Lightscape Library Lesson

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Printed in the United States.

Title: Lightscape Library Lesson

Item No.: LILL3.2-01

Publication ID: 1.0

Date: April, 1999

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Working with Block Libraries

You can use Lightscape™ to build a model from blocks and luminaires that are stored in block libraries. Using Lightscape features to assemble blocks into layers and transform blocks is often more convenient than bringing a model back into an external modeling application. By completing the exercises in this lesson, you learn the following Lightscape skills:

- · Layer Management: Placing block instances on designated layers
- Block Transformation: Moving, rotating, and scaling blocks
- · Block Multiple Duplication: Creating arrays of blocks quickly
- Using Selection Filters: Selecting only surfaces with a specific type of surface
- Assigning Materials: Changing the material attributes of a surface

Note: This lesson assumes that you have some basic knowledge of the Lightscape interface and have completed the first two lessons in *Learning Lightscape*. For more information about all the software features, refer to the *Lightscape User's Guide*.

Views, solution images, and completed models are given with this Library lesson. The files can be found in the *C:\Program Files\Lightscape\Projects\Library Lesson* folder.

This lesson should take six to eight hours of active work to complete.

About the Lightscape Libraries

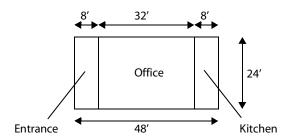
A set of Lightscape libraries is included with the Lightscape application. The libraries include hundreds of blocks, luminaires, and materials that can easily be used in your models. All the blocks, luminaires, and materials used in this lesson are from the Lightscape libraries.

Note: Depending on your Lightscape installation, the libraries may already be installed in the *C:\Program Files\Lightscape\Lib* folder. Otherwise, perform a Custom installation and select only Lightscape Libraries from the list of items to install.

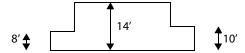


Exercise 1: Create the Shell

Congratulations! You have just been awarded a very lucrative contract to design the offices for a prestigious company. They have chosen to renovate the existing shell of a masonry building. The building envelope has the following dimensions: 48 feet long by 24 feet wide, as shown in the following plan drawing:



It has ceiling heights that vary throughout the space, according to the following longitudinal section drawing:



It is your job to create a design using the persuasive and accurate visualization features of Lightscape.

Start Lightscape and create a new Preparation file

- 1. Click the Windows Start button.
- 2. Choose Programs | Lightscape | Lightscape.

The Lightscape interface appears on the screen.

3. Choose File | New.

Note: When you start Lightscape, a new Preparation file opens automatically.

Modify the document properties

Properties are the general parameters and defaults stored with each model. Before you start the design, modify the document properties for the colors, units, and paths.

1. Choose File | Properties.

The Document Properties dialog appears.

2. Click the Colors tab.

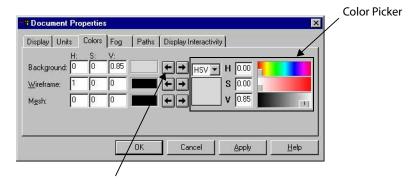
On this panel, you can change the background color, wireframe color, and mesh outline color.



3. To change the background color to light gray, set color values in the color picker:

Note: On this dialog, you can set a color two ways: enter values directly, or use the color picker and then transfer the color values to the boxes. When you use the color picker, you can use the sliders instead of entering values.

- a) Set H (Hue) to 0.
- **b)** Set S (Saturation) to 0.
- c) Set V (Value) to 0.85.



d) Click the left arrow button that corresponds with Background to assign the HSV values to the background color.

Hint: You can use the right arrow buttons to transfer color values from the boxes (for Background, Wireframe, or Mesh) to the color picker.

- **e)** Click Apply.
- **4.** Set the Mesh and Wireframe colors to black.
- **5.** Change the Length and Lighting units:
 - a) Click the Units tab.
 - **b)** Select Feet from the Length list.

Note: The display unit appears in the bottom corner of the status bar.

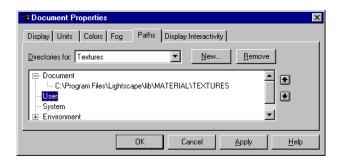
c) Select American from the Lighting list.



6. Check the paths:

When a material uses a texture, Lightscape must be able to find the texture file. When a luminaire uses a photometric web, Lightscape must be able to find the luminaire distribution (IES) file.

a) Click the Paths tab.



Paths to the textures and luminaire distributions can be associated with the document, user, system, or environment.

In this lesson, you use textures and luminaire distributions from the Lightscape libraries. After the installation of the Lightscape libraries, the Document and Environment paths should already include the correct paths:

- Luminaire distributions are in *C:\Program Files\Lightscape\Lib\Lights\IES*.
- Textures are in *C*:*Program Files**Lightscape**Lib**Material**Textures*.
- **b)** Check that both of these paths are showing on the Paths panel.

If they are not there, click New to add them.

- 7. Click OK.
- **8.** Save the Preparation file:
 - a) Choose File | Save As.

The Save As dialog appears.

- **b)** From the Save In list, select the following folder:
- C:\Program Files\Lightscape\Projects\Library Lesson
- **c)** Type Office.lp in the File Name box, then click Save.

Load the Geometry block

You create the kitchen, office, and entrance areas using the geo.1.room(10'x10'x10') geometry block.

1. Load the following block library:

C:\Program Files\Lightscape\Lib\Blocks\1. Geometry\Geometry.1.blk

For instructions, see "How to load a block from a block library" on page 5.

2. From this library, load the block named geo.1.room(10'x10'x10').



How to load a block from a block library

1. Right-click in the Blocks table, then choose Load.

The Open dialog appears.

2. From the Look In list, select the folder where the block library is located.

For this lesson, you use the Lightscape libraries. The path to the block libraries is *C:\Program Files\Lightscape\Lib\Blocks*.

3. Select the block library and click Open.

The Available Blocks dialog appears.

4. Before you select which blocks to load, you can view each of them in the block preview.

For more information, see "About the block preview" on page 5.

5. Select one or more blocks, then click OK.

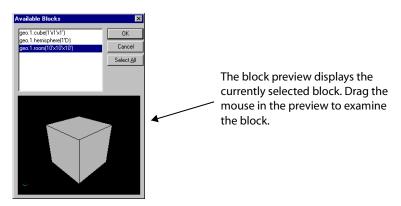
Hint: You can select more than one block by Ctrl-clicking or Shift-clicking. Click Select All to select all the blocks in the library.

A new layer with the same name as the block is created for each of the loaded blocks. This layer is used for the block surfaces, while the current layer is used for block instances.

Note: A block stored in a library may have layers associated with the surfaces of the block. When you load the block into Lightscape, any layers associated with the block surfaces are added to the Layers table for the model.

About the block preview

The block preview appears below the list of blocks in the Available Blocks dialog.



To examine the selected block, you can change the display mode and use the interactive view controls. Use the preview's context menu to change these settings. For example, right-click the preview and choose Shading | Solid to show the Solid display mode.



You can also press the hot keys while moving the mouse in the block preview to enable the other interactive view controls. For example, press P while moving the mouse to pan the view of the block. The other hot keys are O (Orbit), R (Rotate), Z (zoom), D (Dolly), and S (Scroll).

Note: The block preview in the Blocks table gives you the same flexibility to examine blocks. Instead of setting the shading in the preview's context menu, you can use the same shading as the model. To do this, right-click in the preview and choose Shading | From Toolbars. You can also enable View Control | From Toolbars to change the view using the toolbar settings.

