Visual 2012

Simple Office Tutorial

Objectives

- Use of the Interior Tool in making lighting layouts to meet criteria.
- Selecting IES files and determining the Light Loss Factor.
- Finishing the design by bringing it into Visual Professional.
- Emphasize difference between the average illuminance calculated by the Interior tool and the average illuminance calculated by the point method.
- Create and use office partitions and furniture for the calculations.
- Review results.
- Create a printout.

Design Criteria

The primary task is to light an open plan office area to the typical level of 30 footcandles. The open office area is 56 feet by 53.5 feet by 9 feet. Reflectance values of the room surfaces are estimated to be 80% ceiling, 50% walls, and 20% floor. You want to try an efficient 1x4 LED recessed luminaires.

Design the lighting to meet maintained conditions. With the excellent controllability of LEDs and a lumen maintenance program, use a constant lumen output control system to keep the lamp lumen depreciation (LLD) at a value of 0.8. Over the life of the system, the light level will remain at .8 of the level, slowly increasing wattage to maintain that level. For a clean office setting and routine cleaning, the Luminaire Dirt Depreciation (LDD) is estimated to be .95. Total LLF = .8 x .95 = .76.

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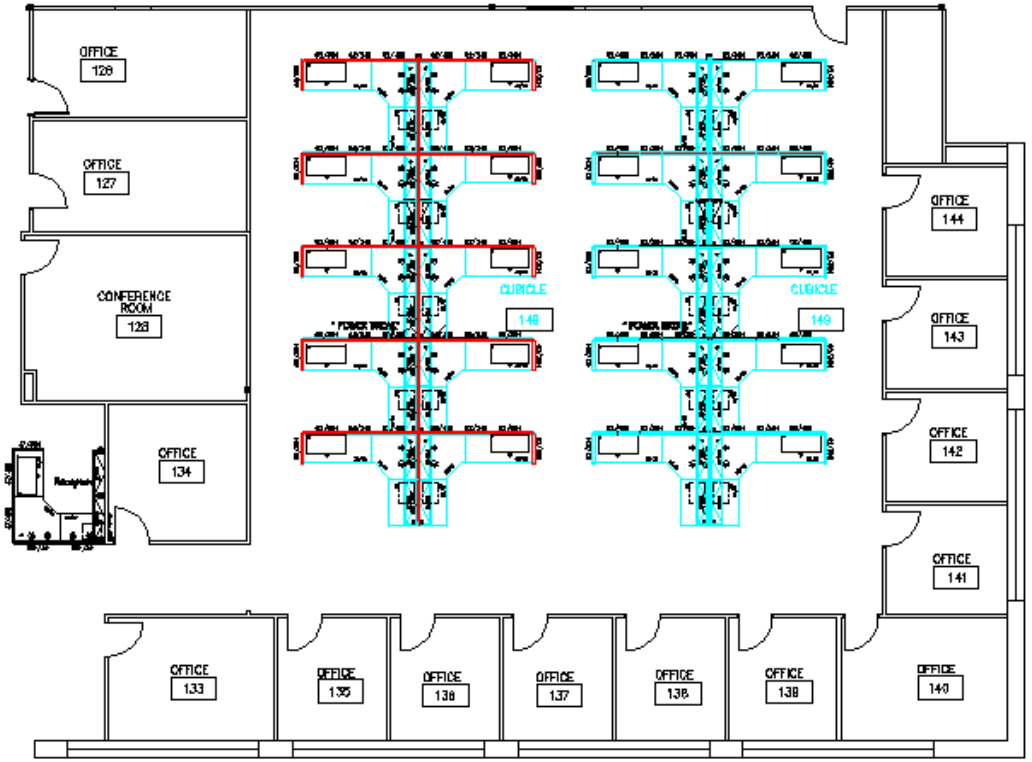
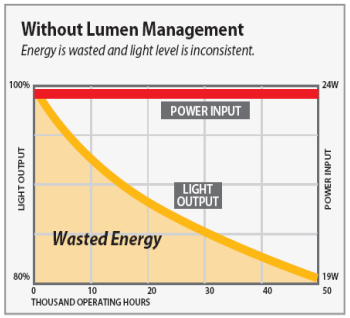
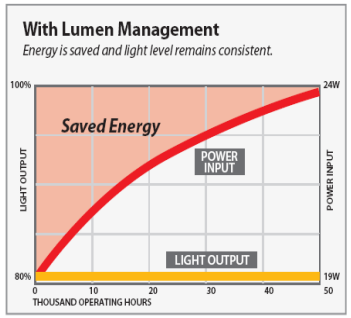


Constant Lumen Management

Enabled by the embedded nLight control, the RTLED actively tracks its run-time and manages its light source such that constant lumen output is maintained over the system life. Referred to as lumen management, theis feature eliminates the energy waste created by the traditional practice of over-lighting.





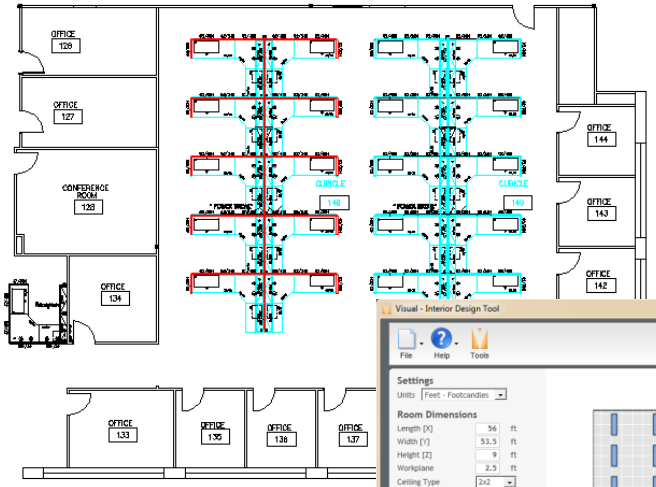
Length: 48 (121.9)
Width: 12 (30.5)
Depth: 3-1/8 (7.9)

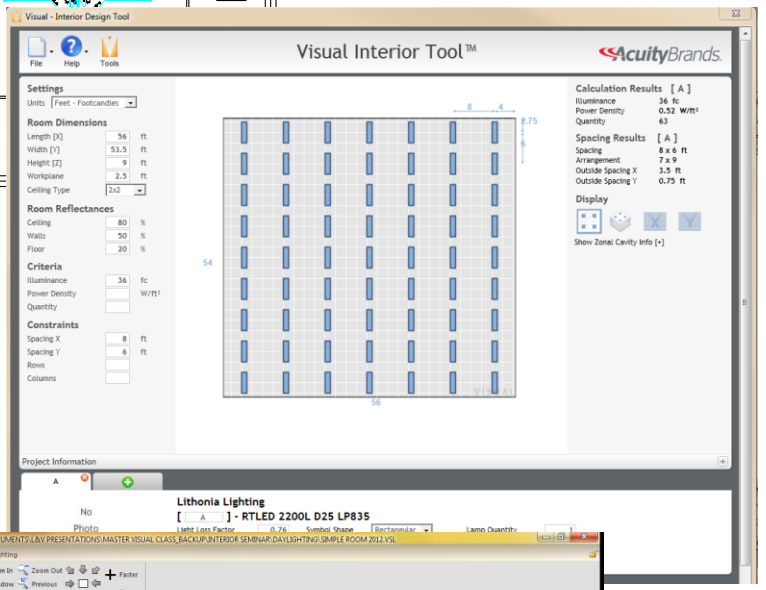
Note

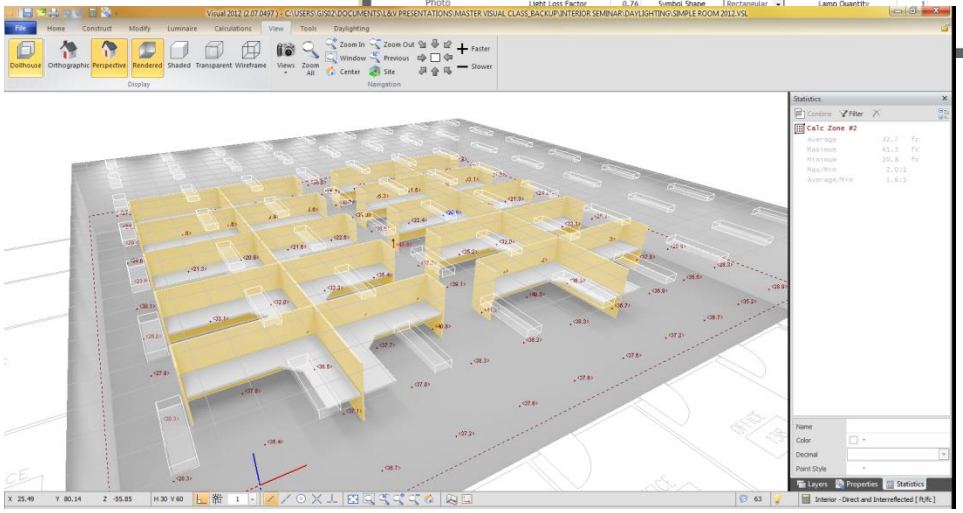
1 With nlight 80% lumen management input watts start at 19 and gradually increasing to 24 at 50,000 hrs.

Design Plan

1. A lighting design for the open office spaces will be made using the Interior Design tool. Then, we will transfer the layout into Visual. Points of analysis will be used to determine the uniformity ratio. Partitions and desk surfaces will be added to take their effect into account. The design will be rendered. Finally a printout will be created and saved as a PDF file.
2. Import the CAD drawing
3. Measure dimensions and adjust the scale if necessary
4. Determine the luminaire layout to provide 30 average maintained fc 2.5-ft above the floor for the open offices. Use the Tool/Interior web program. Request approximately 20% more light (36 fc) because of eventual light reduction from partitions and desks.
5. Export layout to design mode.
6. Add partitions and desk surfaces to the space and calculate.
7. Render.
8. Compose printout.







AcuityBrands.

Import the AutoCAD model

1. Start Visual 2012

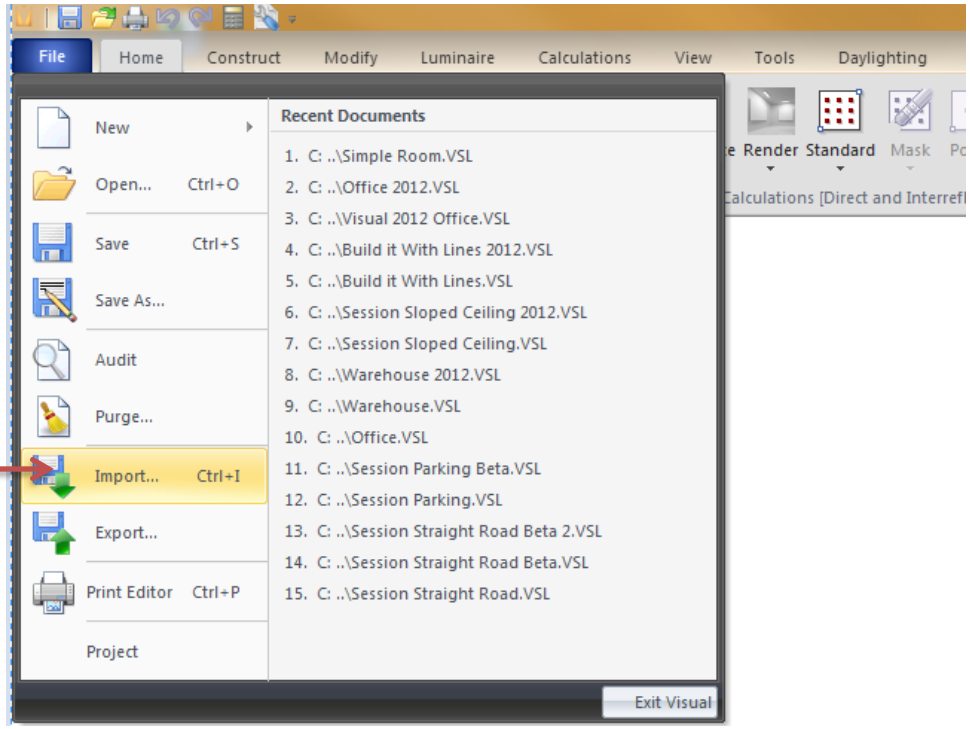
2. **Import AutoCAD file** using the command **File/Import** command.

