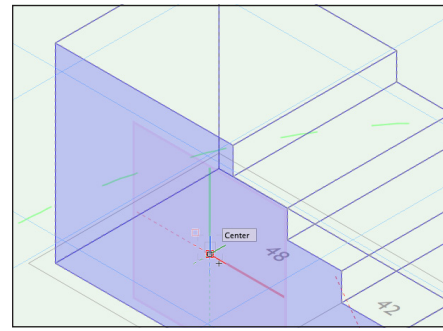
Use the Command/Ctrl key to select objects while using the Offset tool.

Use the placement grid in the OIP to resize as shown. Use the Reshape tool for the 24" step. Add guidelines as required. You'll have something like this.

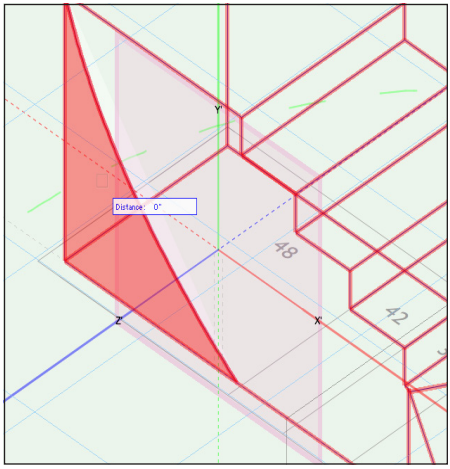


Extrude as needed to below the steps. Extrude below the ramp to 18" and change the working plane. Draw a line and subtract the face as we have done. I added a 12" x 12" rectangle, drawn in the new working plane, as a guide for my angled line.

Select all of the 3D objects, and go to **Model>Add Solids**. Assign the new object to the **CU-Marble** class and turn the class off. Delete the 2D objects, and turn on all of the CU classes to reveal this.

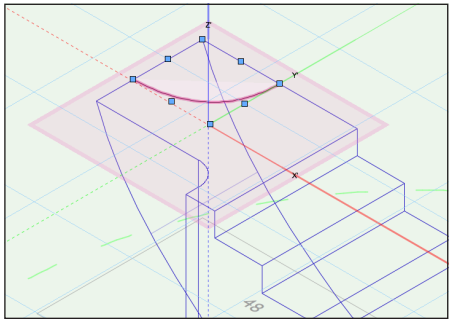


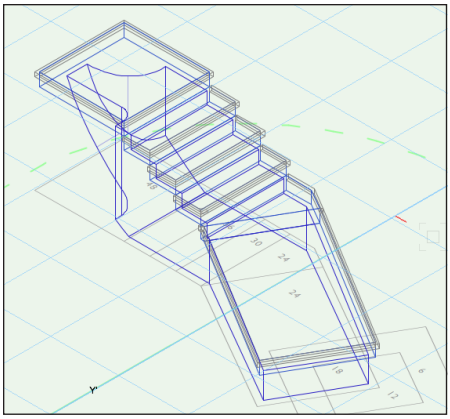
The result is a little clunky. Turn off the Trim and Decks. Set the working plane to the large face in the right isometric view. Using the Polyline tool, in the Bezier Curve mode draw a line with three points on the face, and slice that area away with the Push/Pull tool.



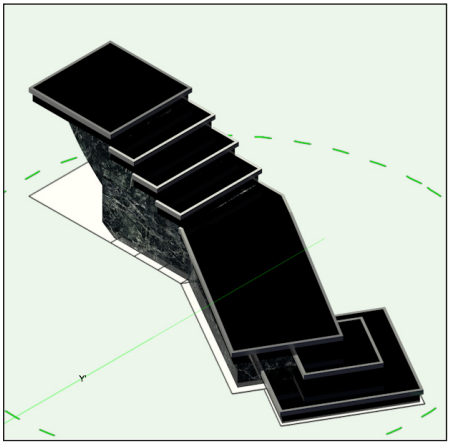

Change the plane to the top of this area. This is the balcony, by the way. Draw a rectangle, and fillet the one edge as shown. Slice this area away from the form.