Add the office

For the office area, create an instance of the geo.1.room(10'x10'x10') block using Create Single Instance.

1. Make the geo.1.room(10'x10'x10') layer current.

To do this, select geo.1.room(10'x10'x10') in the Layers table, right-click, and choose Make Current. You can right-click the layer name to select it and display the context menu in one step.

Note: Having the individual surfaces of the block and the instance of the block on the same layer is usually a good organizational strategy. This technique is used throughout this lesson.

2. Create a single instance of geo.1.room(10'x10'x10').

To do this, select geo.1.room(10'x10'x10') in the Blocks table, right-click, and choose Create Single Instance. You can right-click the block name to select it and display the context menu in one step.

When you use Create Single Instance, the insertion point of the instance is placed at the origin of the model (0, 0, 0).

3. Choose View | Extents or click the View Extents button ⊕ |.

When the Perspective projection is displayed, View Extents orients the model so you view it from the front.



This is how the axis system is oriented when the model is viewed from the front.

Note: In Lightscape, viewing a model from the front means looking at the ZX plane and into the positive Y axis. To see the current axis system, choose Display | Show Axis.

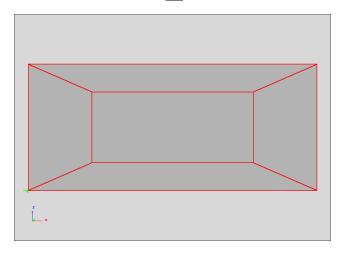
- **4.** Scale the block to the dimensions of the office area:
 - **a)** Right-click in the Graphic window, then choose Transformation.

The Transformation dialog appears.

- **b)** Click the Scale tab.
- c) Type the following scale factors: X = 3.2, Y = 2.4, Z = 1.4.
- d) Click OK.



5. Click the View Extents button \bigoplus .



- **6.** Measure the walls to check the new dimensions:
 - a) Choose Tools | Measure Distance.
 - **b)** Enable Snap to Nearest Vertex.
 - **c)** Make sure the Select button | is selected.
 - d) Click near the corners of the room.

The wall dimensions should be 32 feet, 24 feet, and 14 feet.

- e) Click Close.
- **7.** Explode the block and delete the end surfaces:

Note: You must explode the block before you delete the end surfaces. Otherwise, the surfaces are also deleted from the block definition.

a) To explode the block, right-click in the Graphic window and choose Explode.

When you are prompted to explode every selected block, click Yes.

- **b)** Select the two surfaces at the left and right ends of the block.
- c) Press Delete.



Add the kitchen

For the kitchen, create a new instance of the geo.1.room(10'x10'x10') block by dragging from the Blocks table.

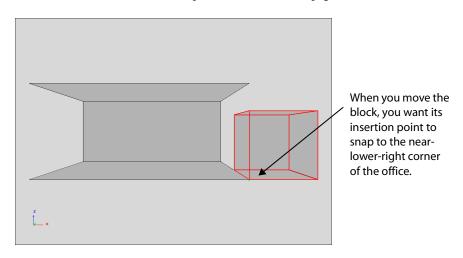
1. Add a block for the kitchen:

Drag the geo.1.room(10'x10'x10') from the Blocks table to somewhere on the floor of the office area.

Note: When you drag an instance out from the Blocks table to the Graphic window, the new instance will be automatically selected. If the Accumulate Pick feature is on, the new instance is added to the current selection set. If this feature is off, the selection set is cleared and the new instance becomes the only item selected.

Since the block instance is selected, you can immediately move and scale it to make the kitchen.

2. You can quickly assemble models by moving geometry blocks with the Snap to Nearest Vertex feature. See "How to move a block with Snap to Nearest Vertex" on page 9.



Note: The insertion point of the block is the near-lower-left corner of the cube. It is shown with green crosshairs.

- **3.** Scale the block to the dimensions of the kitchen area:
 - a) Right-click in the Graphic window, then choose Transformation.

The Transformation dialog appears.

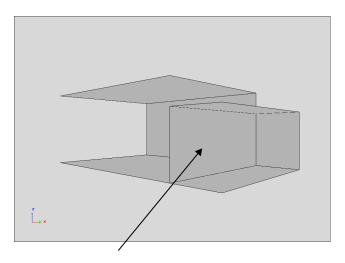
- **b)** Click the Scale tab.
- c) Type the following scale factors: X = 0.8, Y = 2.4, Z = 1.
- d) Click OK.
- **4.** Click the View Extents button **4.** .



- **5.** Explode the block and delete the surface between the office and kitchen:
 - a) Right-click in the Graphic window and choose Explode.

When you are prompted to explode every selected block, click Yes.

b) Orbit the model to view the wall that separates the two rooms.



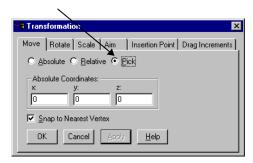
- **c)** Select the surface at the left end of the block.
- d) Press Delete.
- **6.** Click the View Extents button **(4)**.

How to move a block with Snap to Nearest Vertex

- **1.** Make sure the block instance is selected.
- **2.** Right-click in the Graphic window, then choose Transformation. The Transformation dialog appears.
- **3.** Click the Move tab.



4. Enable Pick.



This sets the function of the left mouse button to a special selection mode used for Pick.

- **5.** Enable Snap to Nearest Vertex.
- **6.** Click near the vertex where you want to move the block.

The instance is moved so that its insertion point is aligned with the closest vertex.

7. Click OK when you are finished.

To do more transformations, you can leave the Transformation dialog open.

Add the entrance area

For the entrance area, create a new instance of the geo.1.room(10'x10'x10') block by dragging from the Blocks table.

- 1. Add a block for the entrance area:
 - a) Drag the geo.1.room(10'x10'x10') from the Blocks table to somewhere on the floor of the office area.
 - **b)** Select the block instance if necessary.

When the block instance is selected, you can move and scale it to make the entrance area.

2. Move the block with the Snap to Nearest Vertex feature so its insertion point snaps to the near-left corner of the office. For instructions, see "How to move a block with Snap to Nearest Vertex" on page 9.

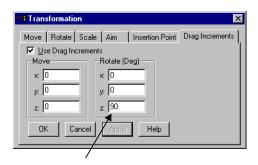


3. Set the drag increments to help you use the interactive Rotate feature:

With the interactive Move and Rotate features, you can transform a block without using the Transformation dialog.

a) Click the Edit Drag Increments button 🔼 .

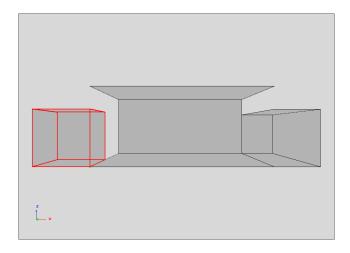
The Transformation dialog appears with the Drag Increments panel selected.



- **b)** Type 90 in the Rotate Z box.
- c) Enable Use Drag Increments.

You can also toggle this option by clicking the Use Drag Increments button .

- d) Click OK.
- **4.** Rotate the block around the Z axis:
 - **a)** Click the Rotate button 💍 to switch to interactive Rotate mode.
 - **b)** Click the Z Constraint button Z to rotate around the Z axis.
 - c) Drag in the Graphic window until the block instance is rotated 90 degrees.