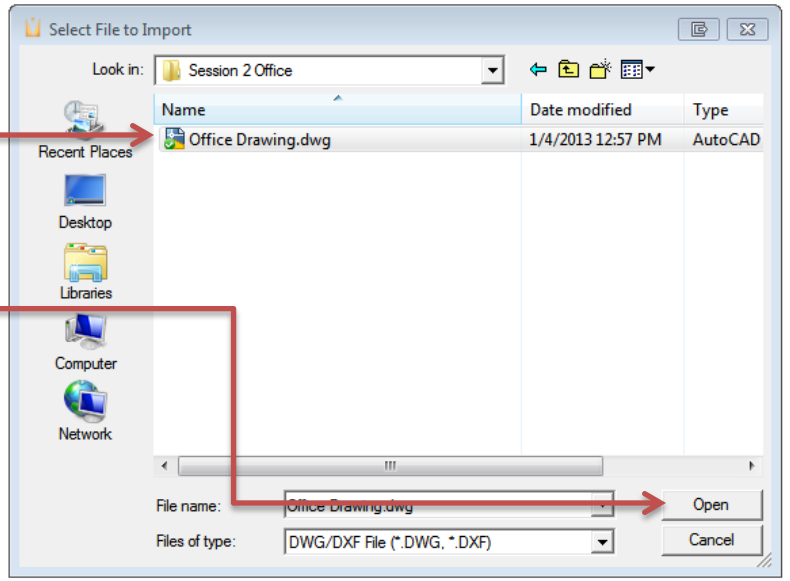
   A. Navigate to the folder that contains the file "Office Drawing"

   B. Select the DWG Office Drawing file with a left click. Note, you may have to change the File of Type in order to see the drawing files.

   C. Select "open"

Visual will import the entire drawing with all of its layers. Within Visual, we will be able to turn off layers that are not needed for the lighting calculations.





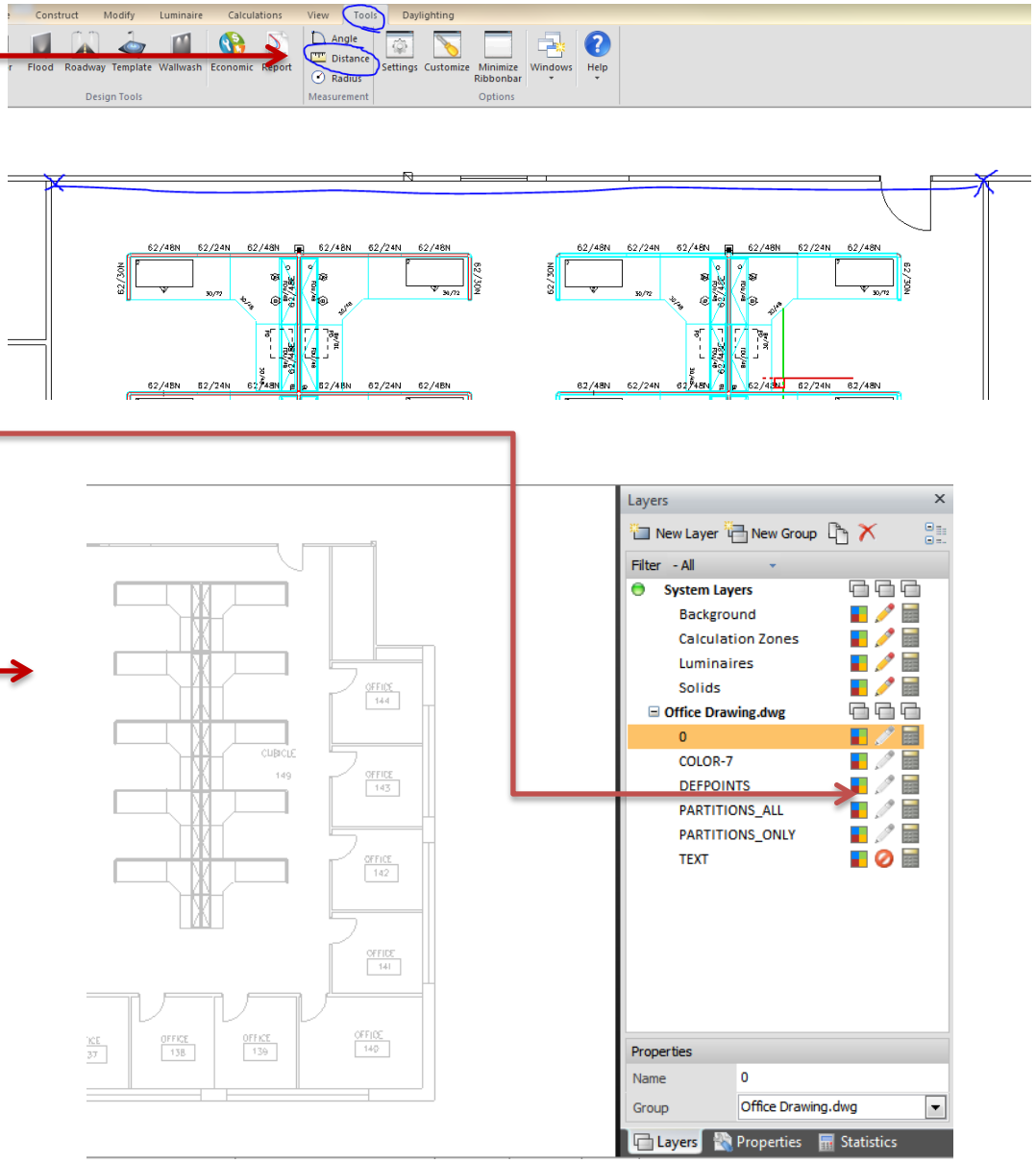
Measure Dimensions

1. Check dimensions to insure background is scaled properly **(Tools/Distance).** Measure the width on the inside of the open office room. If it is 56 feet, no scale adjustment is necessary.

2. Now that the AutoCAD file is imported and the scale is confirmed as being correct, turn off the TEXT layer and turn all the other layers to Uneditable. Use the layer panel on the right side of the screen. Turn off a layer by clicking on the pencil until you see the "X" symbol. Turn all the other layers to uneditable by clicking the pencil until the pencils become ghosted.

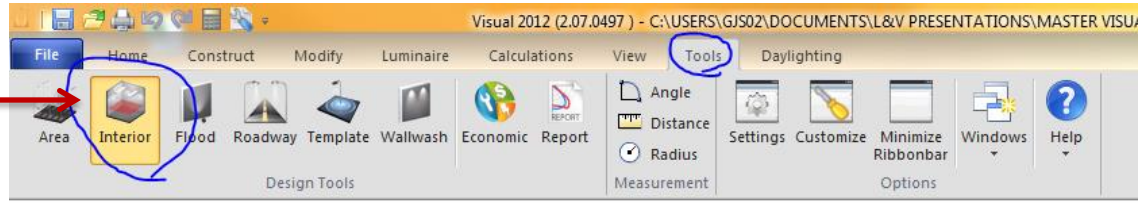
3. At this point all the background elements in the design screen will be dimmed or "ghosted". This will allow us to reference the points without the danger of accidentally changing them.

This might be a good time to save the file. From the main menu, select **File/save.** Enter a name (such as "Office-1") to save the file. While Visual does have an Autosave feature, it is a good habit to save your file often.

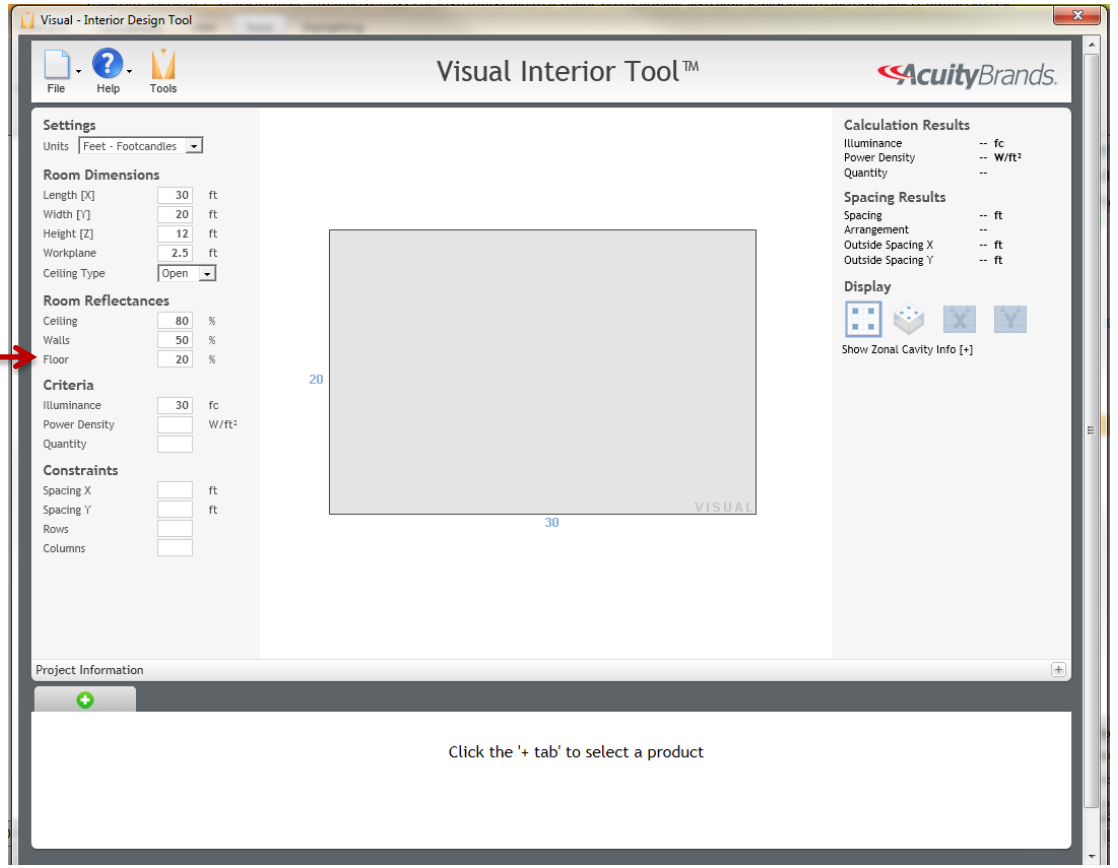


Determine the luminaire layout

1. The number of luminaires necessary to provide 30-fc average maintained at 2.5-ft above the floor as well their spacing can be determined using the Visual Interior Tool. It is a web based calculation program. From the main menu, select **Tools/Interior. Note: You must be connected to the web for this to work.**



2. The screen that opens has a default room already completed. Simply work your way down the left side, changing the dimensions to match our conditions.