Working in the same plane, draw another curve in the top corner. I used the Polyline tool and then the Reshape tool to get this curve. Slice this section away. Turn on the other Classes.



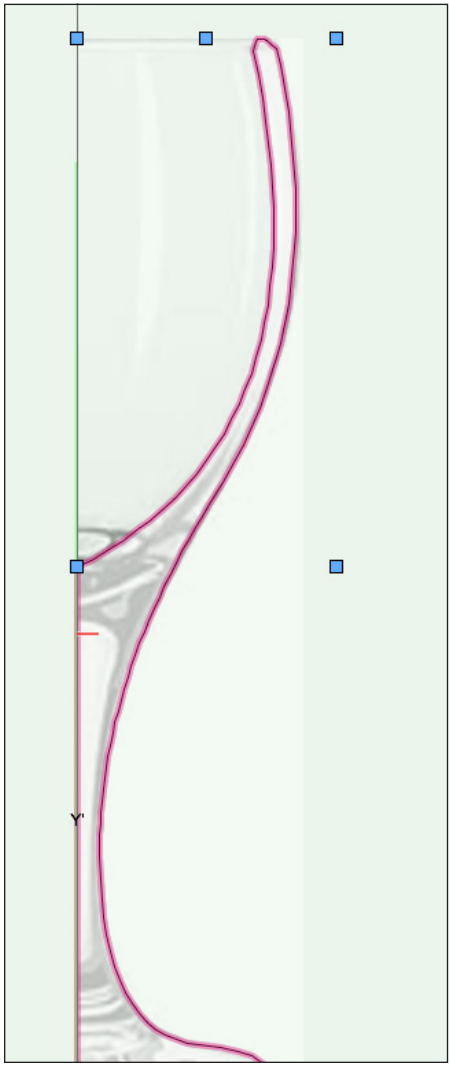
Now, add the bottom steps, and you should end up with something like this.



One more thing...

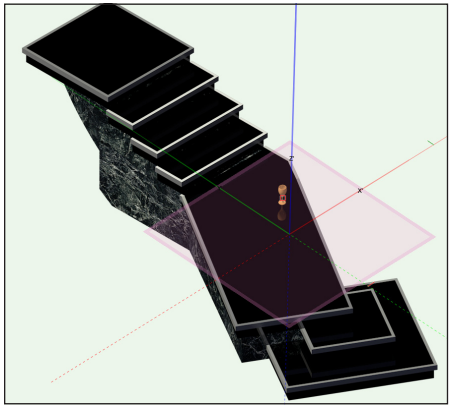
Create a new Class called *CU-Goblet*. Give it a brown pen color, and use the Metal Gold Polished texture from the Default Textures, always accessible from the Class tab of the Organization palette. Create a new Design Layer called *Goblet-Design*, and turn off any visible Design Layers. Go to the front view.

Go to **File>Import>Import Image File**, and import the file Goblet.jpg and place the left- hand corner at 0,0. In the OIP, set the size of the image at 1 1/2" x 7" so that it is adjusted for the final object size. Trace with the Polyline tool and go to **Model>Sweep**. Assign the CU-Goblet Class, and create a symbol with the insertion point at the bottom center.



Return to the CentralUnit Design Layer. Turn off the Goblet-Design layer. Look at the CU in right isometric view. Set the Working Plane to the top of the ramp, which is the Slab for the purposes of the script. Go to the Top View and insert the Goblet symbol onto the slab. Go to the Front view and see that the symbol is inserted on the angle of the slab. Go back to the isometric and render.

You can insert 3D symbols on different working planes. 2D or hybrid symbols cannot be inserted into different working planes. If you design a project with a rake or a ramp, you can use existing symbols in the Vectorworks library by importing the symbol, editing the 2D component, and then deleting the content of the 2D component. Always edit a copy of the symbol rather than the original, as you may want to use that 2D information sometime in the future.



Select all of the 3D content and create a Hybrid symbol CU. Do not include the Goblet in the 2D content. Class the 2D content in a new Class CU-Container with only Pen and Fill attributes, no texture.