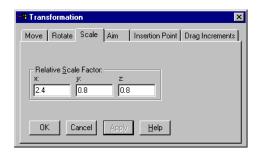
Hint: As you drag, you can view the amount of rotation on the status bar.



- **5.** Scale the block to the dimensions of the entrance area:
 - a) Right-click in the Graphic window, then choose Transformation.

The Transformation dialog appears.

b) Click the Scale tab.



c) Type the following scale factors: X = 2.4, Y = 0.8, Z = 0.8.

Note: You might notice that the X and Y scale factors are reversed. For example, an X scale factor of 2.4 changes the depth of the block (on the Y axis) to 24 feet. The values are reversed because block instances are scaled relative to the insertion point of the block definition, and the block instance was rotated 90 degrees in the previous step.

- d) Click OK.
- **6.** Click the View Extents button 🕕 .
- **7.** Explode the block and delete the surface between the entrance and office:
 - a) Right-click in the Graphic window and choose Explode.

When you are prompted to explode every selected block, click Yes.

- **b)** Orbit the model to view the wall that separates the entrance and office.
- **c)** Select the surface at the right end of the block.
- d) Press Delete.
- **8.** Click the View Extents button 🕀 .

Add two clerestory walls

You need to add two walls to fill the holes in the structure. To do this, use the Create Surface feature.

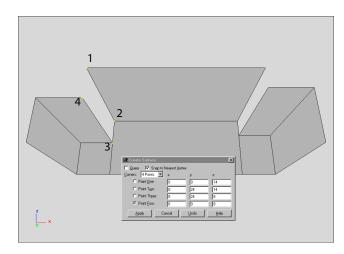
- 1. Orbit the model until you are looking up towards the ceiling. (See the illustration in step 5.)
- **2.** Choose Tools | Create Surface.

The Create Surface dialog appears.

3. Enable Snap to Nearest Vertex.



- **4.** From the Corners list, select 4 Points.
- **5.** Create the left clerestory wall:
 - **a)** Select the four corners as you trace around the left hole. (You can select the points in any order as long as the points follow the edge of the hole.)



Note: The 0 values in the X, Y, and Z boxes may appear as very small numbers (for example,1.21e-007).

- **b)** Click Apply.
- **6.** Repeat step 5 for the right clerestory wall, then click Cancel.
- **7.** Make the two new surfaces non-occluding (like the rest of the surfaces):
 - a) Select the two surfaces.
 - b) Right-click in the Graphic window, then choose Surface Processing.

The Surface Processing dialog appears.

c) Disable Occluding.

The clerestory wall surfaces must be non-occluding due to the type of window you add to the wall in Exercise 2.

- d) Click OK.
- **8.** Click the View Extents button 🕀 .



Load a masonry material

1. Right-click in the Materials table, then choose Load.

The Open dialog appears.

2. From the Look In list, select the folder where the material library is located.

For this lesson, you use the Lightscape libraries. The path to the material libraries is *C:\Program Files\Lightscape\Lib\Material*.

3. Select the *Masonry.1.atr* library and click Open.

The Available Materials dialog appears.

4. Select msn.1.brick.running, then click OK.

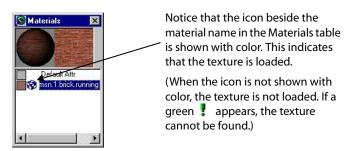
The material appears in the Materials table.

Assign the masonry material to the front and back walls

- 1. Select the six surfaces that make up the front and back walls:
 - a) Make sure the Accumulate Pick feature is turned on.
 - **b)** Select the surfaces of the 48-foot back wall.
 - c) Orbit the model 180 degrees until you can see the wall on the opposite side.
 - d) Select the surfaces of the 48-foot front wall.
- **2.** Assign the masonry material:
 - a) Right-click in the Graphic window, then choose Assign Material.

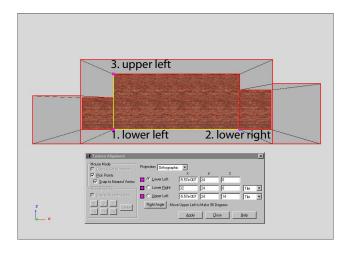
The Assign Material dialog appears.

- **b)** Select msn.1.brick.running, then click OK.
- **3.** Click the Textures button 🔞 to display the textures.





- **4.** While the surfaces are still selected, align the textures:
 - **a)** Right-click in the Graphic window, then choose Texture Alignment.
 - **b)** In the Texture Alignment dialog, enable Pick Points and Snap to Nearest Vertex.
 - **c)** Select Tile from both the Lower Right and Upper Left lists.
 - **d)** Pick the lower-left, lower-right, and upper-left corners (in that order).



- e) Click Apply, then click Close.
- **5.** Check the result by zooming in on the edges where the textured surfaces meet. Notice that the masonry textures are aligned on both the front and rear walls.
- **6.** Click the Deselect All button .
- **7.** Click the View Extents button \blacksquare .
- **8.** To save the Preparation file, choose File | Save.



Exercise 2: Add Construction Blocks

The Construction group contains blocks that are accurate depictions of common building and construction materials. In this exercise, you add:

- A glass door to the entrance area
- · A door to the kitchen
- · A set of windows on the clerestory wall
- · A partition wall between the entrance and office areas
- Base boards for the entire structure.

Load the Construction blocks

The blocks for this exercise are found in two different block libraries.

1. Load the following block library:

C:\Program Files\Lightscape\Lib\Blocks\2. Construction\Windows&Doors.1.blk

For instructions, see "How to load a block from a block library" on page 5. From this library, load these three blocks:

```
w&d.1.door(3'x7')
w&d.1.door.glass(6'x8')
w&d.1.window(1'x1')
```

2. Load the following block library:

C:\Program Files\Lightscape\Lib\Blocks\2. Construction\Wall.1.blk

From this library, load these two blocks:

```
wal.1.4"base(x1')
wal.1.partition(5"x1'x10')
```

Change the display units to inches

Now that the shell of the building is created, you can switch to a smaller unit for the Construction blocks. Note that you can always see the current unit on the right end of the status bar.

1. Choose File | Properties.

The Document Properties dialog appears.

- 2. Click the Units tab.
- **3.** Select Inches from the Length list.
- 4. Click OK.



Load a carpet material

1. Right-click in the Materials table, then choose Load.

The Open dialog appears.

2. From the Look In list, select the folder where the material library is located.

Change the path to *C*:*Program Files**Lightscape**Lib**Material*.

3. Select the *GS.1.atr* library and click Open.

The Available Materials dialog appears.

4. Select GS.1.carpet.loop, then click OK.

The material appears in the Materials table.

Assign the carpet material to the office floor

All GS textures use the Blend feature (on Texture panel), so manipulating the diffuse color of the material results in different colors of texture. Refer to Chapter 7, "Using Materials" in the *Lightscape User's Guide* for more information.

1. Drag the GS.1.carpet.loop from the Materials table to the floor surface of the office area.

Note: If the material appears with a green ! in the Materials table, you should reload the texture. You can reload all the textures by toggling the Textures button, but you can also load the one texture only. To do this, right-click on the material in the Materials table, then choose Reload Texture.

- **2.** Change the color of the carpet:
 - a) Double-click GS.1.carpet.loop in the Materials table.
 - b) Click the Color tab.
 - **c)** Adjust the Hue slider or enter a value in the H box.
 - d) Click Apply.
 - e) When you are satisfied with the color, click OK.