Enter Room Dimensions

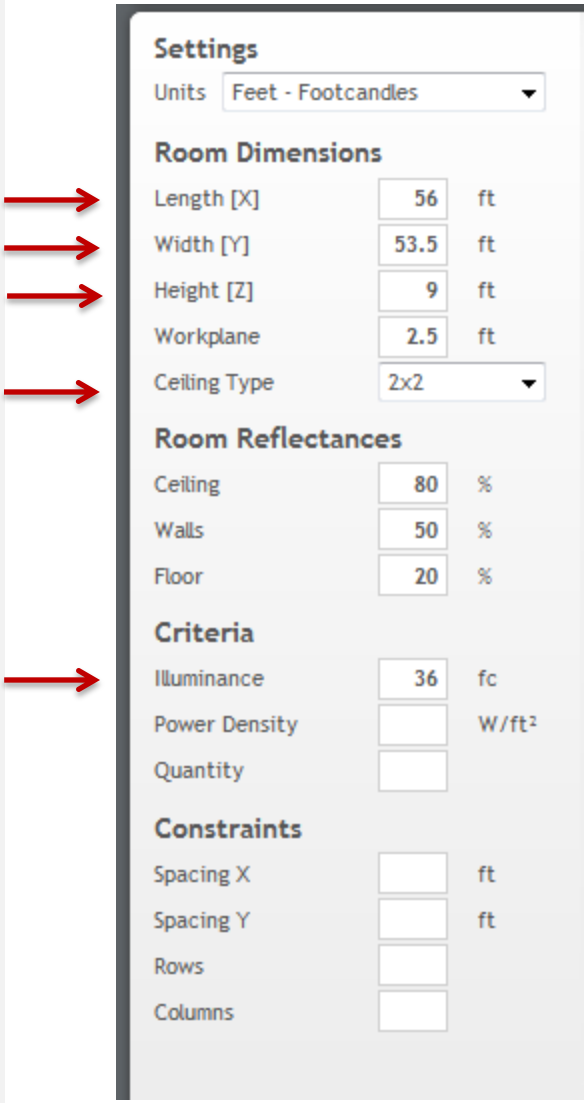
1. Fill in the screen describing the office's geometry and reflectance conditions. The way the drawing was imported the dimension are

2. Length [X] : 56 ft
3. Width [Y]: 53.5 ft
4. Ceiling Height: 9ft

5. Ceiling Type: 2x2

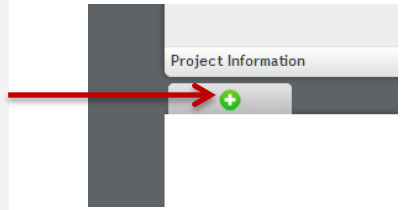
6. Illuminance: 36fc

Note that we are going to overstate the footcandle level to try and compensate for interreflectance losses because of the furniture.



Selecting an IES File

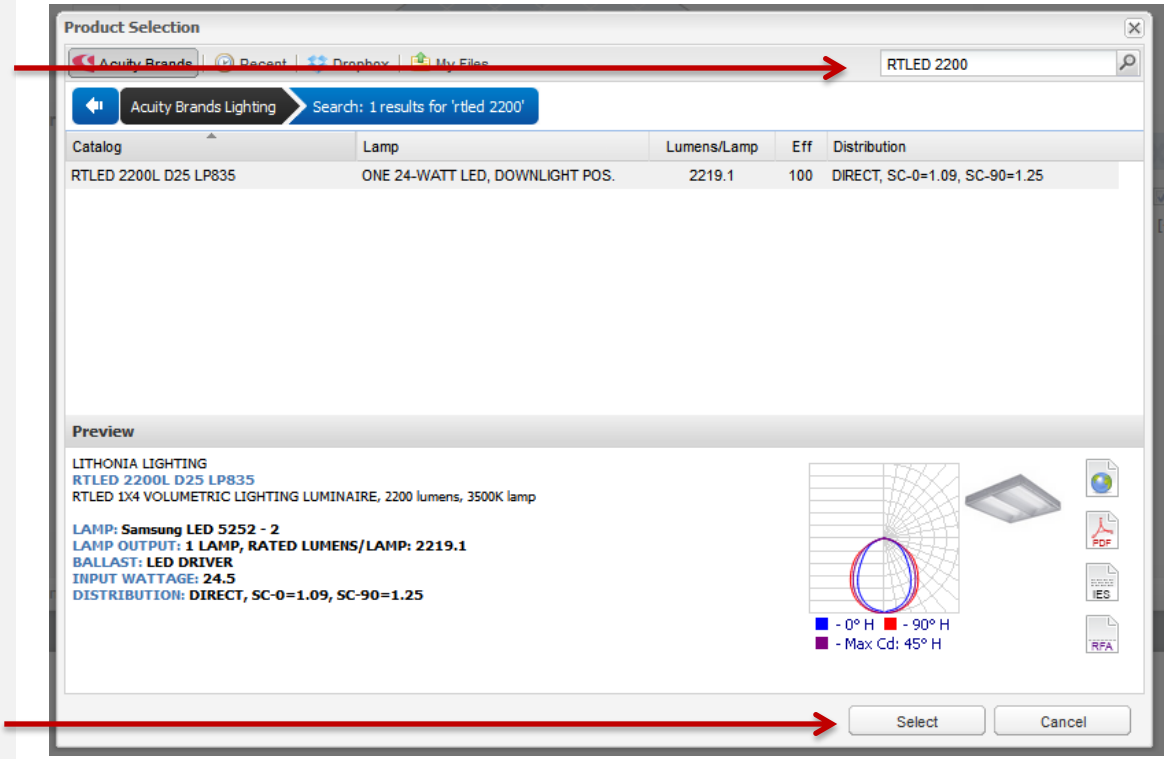
1. Move to the bottom of the screen and pick the green plus to select the luminaire



2. In the Search box, type “RTLED 2200”

3. Select the RTLED photometric file that is displayed in the list

4. Click select to close the Product selection window and add the RELED file to the interior tool.

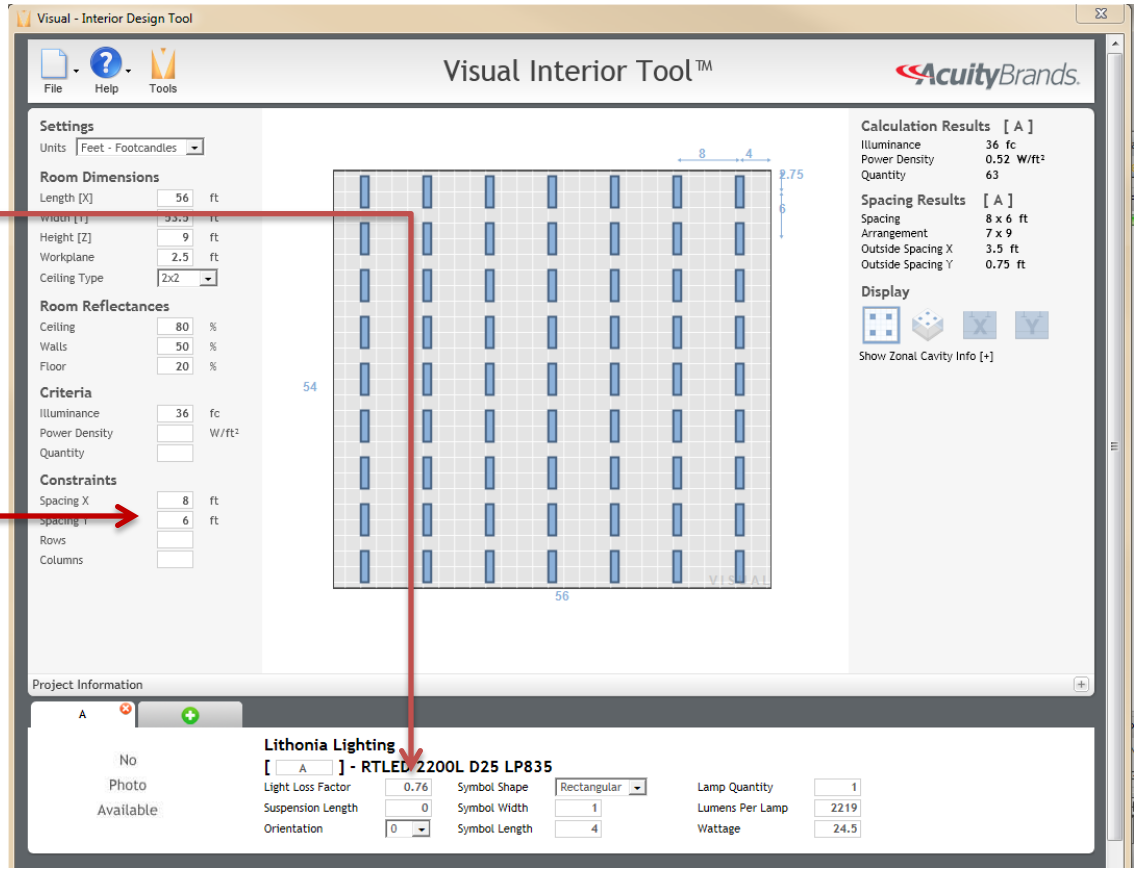


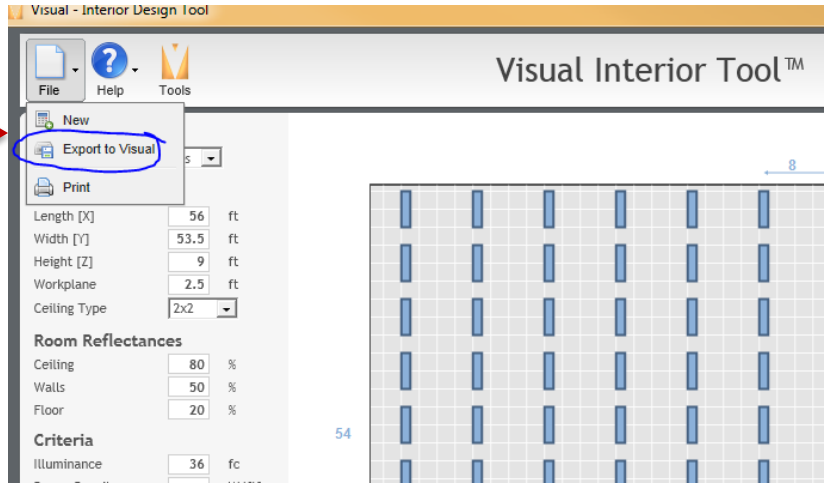
Completing the Layout

1. The program will calculate the number of luminaires needed. Let's also make sure the LLF is appropriate. Change the LLF to .76.