Add a glass door

1. Make the w&d.1.door.glass(6'x8') layer current.

To do this, select w&d.1.door.glass(6'x8') in the Layers table, right-click, and choose Make Current. You can right-click the layer name to select it and display the context menu in one step.



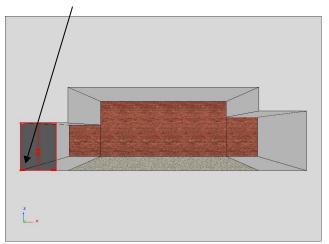
2. Add a glass door to the entrance area:

Drag the w&d.1.door.glass(6'x8') from the Blocks table to somewhere on the floor of the entrance area.

Note: When you drag an instance out from the Blocks table to the Graphic window, the new instance will be automatically selected. If the Accumulate Pick feature is on, the new instance is added to the current selection set. If this feature is off, the selection set is cleared and the new instance becomes the only item selected.

Since the block instance is selected, you can immediately move it.

3. Move the block with the Snap to Nearest Vertex feature so its insertion point snaps to the near-left corner of the entrance area. For instructions, see "How to move a block with Snap to Nearest Vertex" on page 9.



- **4.** Rotate the block around the Z axis:
 - **a)** Click the Rotate button 💍 to switch to interactive Rotate mode.
 - **b)** Click the Z Constraint button | z | to rotate around the Z axis.

In a previous exercise, you set the drag increments for the Z axis to 90 degrees and turned on the Use Drag Increments option.

c) Drag in the Graphic window until the block instance is rotated 90 degrees.

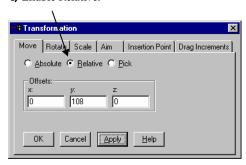
Note: You can also rotate the block using the Transformation dialog.



- **5.** Move the block to the center of the wall:
 - **a)** Right-click in the Graphic window, then choose Transformation.

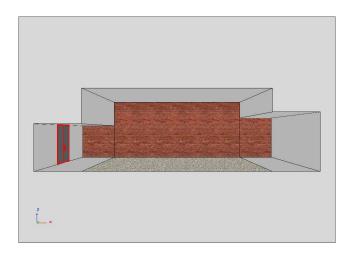
The Transformation dialog appears.

- **b)** Click the Move tab.
- c) Enable Relative.



- **d)** Type 108 in the Offsets Y box.
- e) Click OK.

The 6-foot wide door is now centered in the 24-foot wide wall.



Note: You can also move the block using the interactive Move feature. To position the door precisely, you can also set the Move drag increments.

6. Click the Deselect All button .



Add a partition wall

- **1.** Make the wal.1.partition(5"x1'x10') layer current.
- **2.** Add a partition wall to the office area:

Note: If necessary, turn the Accumulate Pick feature is off or make sure that nothing else is selected. To clear the selection set, click the Deselect All button. (If the Accumulate Pick feature is on, the new instance is added to the current selection set.)

Drag the wal.1.partition(5"x1'x10') from the Blocks table to somewhere on the floor of the office area.

Since the block instance is selected, you can immediately scale it.

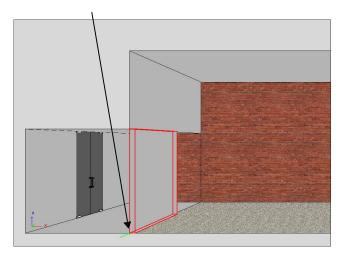
- **3.** Scale the block to fit under the clerestory wall:
 - **a)** Right-click in the Graphic window, then choose Transformation.

The Transformation dialog appears.

- b) Click the Scale tab.
- c) Type the following scale factors: X = 1, Y = 12, Z = 0.8.
- d) Click OK.

Since the block definition is 5 inches by 1 foot by 10 feet, the scaled block is 5 inches wide by 12 feet long by 8 feet tall.

4. Move the block with the Snap to Nearest Vertex feature so its insertion point snaps to the near-left corner of the office area. For instructions, see "How to move a block with Snap to Nearest Vertex" on page 9.



Note: The insertion point of the block is the near-lower-left corner.

Since the insertion point of the block is the near-lower-left corner, the wall is now positioned 5 inches into the office area. To make the wall flush with the clerestory wall, you could move it 5 inches to the left. Another way is to rotate the wall around the insertion point.



- **5.** Rotate the block around the Z axis:
 - a) Click the Rotate button 💍 to switch to interactive Rotate mode.
 - **b)** Click the Z Constraint button **Z** to rotate around the Z axis.
 - c) Drag in the Graphic window until the block instance is rotated 180 degrees.
- **6.** Move the block to the middle of two masonry walls:
 - a) Right-click in the Graphic window, then choose Transformation.

The Transformation dialog appears.

- **b)** Click the Move tab.
- c) Enable Relative.
- **d)** Type 216 in the Offsets Y box.
- e) Click OK.

The 12-foot wide wall is now centered in the 24-foot wide office.

7. Click the Deselect All button .

Add base boards

- **1.** Make the wal.1.4"base(x1') layer current.
- **2.** Drag the wal.1.4"base(x1') from the Blocks table to somewhere on the floor of the office area.
- **3.** Scale the block to fit under the clerestory wall:
 - **a)** Right-click in the Graphic window, then choose Transformation.

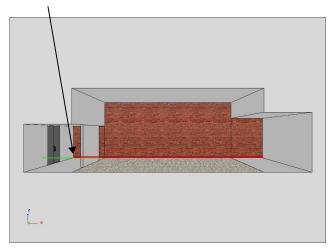
The Transformation dialog appears.

- **b)** Click the Scale tab.
- **c)** Type the following scale factors: X = 48, Y = 1, Z = 1.
- d) Click OK.

Since the block definition is 1 foot long, the scaled block is 48 feet long (the length of the structure).



4. Move the block with the Snap to Nearest Vertex feature so its insertion point snaps to the far-left corner of the entrance area. For instructions, see "How to move a block with Snap to Nearest Vertex" on page 9.



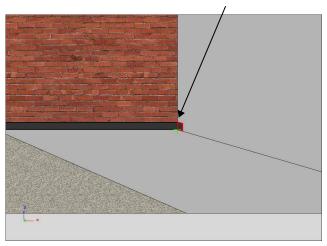
- **5.** Click the Deselect All button .
- **6.** Drag the wal.1.4"base(x1') from the Blocks table to somewhere on the floor of the kitchen area.
- **7.** Use the Zoom Window feature to zoom in on the kitchen area.
- **8.** Rotate the block around the Z axis:
 - **a)** Click the Rotate button 💍 to switch to interactive Rotate mode.
 - **b)** Click the Z Constraint button Z to rotate around the Z axis.
 - c) Drag in the Graphic window until the block instance is rotated -90 degrees.
- **9.** Scale the block to be 8 inches long:
 - **a)** Right-click in the Graphic window, then choose Transformation.

The Transformation dialog appears.

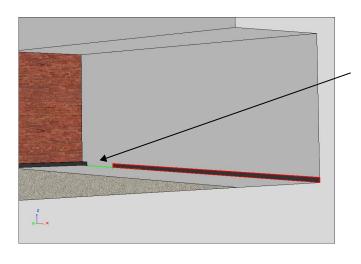
- **b)** Click the Scale tab.
- **c)** Type the following scale factors: X = 0.67, Y = 1, Z = 1.
- d) Click OK.



10. Move the block with the Snap to Nearest Vertex feature so its insertion point snaps to the far-right corner of the kitchen area. For instructions, see "How to move a block with Snap to Nearest Vertex" on page 9.



- **11.** Click the Deselect All button .
- **12.** Add another base board for the rest of the kitchen wall (except 40 inches for the kitchen door):
 - a) Drag the wal.1.4"base(x1') from the Blocks table to somewhere on the floor of the kitchen area.
 - **b)** Rotate the block -90 degrees around the Z axis.
 - c) To scale the block to be 20 feet long, use the following scale factors: X = 20, Y = 1, Z = 1.
 - **d)** Move the block with the Snap to Nearest Vertex feature so its insertion point snaps to the far-right corner of the kitchen area.
 - **e)** Move the block with the Transformation dialog. On the Move panel, enable Relative and type -48 in the Offsets Y box.



There is a 40-inch gap between the base boards for the kitchen door that you will add later.

f) Click the Deselect All button 🔝.

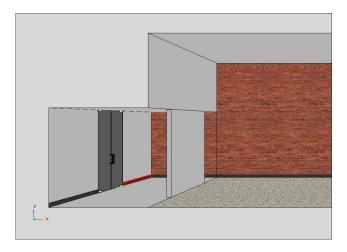
24



- **13.** Add another base board for the entire length of the back masonry wall:
 - a) Drag the wal.1.4"base(x1') from the Blocks table to somewhere on the floor of the kitchen area.
 - **b)** Rotate the block 180 degrees around the Z axis.
 - **c)** Orbit around the model to view the back masonry wall.
 - **d)** To scale the block to be 48 feet long, use the following scale factors: X = 48, Y = 1, Z = 1.
 - **e)** Move the block with the Snap to Nearest Vertex feature so its insertion point snaps to the far-left corner of the kitchen area.
 - f) Click the Deselect All button 🔝.
- **14.** Add the first of two base boards for the wall of the entrance area:
 - a) Drag the wal.1.4"base(x1') from the Blocks table to somewhere on the floor of the entrance area.
 - **b)** Rotate the block 90 degrees around the Z axis.
 - **c)** Orbit around the model to view the entrance wall.
 - **d)** To scale the block to be 9 feet long, use the following scale factors: X = 9, Y = 1, Z = 1.
 - **e)** Move the block with the Snap to Nearest Vertex feature so its insertion point snaps to the far-left corner of the entrance area.
- **15.** Since the 6-foot wide door is centered in the 24-foot wide wall, you need two 9-foot base boards. Duplicate the base board you just created:
 - a) Right-click in the Graphic window, then choose Duplicate.

The duplicate block instance is selected.

b) Move the block with the Transformation dialog. On the Move panel, enable Relative and type 180 in the Offsets Y box to move the block 15 feet.

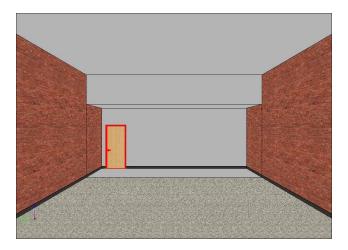


c) Click the Deselect All button .



Add a 3 x 7 door to the kitchen

- **1.** Make the w&d.1.door(3'x7') layer current.
- 2. Drag the w&d.1.door(3'x7') from the Blocks table to somewhere on the floor of the kitchen area.
- **3.** Rotate the block -90 degrees around the Z axis.
- **4.** Move the block with the Snap to Nearest Vertex feature so its insertion point snaps to the far-left corner of the kitchen area.
- **5.** Move the block with the Transformation dialog. On the Move panel, enable Relative and type -8 in the Offsets Y box.



- **6.** Click the Deselect All button .
- **7.** Click the View Extents button ①.

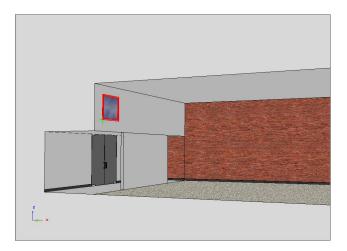
Add windows to the left clerestory wall

The window block you will use does not require any opening. Position it on a wall that is non-occluding and daylight will pass through the wall and be emitted only by the window surface. Position it on a wall that is occluding and it will not emit daylight.

- **1.** Make the w&d.1.window(1'x1') layer current.
- 2. Drag the w&d.1.window(1'x1') from the Blocks table to somewhere on the floor of the office area.
- **3.** Move the block with the Snap to Nearest Vertex feature so its insertion point snaps to the near-left corner of the left clerestory wall.
- **4.** Rotate the block 90 degrees around the Z axis.
- **5.** To scale the block to be 3 feet long by 3 feet tall, use the following scale factors: X = 3, Y = 1, Z = 3.



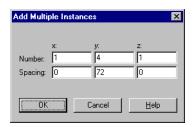
6. Move the block with the Transformation dialog. On the Move panel, enable Relative and type 18 in the Offsets Y and Z boxes.



- **7.** Add three duplicate instances of the window block:
 - a) Right-click in the Graphic window, then choose Multiple Duplicate.

The Add Multiple Instances dialog appears.

b) Type 4 in the Number Y box, and type 72 in the Spacing Y box.



c) Click OK.

This creates a total of 4 block instances in the Y direction with the window insertion points spaced 72 inches apart.

- **8.** Click the Deselect All button .
- **9.** Click the View Extents button 🕀 .
- **10.** To save the Preparation file, choose File | Save.



Exercise 3: Add More Construction Blocks

In this exercise, you add more blocks from the Construction group:

- Tiles to the entrance and kitchen areas
- · Company logo lettering to the partition wall
- Cabinets and a sink to the kitchen.

Load the Construction blocks

The blocks for this exercise are found in four different block libraries.

1. Load the following block library:

```
C:\Program Files\Lightscape\Lib\Blocks\2. Construction\Casework.1.blk
From this library, load these two blocks:
cw.1.base.2doors&drawer(24"x24"x35")
```

```
cw.1.storage.2glassdoors(24"x12"x30")
```

2. Load the following block library:

```
\label{lightscape} $$C:\Pr{gram Files \perp ightscape \perp ib \mid Blocks \mid 2. Construction \mid Floor. 1.blk}$$ From this library, load this block:
```

```
flr.1.1' tiles w.grout(4'x4')
```

3. Load the following block library:

```
C:\Program\ Files\Lightscape\Lib\Blocks\2.\ Construction\Mech-plumb-elec.1.blk From this library, load this block: 
mpe.1.sink,faucet&counter(24x24)
```

4. Load the following block library:

```
C:\Program\ Files\Lightscape\Lib\Blocks\2.\ Construction\Signage.1.blk From this library, load this block: sign.1.serif typeface(1')
```



Load materials for the tiles and countertop

1. Load the following material library:

 $C:\ \ Program\ Files \ \ Lightscape \ \ Lib \ \ Material \ \ Stone. 1. atr$

From this library, load these two materials:

slate.1.black

gr.1.Carioca.Gold

2. Load the following material library:

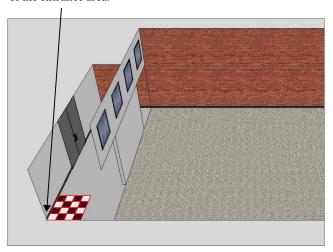
 $C: \label{lightscape} Lib \label{lightscape} Lib \label{lightscape} A distribution of the property of the pr$

From this library, load this material:

plastic.1.white

Add tiles to the entrance area

- **1.** Make the flr.1.1' tiles w.grout(4'x4') layer current.
- **2.** Drag the flr.1.1' tiles w.grout(4'x4') from the Blocks table to somewhere on the floor of the entrance area.
- **3.** Move the block with the Snap to Nearest Vertex feature so its insertion point snaps to the near-left corner of the entrance area.