2. The Visual program will suggest a layout. However, we may know more about the placement and can make adjustments. In this case, let's enter a 6 and 8 in the Spacing X and Spacing Y slots. This will place the luminaires so they cover the partitions properly

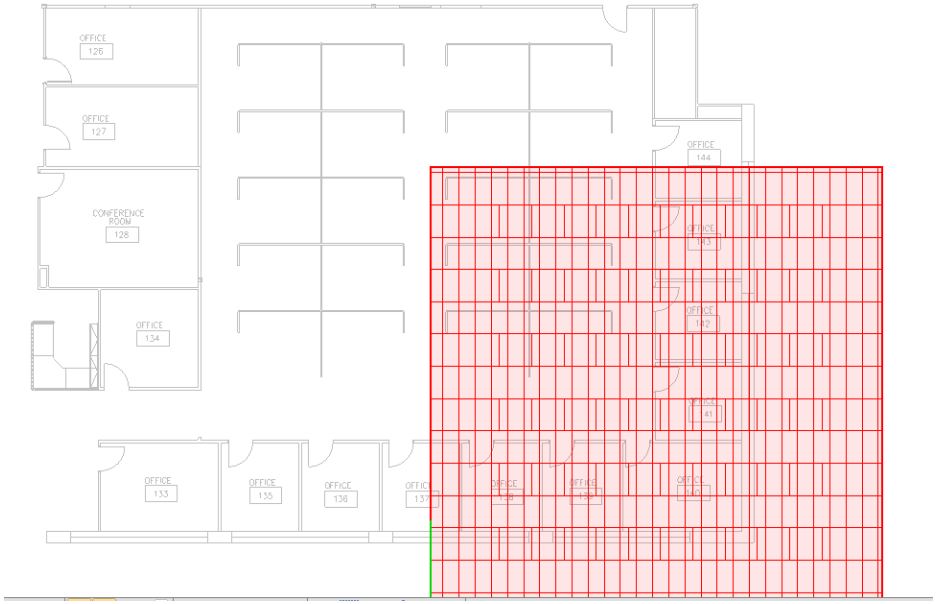
3. When satisfied with the level and layout in the Visual Interior Tool, select **File/Export** to Visual.



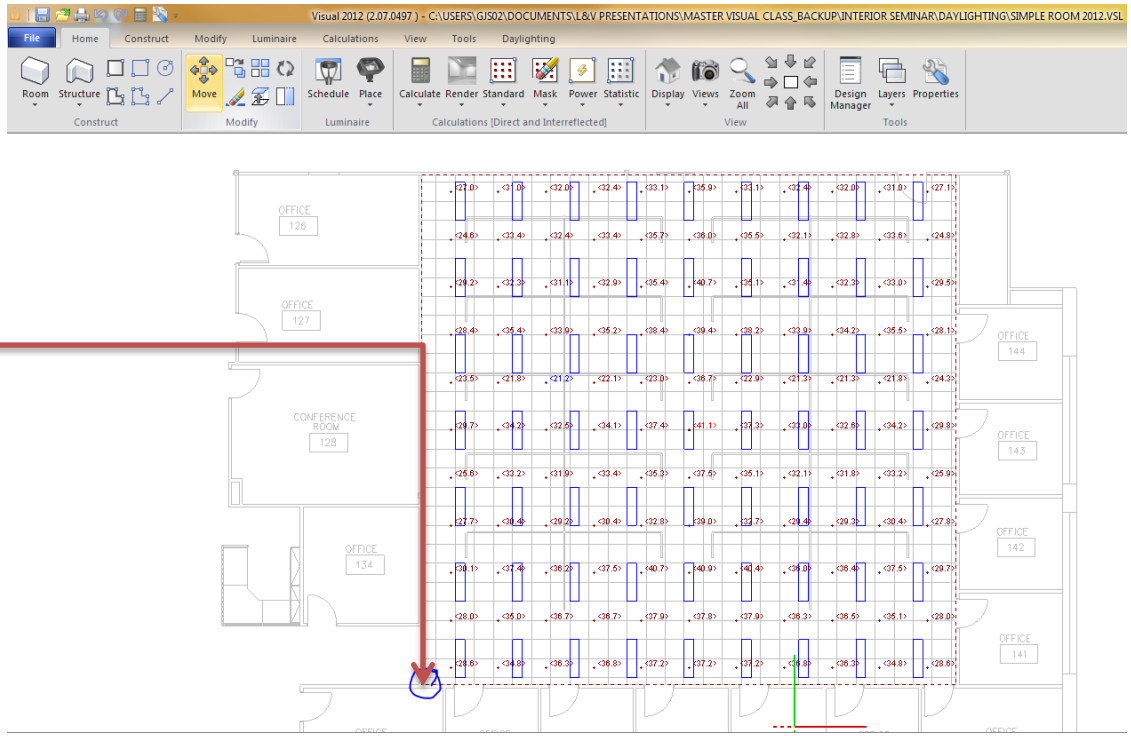


Inserting the Interior Tool Design

1. The room created in the Interior Tool will now be attached to the pointer in the Design Environment.

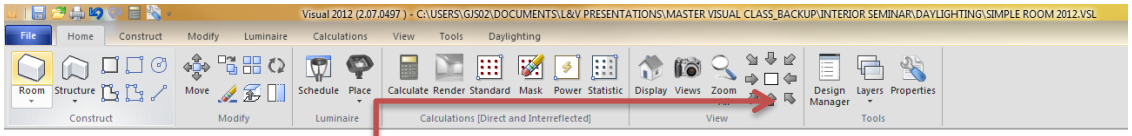


2. Turn on **Endpoint Osnap** and locate the first point at the lower left corner of the open office room.

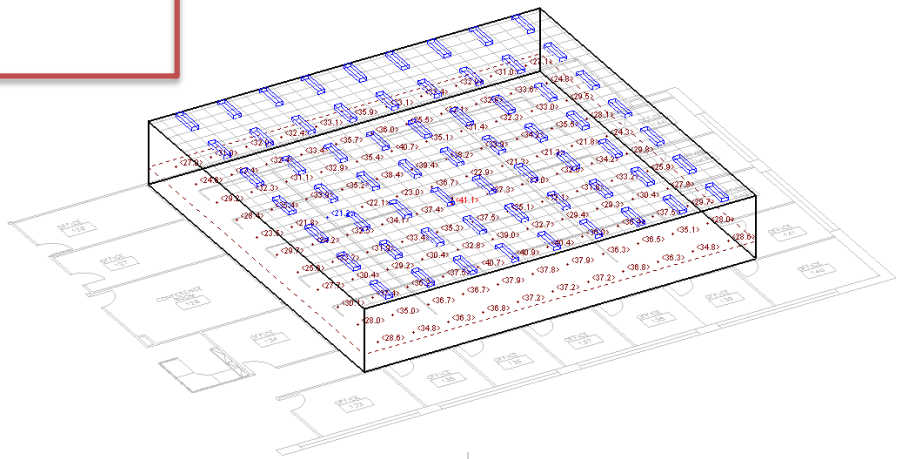


3. Select the lower right corner as the second coordinate or enter **0** in the Command Line for the rotation angle.

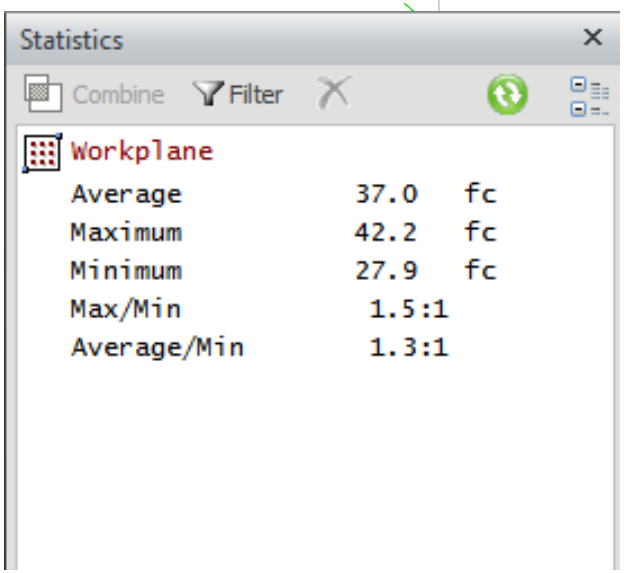
Calculate the Interior Tool File



1. Check your placement by viewing the SW orthogonal view.



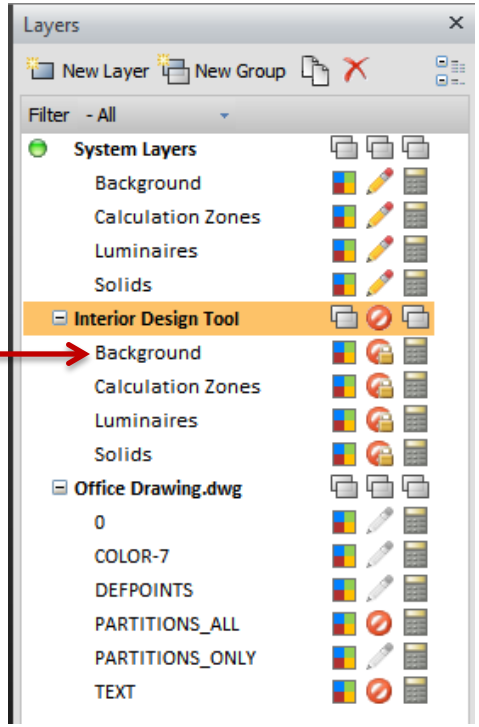
2. Hit the Calculate button. When the calculation is complete, it will automatically open the Statistics sidebar on the right.



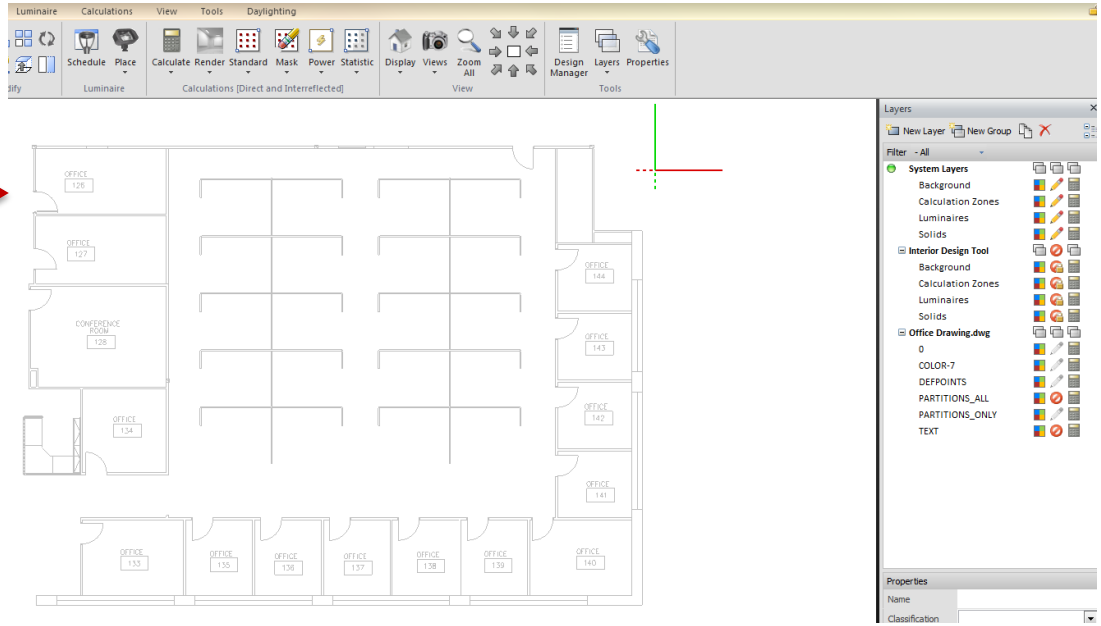
Note: Visual calculates the light level using full radiative transfer, instead of the relatively simple lumen method calculation used in the Interior Tool. The difference between these calculation methods accounts for the slightly different calculated average illuminance values (36fc in interior tool, and 37fc in Visual). Typically, the lumen method average calculated in the Interior Tool is a good approximation

Preparing for Adding Detail

1. Add partitions and desk surfaces to the space and calculate. Select the Layers tab and turn off the layers under the Interior Design Tool. Also make layers under the Office Drawing.dwg uneditable. This will allow you to see the partition layout.