- **4.** Duplicate the block instance to cover the floor of the entrance area:
 - a) Right-click in the Graphic window, then choose Multiple Duplicate.

The Add Multiple Instances dialog appears.

- **b)** Type 2 in the Number X box, and type 48 in the Spacing X box.
- **c)** Type 6 in the Number Y box, and type 48 in the Spacing Y box.
- d) Click OK.

This creates 12 block instances that cover the 8-foot by 24-foot entrance area.

- **5.** Select the 12 block instances and explode them:
 - a) Click the Deselect All button 🔝 .
 - **b)** Click the Select button , then click the Block button .
 - c) Select the 12 block instances.
 - d) To explode the selected blocks, right-click in the Graphic window and choose Explode.

When you are prompted to explode every selected block, click Yes.

Note: You must explode the block before you change the material assigned to the tiles. Otherwise, the material is also changed in the block definition.

6. Click the Deselect All button

Change the material for the entrance area tiles

Before you add tiles to the kitchen floor, you will change the material assigned to the tiles that you just added to the entrance area. If you add the tiles first, you can simply use the selection filter with Select Area All Vertices (instead of Select All) to select the tile surfaces in the entrance area.

- 1. Query the material assigned to the dark tiles:
 - a) Choose Edit | Selection | Query or click the Query Select button 🔼 .

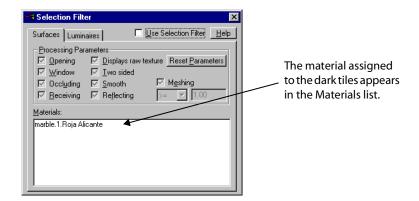
This sets the function of the left mouse button to Query mode. Clicking an object in the Graphic window displays information about the object on the status bar.

- **b)** Click the Surface button .
- c) Pick a point on a dark tile.

The tile is highlighted in green and marble.1. Roja Alicante is highlighted in the Materials table.



- **2.** Add the selected material to the selection filter:
 - a) Right-click the material name in the Materials table, then choose Add to Selection Filter.
 - **b)** Choose Edit | Selection | Filter or click the Toggle Selection Filter Dialog button The Selection Filter dialog appears.



c) Enable Use Selection Filter.

You can also toggle this option by clicking the Use Selection Filter button

- **3.** Add the light tile material to the selection filter:
 - a) Pick a point on a light tile.
 - b) Right-click the material name in the Materials table, then choose Add to Selection Filter.

The marble.1.Bianco Carrara material is added to the selection filter.

4. Click the Select button , then click the Select All button .

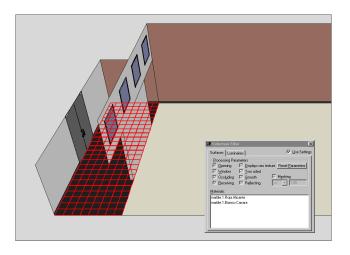
The filter is used to select all the tile surfaces that match the chosen materials.



- **5.** Assign the black slate material to all the tiles:
 - a) Right-click in the Graphic window, then choose Assign Material.

The Assign Material dialog appears.

b) Select slate.1.black, then click OK.



- **6.** Click the Toggle Selection Filter Dialog button 🔁 .
- **7.** Click the Deselect All button .

Add tiles to the kitchen

- 1. Drag the flr.1.1' tiles w.grout(4'x4') from the Blocks table to somewhere on the floor of the kitchen area.
- 2. Move the block with the Snap to Nearest Vertex feature so its insertion point snaps to the near-left corner of the kitchen area.
- **3.** Duplicate the block instance to cover the floor of the kitchen area:
 - **a)** Right-click in the Graphic window, then choose Multiple Duplicate.

The Add Multiple Instances dialog appears.

- **b)** Type 2 in the Number X box, and type 48 in the Spacing X box.
- **c)** Type 6 in the Number Y box, and type 48 in the Spacing Y box.
- d) Click OK.

This creates 12 block instances that cover the 8 foot by 24 foot kitchen area.



- **4.** Select the 12 block instances and explode them:
 - a) Click the Deselect All button 🔝.
 - **b)** Click the Select button , then click the Block button .
 - c) Select the 12 block instances.
 - d) To explode the selected blocks, right-click in the Graphic window and choose Explode.

When you are prompted to explode every selected block, click Yes.

Change the material for the kitchen tiles

- Click the Toggle Selection Filter Dialog button <a>[=]
 The Toggle Selection Filter dialog appears with the previous settings.
- **2.** Select the dark tiles:
 - a) Double-click marble.1.Bianco Carrara to remove it from the list.

Hint: You can also right-click the list of materials and choose Remove.

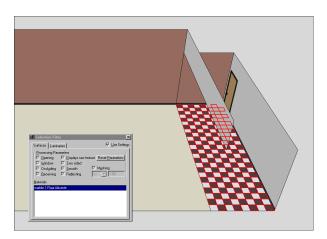
- **b)** Click the Select button , then click the Surface button .
- c) Make sure Use Selection Filter is enabled.
- **d)** Click the Select All button .

The filter is used to select all the tile surfaces that match the chosen materials.

- **3.** Assign the dark grey plastic material to the selected tiles:
 - a) Right-click in the Graphic window, then choose Assign Material.

The Assign Material dialog appears.

b) Select plastic.1.dk.grey, then click OK.



c) Click the Deselect All button .



- **4.** Select the light tiles:
 - a) Right-click marble.1.Bianco Carrara in the Materials table, then choose Add to Selection Filter.
 - b) Double-click marble.1.Roja Alicante to remove it from the list.
 - c) Click the Select All button

The filter is used to select all the tile surfaces that match the chosen materials.

- **5.** Assign the white plastic material to the selected tiles:
 - a) Right-click in the Graphic window, then choose Assign Material.

The Assign Material dialog appears.

- **b)** Select plastic.1.white, then click OK.
- c) Click the Deselect All button 🔝 .
- 6. Double-click marble.1.Bianco Carrara to remove it from the list.

The selection filter is cleared.

- 7. Click the Toggle Selection Filter Dialog button 🔁 to hide the dialog.
- **8.** Click the Use Selection Filter button \(\sqrt{k} \) to disable the Use Selection Filter option.
- **9.** Click the View Extents button .

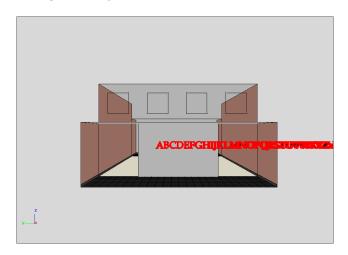
Add a logo to the partition wall

To make a company logo for the entrance area, you will use the lettering in the sign.1.serif typeface(1') block. This block includes all the alphabet plus digits and punctuation. You will use the characters to write 3DW and delete the rest.