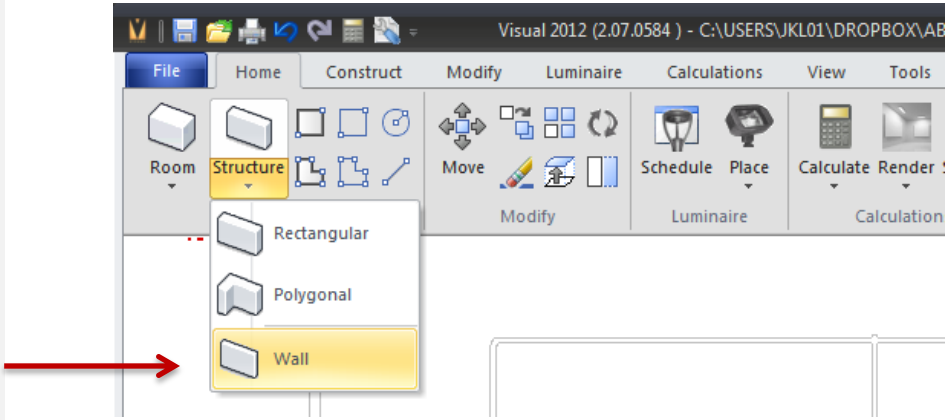


2. Once you turn off the layers, your drawing should look like this:



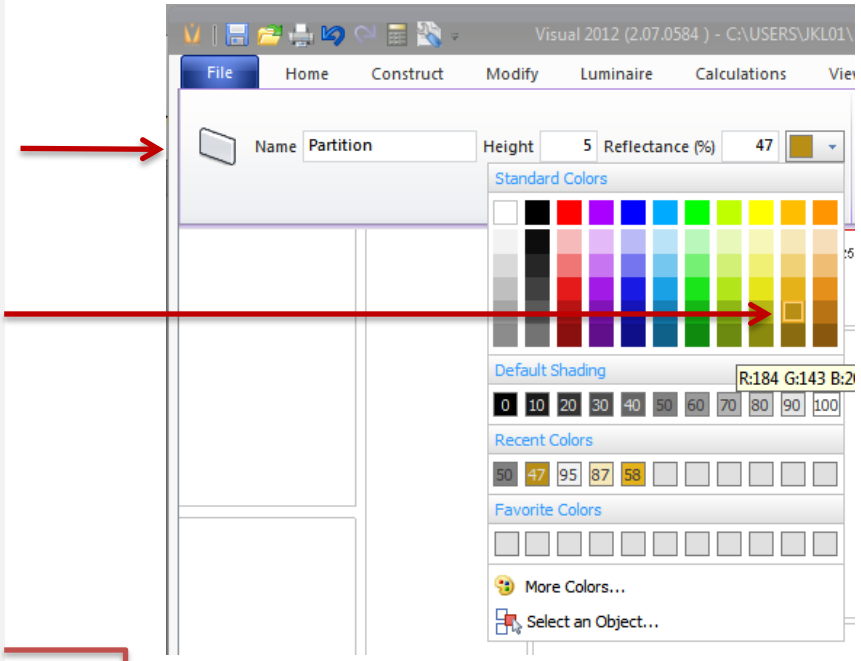
Create cubicle walls part 1

1. Construct one of the partition segments by using the **Construct/Structure/Polygonal**.

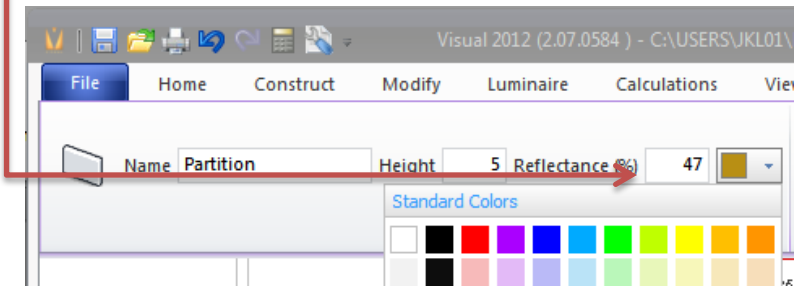


1. Enter a name “Partitions” and make the partition height 5 feet.

2. Choose a color to make the partitions.



3. The color you select will change the reflectance value

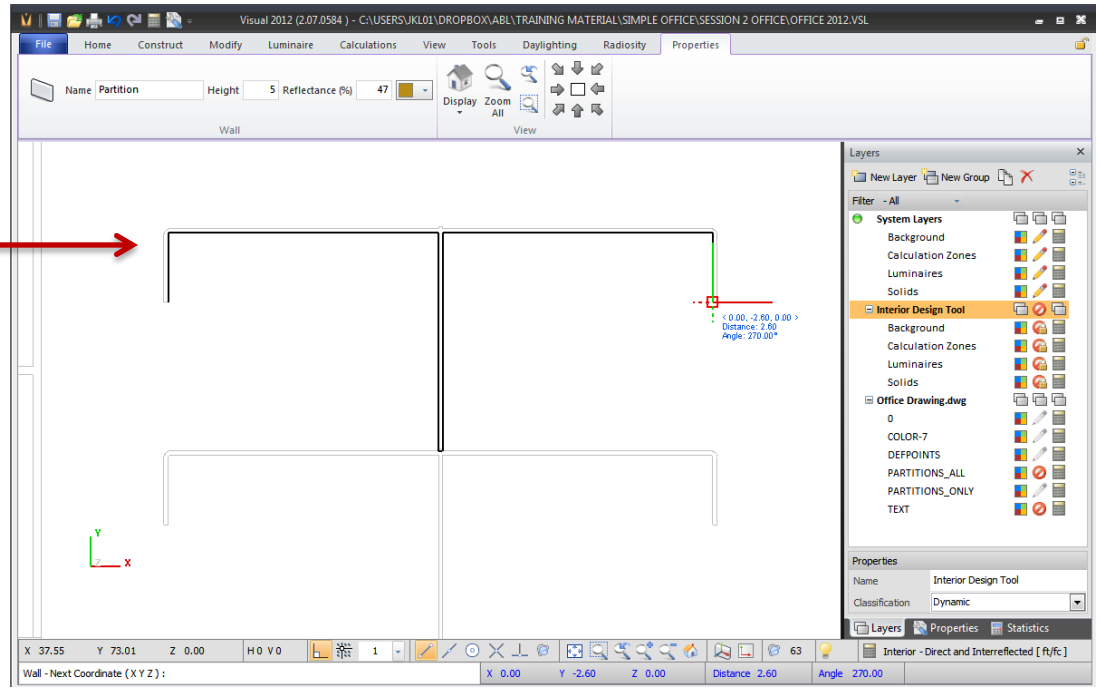


Create cubicle walls part 2

1. Using **Endpoint Osnap**, move around the partition to complete the structure. (follow just the inside edges)

2. You add a new vertex with each left click

3. Right click to complete the command



Create Desk Surface Part 2

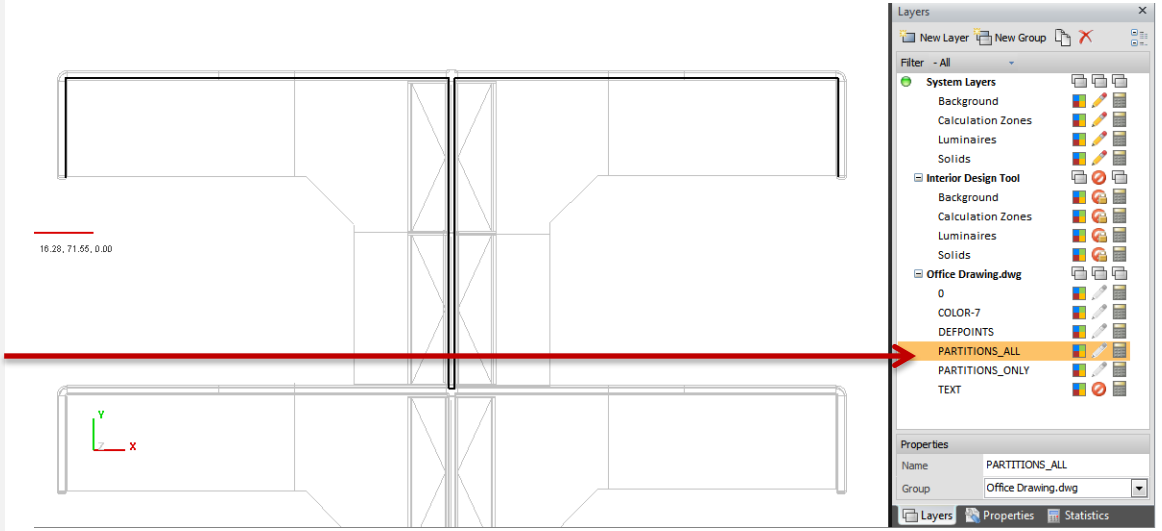
1. Turn the **PARTITIONS_ALL** layer on so you can identify edges of the desk tops.

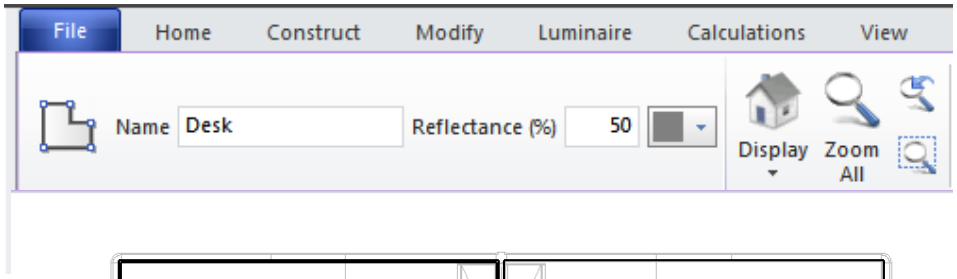
2. Select the **Polygonal Surface** command

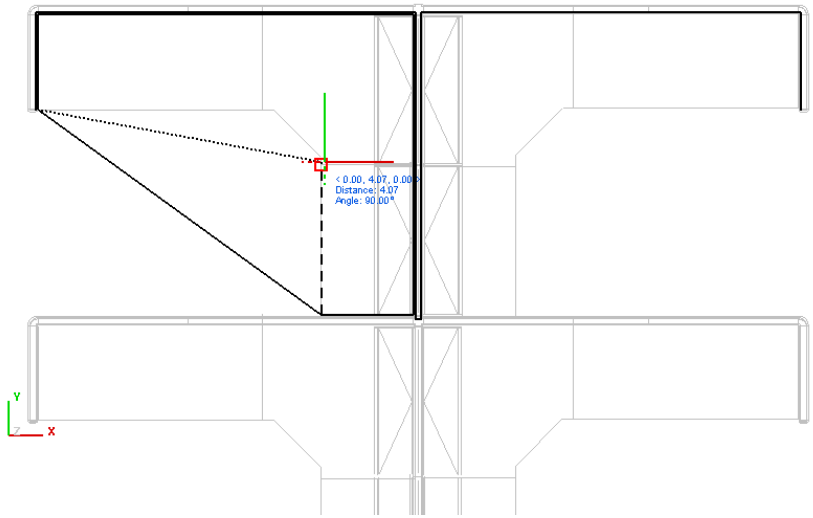
3. Name the surface **Desk**

4. Using **Endpoint Osnap**, left click the corners of the desk to add new vertices. If you make a mistake, use Undo to remove your last vertex. You may end up toggling Ortho or Endpoint Osnap on/off to help you. You can zoom in and out with the mouse wheel as you work.

5. Right click to complete the command





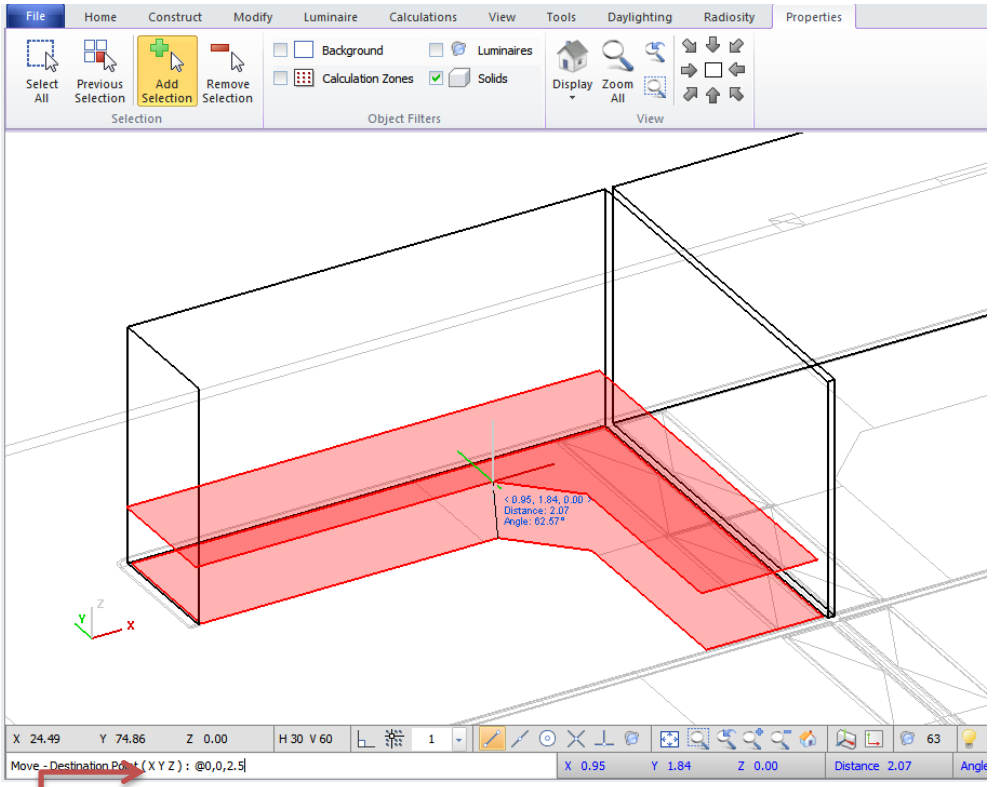


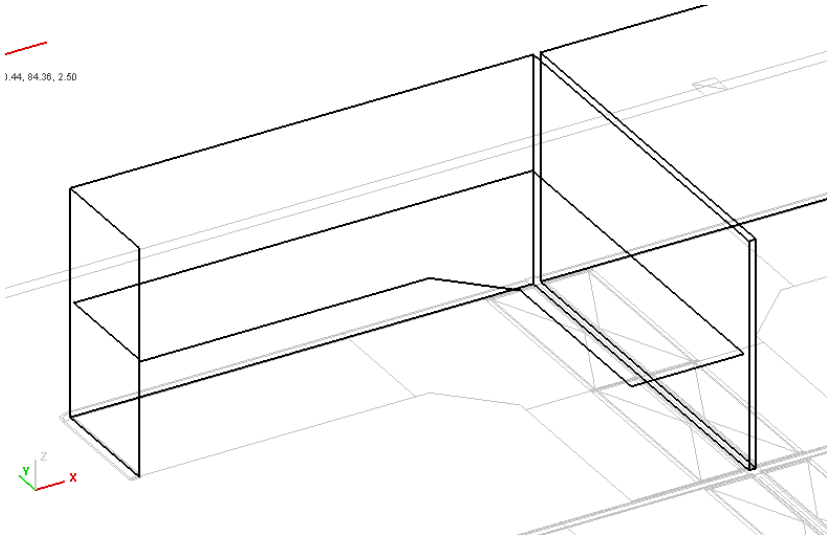
Create Desk Surface Part 2

1. Your desk top will be laying on the floor. You will need to move it up until the top of the surface is at 2.5'.

2. Use the move command and select the desktop. Move it from 0,0,0 to 0,0,2.5

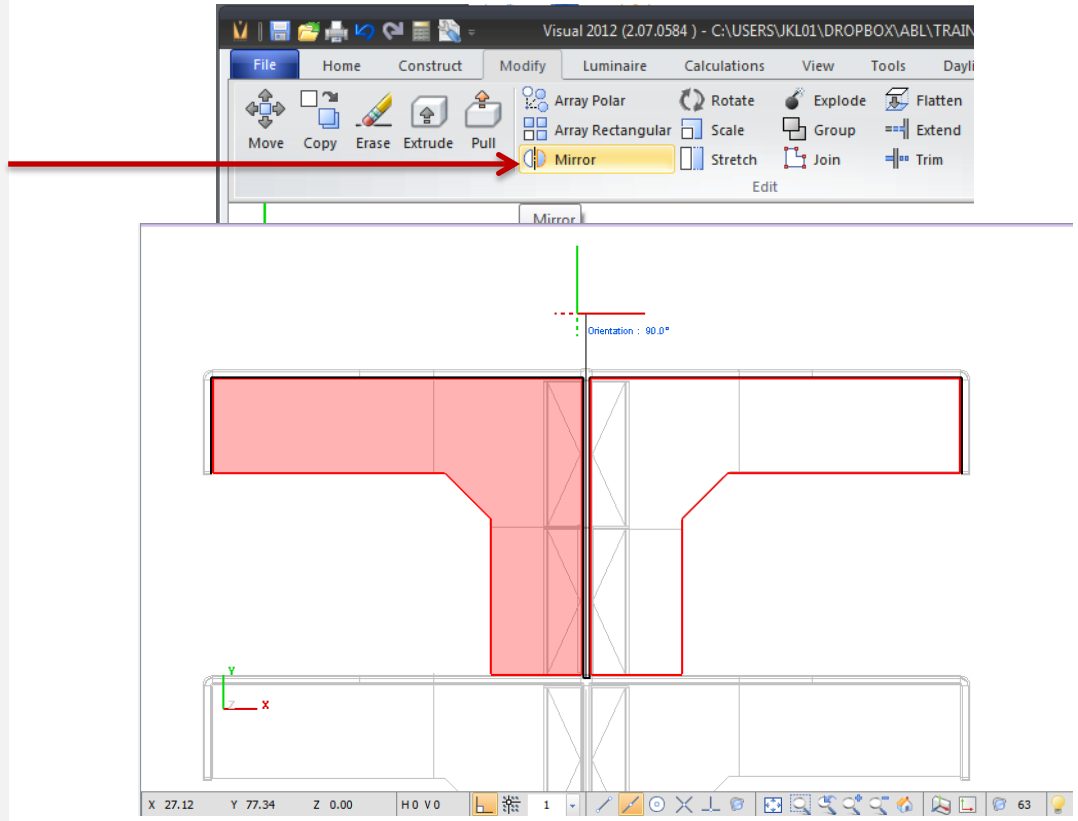
3. You can complete this move by…
   - Switch to an elevation view, change the snap setting to .5
   - Select any corner as the move basepoint, then, in the command line enter "@0,0,2.5", this uses relative coordinates, so we are moving from the basepoint to a height 2.3 feet above and in the X Y Z coordinates



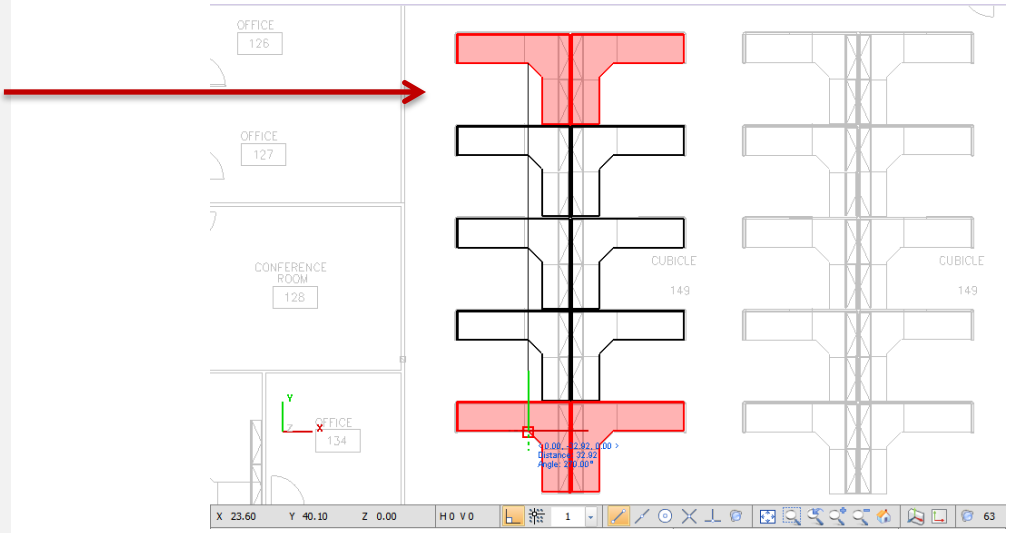


Copying the Workspaces

1. Use the **Mirror** command to mirror the desk to the other side of the cubicle. Hint: use the Midpoint Osnap and the orthogonal modifiers.