- 1. Orbit around the model to view the front of the partition wall.
- **2.** Make the sign.1.serif typeface(1') layer current.
- **3.** Turn off the w&d.1.door.glass(6'x8') layer so you can see the partition wall clearly.
- **4.** Drag the sign.1.serif typeface(1') from the Blocks table to somewhere on the partition wall.



- **5.** Rotate the block around the Z axis:
 - **a)** Click the Rotate button 💍 to switch to interactive Rotate mode.
 - **b)** Click the Z Constraint button Z to rotate around the Z axis.
 - **c)** Drag in the Graphic window until the block instance is rotated -90 degrees.



- **6.** Scale the block to be 3 inches deep:
 - **a)** Right-click in the Graphic window, then choose Transformation.

The Transformation dialog appears.

- **b)** Click the Scale tab.
- **c)** Type the following scale factors: X = 1, Y = 0.25, Z = 1.
- d) Click OK.

The letters are scaled from 12 inches deep to 3 inches deep.

- **7.** Turn off all layers except sign.1.serif typeface(1').
- **8.** To explode the selected blocks, right-click in the Graphic window and choose Explode.

When you are prompted to explode every selected block, click Yes.

- **9.** Zoom in and select the number 3:
 - a) Switch to the Left projection, then click the View Extents button .
 - b) Click the Zoom Window button, then drag a rectangle around the range of letters from about x to 9.
 - **c)** Click the Surface button , then click the Area All button .
 - **d)** Drag a rectangle around the number 3 to select all its surfaces.

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10. Set the drag increments to help you use the interactive Move feature:

With the interactive Move and Rotate features, you can transform a block without using the Transformation dialog.

a) Click the Edit Drag Increments button 🖭 .

The Transformation dialog appears with the Drag Increments panel selected.

- **b)** Type 24 in the Move Z box.
- c) Enable Use Drag Increments.

You can also toggle this option by clicking the Use Drag Increments button .

- d) Click OK.
- **11.** Move the block along the Z axis:
 - **a)** Click the Move button \Leftrightarrow to switch to interactive Move mode.
 - **b)** Click the Z Constraint button Z to move along the Z axis.
 - c) Drag in the Graphic window until the number 3 is 24 inches above the other characters.



- **d)** Click the Deselect All button .
- **12.** Repeat the procedure to extract the W:
 - a) Scroll the view to see the W.
 - **b)** Click the Area All button , then drag a rectangle around the letter W to select all its surfaces.
 - c) Repeat step 11 to move the W up 24 inches.



- **13.** Repeat the procedure to extract the D:
 - a) Scroll the view to see the D.
 - **b)** Click the Area All button , then drag a rectangle around the letter D to select all its surfaces.
 - c) Repeat step 11 to move the D up 24 inches.
- **14.** Delete the other letters:
 - a) Click the View Extents button 🕀 .
 - **b)** Click the Area All button [4], then drag a rectangle around all the remaining letters.
 - **c)** Press the Delete key.
- **15.** Move the 3, D, and W in order:
 - a) Select all the surfaces of the D.
 - **b)** Click the Move button \Leftrightarrow to switch to interactive Move mode.
 - c) Click the Y Constraint button Y to move along the Y axis.
 - **d)** Move the D to the left of the W.
 - e) Click the Deselect All button .
 - f) Select all the surfaces of the 3.
 - **g)** Click the Move button to switch to interactive Move mode.
 - **h)** Move the 3 to the left of the D.
 - i) Click the Deselect All button 🔝.
- **16.** Fine-tune the position of the logo:
 - a) Turn on all the layers.
 - **b)** Click the View Extents button <u>•</u>.
 - c) Select all the surfaces of the 3DW.
 - **d)** Click the Move button 💠 to switch to interactive Move mode.
 - **e)** Click the YZ Constraint button **YZ** to move along the YZ plane.



f) Click the Use Drag Increments button 💉 to turn off the drag increments.

Hint: Instead, you can edit the drag increments and type 0 in the Move Z box.

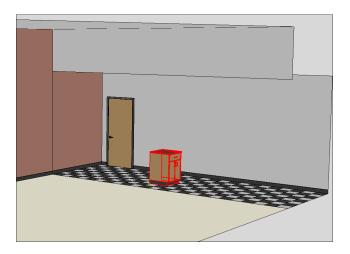
g) Move the 3DW to the center of the partition wall at eye-level.



- **17.** Click the Deselect All button .
- **18.** Switch to the Perspective projection, then click the View Extents button \bigoplus .

Add base cabinets to the kitchen

- 1. Make the cw.1.base.2doors&drawer(24"x24"x35") layer current.
- **2.** Drag the cw.1.base.2doors&drawer(24"x24"x35") from the Blocks table to somewhere on the floor of the kitchen area.
- **3.** Orbit the model and zoom in to see the far-left corner of the kitchen.





- **4.** Using interactive Rotate, rotate the base cabinet -90 degrees around the Z axis.
- **5.** Move the block with the Snap to Nearest Vertex feature so its insertion point snaps to the far-left corner of the kitchen area.
- **6.** Move the block to the right of the kitchen door:
 - a) Right-click in the Graphic window, then choose Transformation.

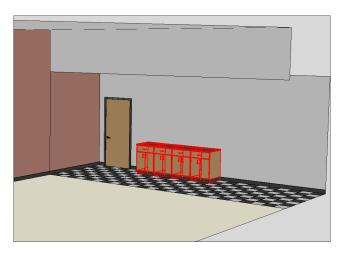
The Transformation dialog appears.

- **b)** Click the Move tab.
- c) Enable Relative.
- **d)** Type -72 in the Offsets Y box.
- e) Click OK.
- **7.** Add three duplicate instances of the base cabinet block:
 - a) Right-click in the Graphic window, then choose Multiple Duplicate.

The Add Multiple Instances dialog appears.

- **b)** Type 4 in the Number Y box, and type -24 in the Spacing Y box.
- c) Click OK.

This creates a total of 4 block instances in the Y direction with the insertion points spaced 24 inches apart.



8. Click the Deselect All button

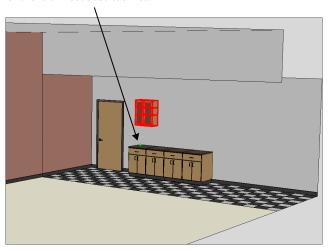


Add storage cabinets to the kitchen

- **1.** Make the cw.1.storage.2glassdoors(24"x12"x30") layer current.
- 2. Drag the cw.1.storage.2glassdoors(24"x12"x30") from the Blocks table to somewhere on the floor of the kitchen area.

Notice that the insertion point is 24 inches below the cabinet.

- **3.** Using interactive Rotate, rotate the storage cabinet -90 degrees around the Z axis.
- **4.** Move the block with the Snap to Nearest Vertex feature so its insertion point snaps to the far-left corner of the left-most base cabinet.



- **5.** Add three duplicate instances of the storage cabinet block:
 - a) Right-click in the Graphic window, then choose Multiple Duplicate.

The Add Multiple Instances dialog appears.

- **b)** Type 4 in the Number Y box, and type -24 in the Spacing Y box.
- c) Click OK.

This creates a total of 4 block instances in the Y direction with the insertion points spaced 24 inches apart.

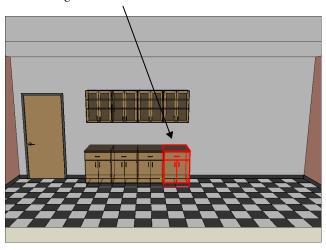
6. Click the Deselect All button .