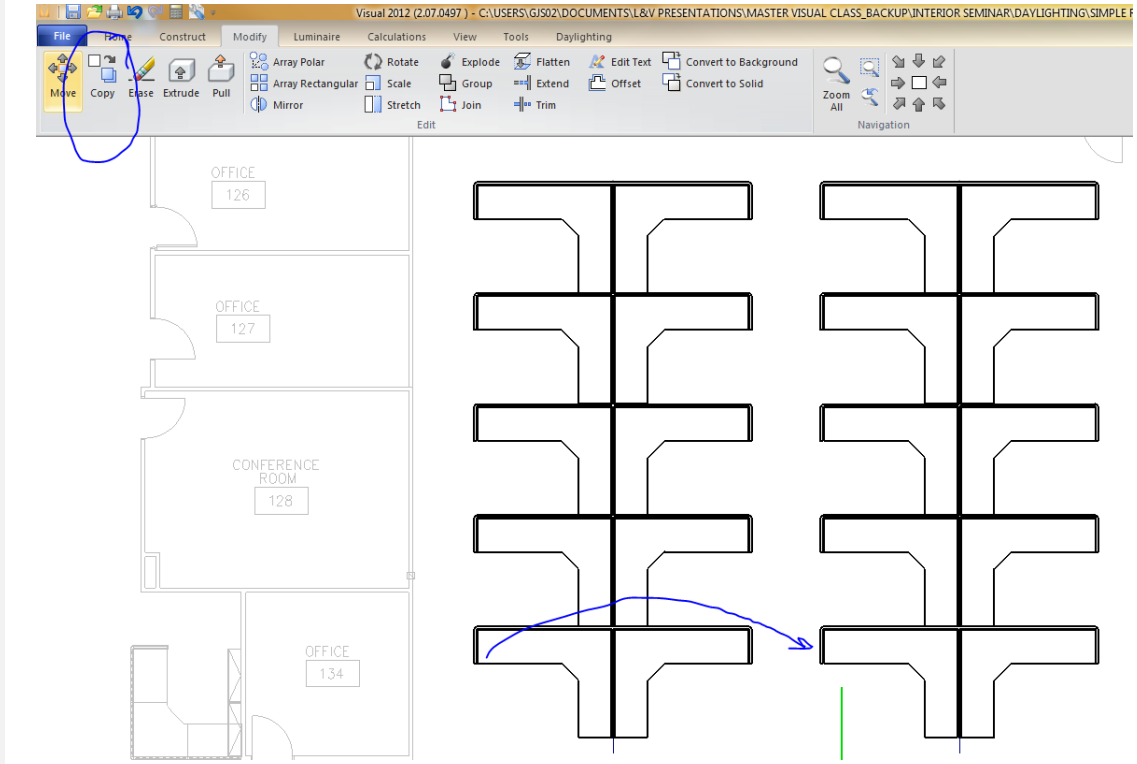


2. Copy the entire group to the other five locations

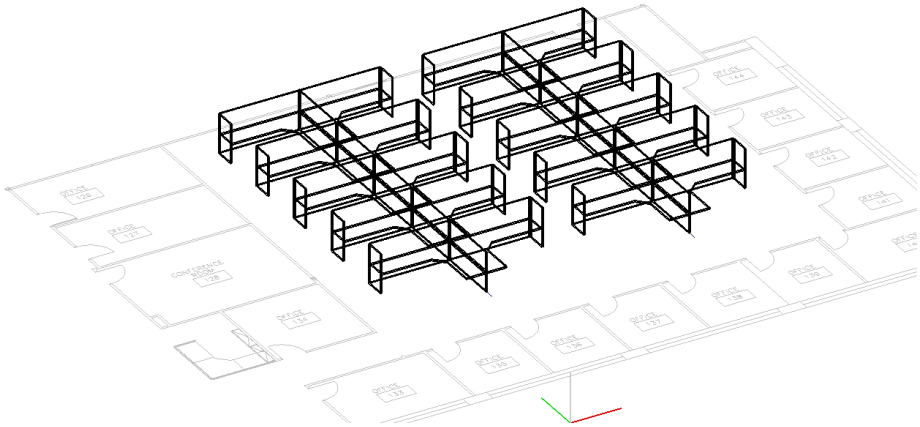


Copying the Workspaces

1. Copy the left group of offices to the right side of the room. Use a selection window to select all the workspaces at once.



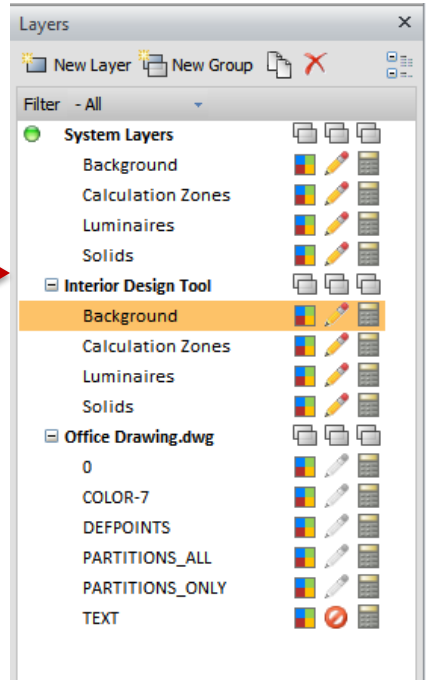
2. Take a look from the SW view..



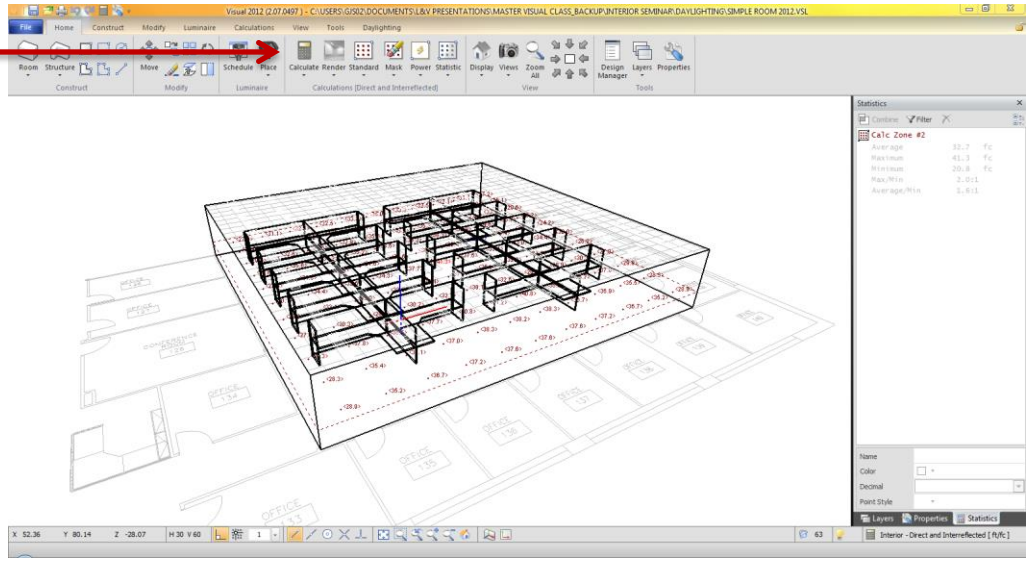
Calculate

Putting it Together

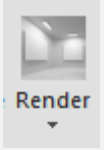
1. Turn on the Interior Design Tool layers.



2. Calculate.

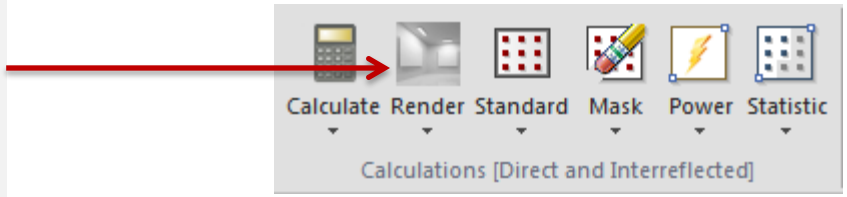


AcuityBrands.

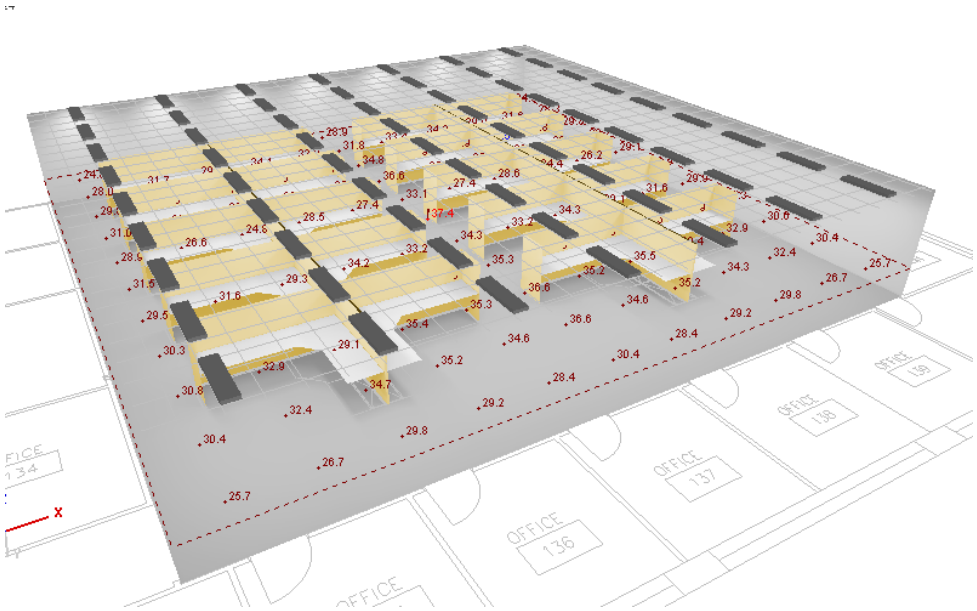


Rendering

1. Renders require no additional work, just click the render button.



2. Change from Orthographic to Perspective projection



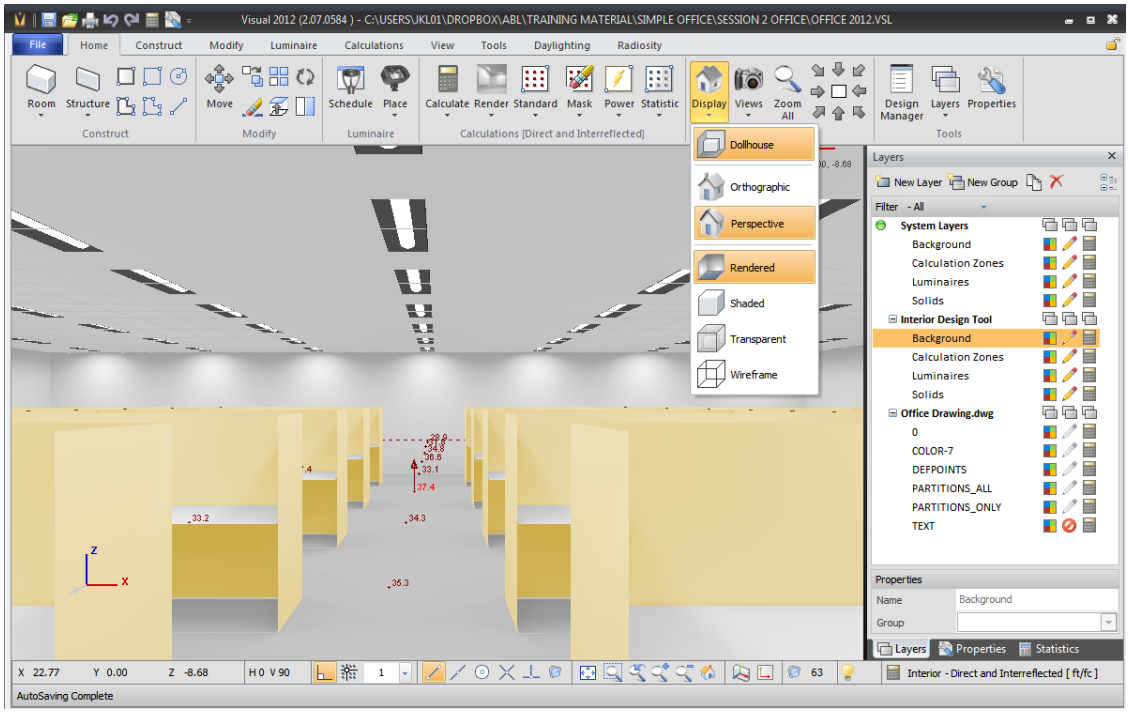
Navigating the Model

Use your mouse to walk through the space

Visual detects when you are inside of the extents of your model and automatically changes the function of the left mouse button from a **3D Orbit** mode to a **Look Around** mode allows you to change you viewing location.

You can **Pan** by holding down right mouse button or mouse wheel and then moving the mouse.

When **Zooming** or **Walking** by rolling the mouse wheel, Visual shifts the center of the screen to the location of the mouse cursor in the Design Environment.



Outside Model

3D Orbit

Look

Zoom In/Out

Walk In/Out

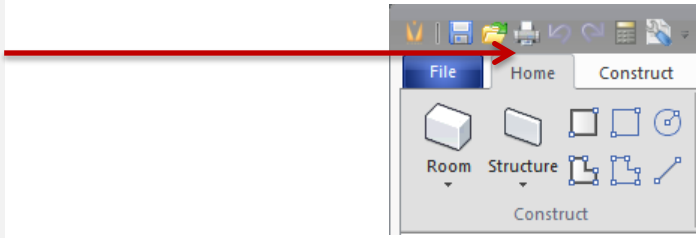
Pan

Pan

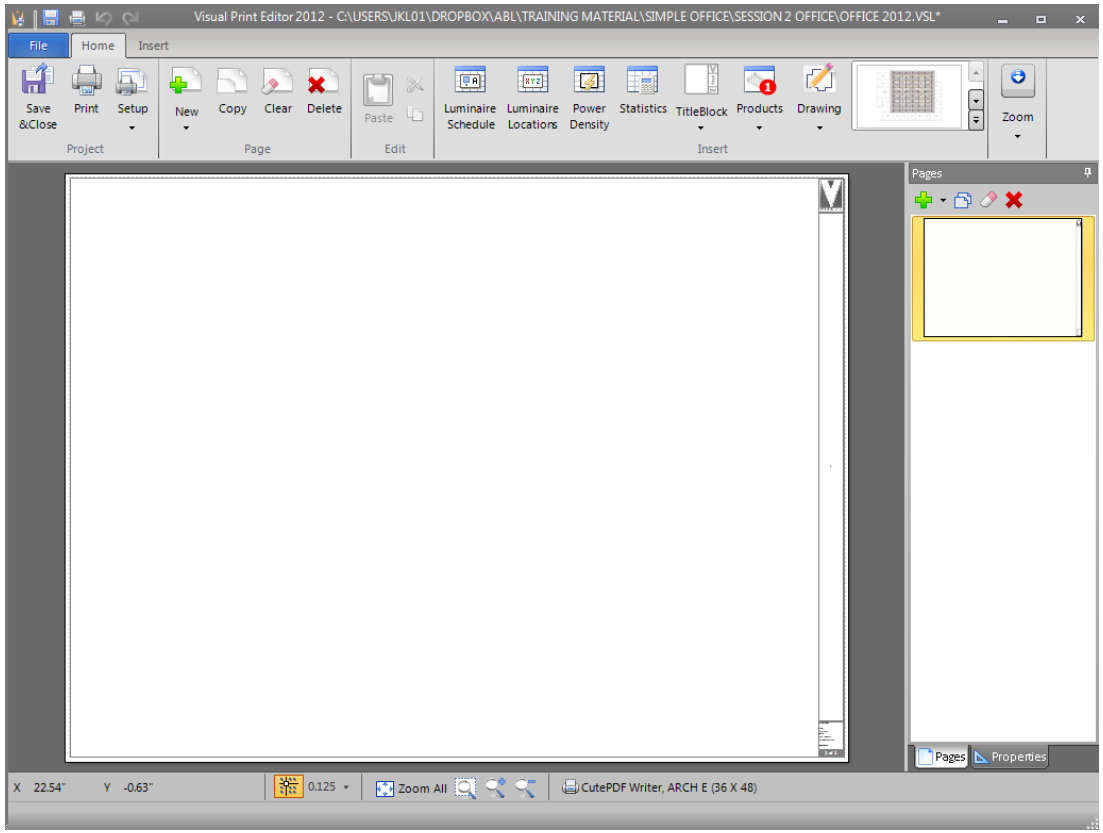
Inside Model

Using the Print Editor

- Click the Print Editor Icon



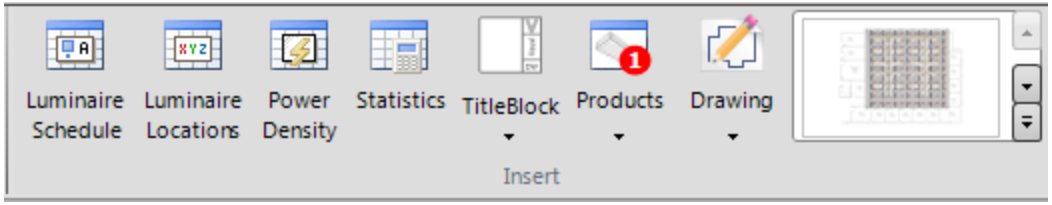
- Print Editor opens a new window that can run side by side with the main Visual window. When you update your project, the print editor automatically updates.

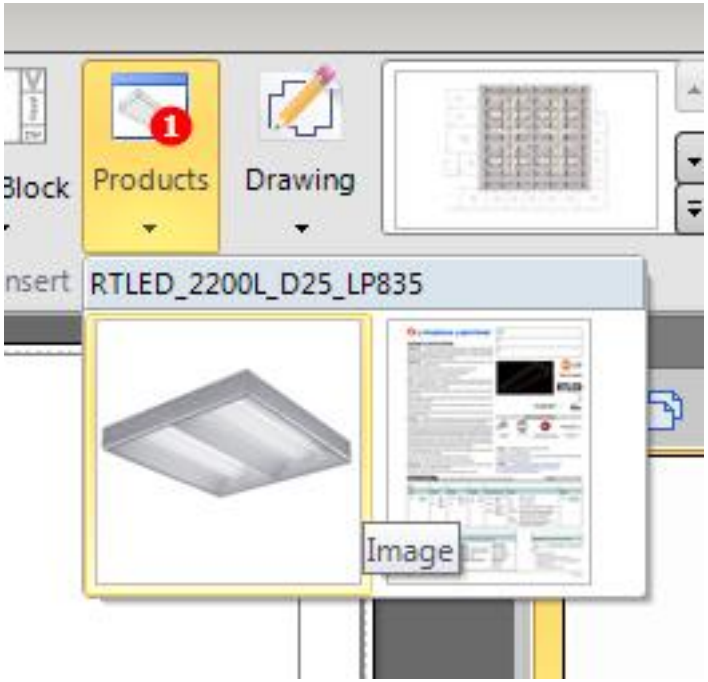


Using the Print Editor

- The Print Editor allows for drag and drop creation of Luminaires Schedules, Drawings, saved Views, Statistical Summaries, and Product Information.

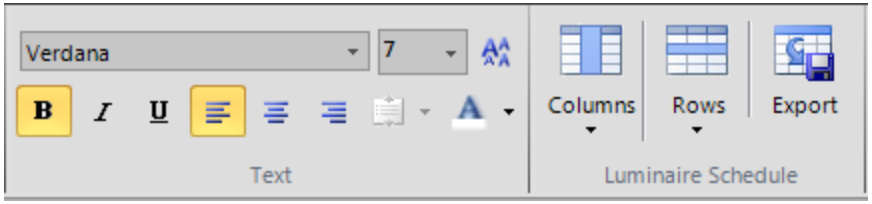
- Product images and PDF spec sheets are automatically brought in if they exist

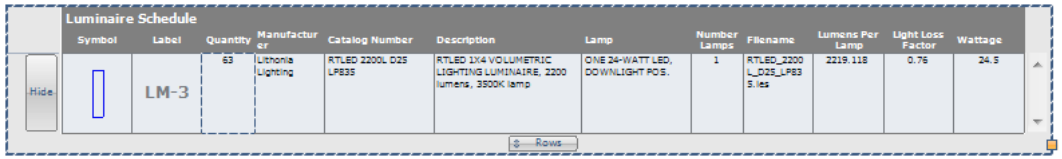




Using the Print Editor

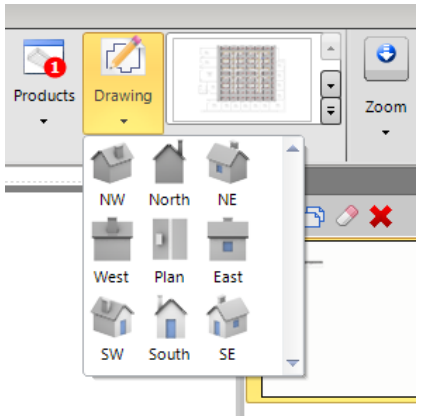
- Clicking the Luminaire Schedule command adds a luminaire schedule
- You can then drag and resize the schedule
- You can edit the column names, hide columns, and add custom columns
- You can hide individual rows, or hide ranges of rows

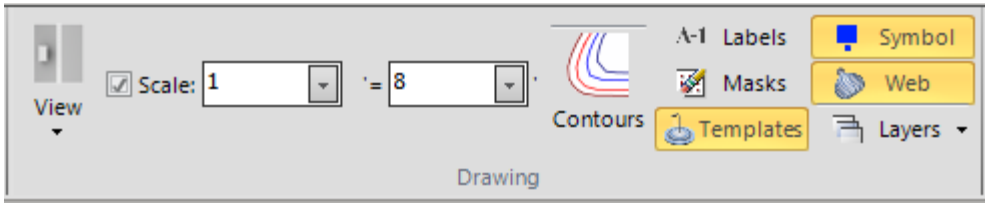


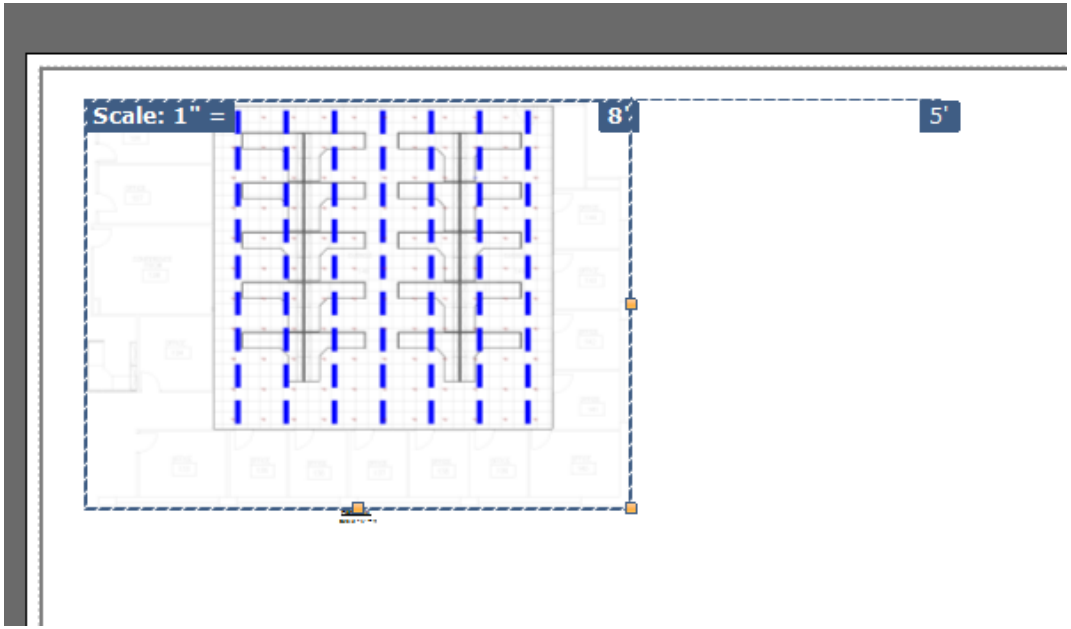


Using the Print Editor

- You can add any typical drawing view
- Drawing automatically snap to architectural scales
- You can toggle the visibility of the layers in each drawing
- You can turn on and off Labels and Photometric webs







Using the Print Editor

- The Print Editor allows you to quickly document your project