Add a sink to a base cabinet

Before you add a sink to one of the base cabinets, you must delete the surface which the sink will replace.

- 1. Change the view so you are looking down at the base cabinets.
- **2.** Select the right-most base cabinet.



3. Explode the block and delete the top surface:

Note: You must explode the block before you delete the top surface. Otherwise, the surface is also deleted from the block definition.

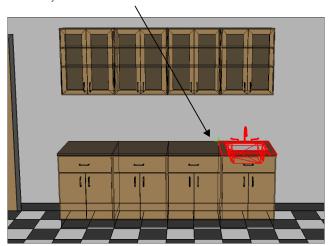
a) To explode the block, right-click in the Graphic window and choose Explode.

When you are prompted to explode every selected block, click Yes.

- **b)** Select the top surface of the block.
- c) Press Delete.
- **4.** Make the mpe.1.sink,faucet&counter(24x24) layer current.
- **5.** Drag the mpe.1.sink,faucet&counter(24x24) from the Blocks table to the wall above the base cabinets. Due to the position of the insertion point, the block instance is placed outside the model.
- **6.** Using interactive Rotate, rotate the storage cabinet -90 degrees around the Z axis.



7. Move the block with the Snap to Nearest Vertex feature so its insertion point snaps to the far-right corner of the adjacent base cabinet.



8. Click the Deselect All button

Change the material assigned to the countertop

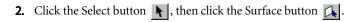
The default material assigned to the countertop of the base cabinets and the sink is plastic.1.grey. You can quickly switch the material after you use the selection filter to select all the surfaces that use this material.

- 1. Add the plastic.1.grey material to the selection filter:
 - a) Right-click the material name in the Materials table, then choose Add to Selection Filter.
 - **b)** Click the Toggle Selection Filter Dialog button 🛅 .

The Selection Filter dialog appears.

c) Enable Use Selection Filter.

You can also toggle this option by clicking the Use Selection Filter button .



3. Click the Select All button .

The filter is used to select all the surfaces that match the chosen material.

- **4.** Assign the gr.1.Carioca.Gold material to all the countertop surfaces:
 - a) Right-click in the Graphic window, then choose Assign Material.

The Assign Material dialog appears.

- **b)** Select gr.1.Carioca.Gold, then click OK.
- **5.** If necessary, click the Textures button 🔞 to display the textures.



6. On the Selection Filter dialog, double-click plastic.1.grey to remove it from the list.

Hint: You can also right-click the list of materials and choose Remove.

The selection filter is cleared.

- 7. Click the Toggle Selection Filter Dialog button 🝵 to hide the dialog.
- **9.** Click the Deselect All button .
- **10.** Click the View Extents button 🕀 .
- **11.** Notice how the block definitions have changed:
 - a) In the Blocks table, double-click cw.1.base.2doors&drawer(24"x24"x35").

The block definition is shown in Isolate mode.

b) Orbit the block and notice that the countertop surfaces use the gr.1. Carioca. Gold material.

Note: The material is changed because you modified the surfaces of the block instances. If you do not want to change the block definition, you should explode the block instance or make a copy of the original block definition before changing the material.

c) Right-click in the Graphic window and choose Return to Full Model.

Note: The countertop surfaces of the mpe.1.sink,faucet&counter(24x24) block are now assigned the gr.1.Carioca.Gold material also.

12. To save the Preparation file, choose File | Save.



Exercise 4: Add Structural and Ceiling Blocks

In this exercise, you construct the ceiling surfaces for both the open office area and the kitchen area. The office area includes exposed steel structural W beams and metal decking. The kitchen area includes a typical suspended ceiling grid.

Load the Construction blocks

The blocks for this exercise are found in two different block libraries.

1. Load the following block library:

2. Load the following block library:

```
\label{lightscape} $$C:\Program Files\Lightscape\Lib\Blocks\2. Construction\Structure.1.blk$$ From this library, load these two blocks: $$struc.1.steel.decking(1'x1')$$ struc.1.steel.'W'section(1'x1'x1')$
```

Load a material for the suspended ceiling

1. Load the following material library:

C:\Program Files\Lightscape\Lib\Material\Misc.1.atr

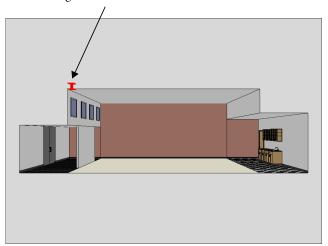
2. From this library, load this material:

```
misc.1.gypsum
```

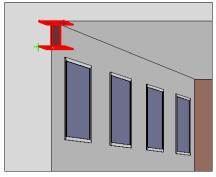
Add steel beams

- 1. Make the struc.1.steel.'W'section layer current.
- 2. Drag the struc.1.steel.'W's ection from the Blocks table to somewhere on the floor of the office area.

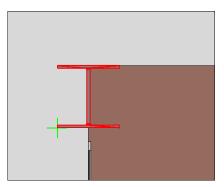
3. Move the block with the Snap to Nearest Vertex feature so its insertion point snaps to the near-left corner of the ceiling.



4. Move the block with the Transformation dialog. On the Move panel, enable Relative and type -6 in the Offsets X box and -12 in the Offsets Z box.



Perspective projection



Front projection

These settings center the section on the wall surface (when seen from the Front projection) and lower the section, so that it is visible in the office.

5. Scale the block using the following scale factors: X = 1, Y = 24, Z = 1.

This scales the 1-foot-long W section across the 24-foot-wide office.



- **6.** Add four duplicate instances of the beam:
 - a) Right-click in the Graphic window, then choose Multiple Duplicate.

The Add Multiple Instances dialog appears.

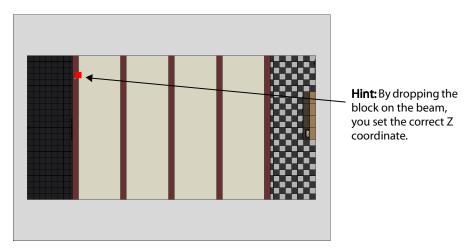
- **b)** Type 5 in the Number X box, and type 96 in the Spacing X box.
- c) Click OK.

This creates a total of 5 block instances in the X direction with the insertion points spaced 96 inches apart.

7. Click the Deselect All button .

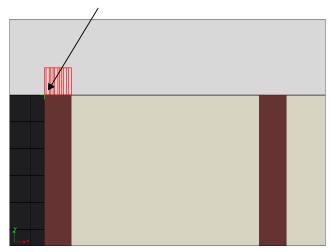
Add the decking

- 1. Make the struc.1.steel.decking layer current.
- **2.** Switch to the Top projection.
- **3.** Drag the struc.1.steel.decking from the Blocks table to somewhere on the left-most beam.





4. Move the block with the Snap to Nearest Vertex feature so its insertion point snaps to the top-left corner of the beam.

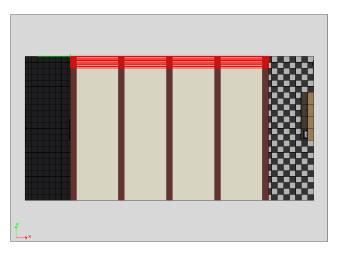


5. Rotate the decking block instance -90 degrees around the Z axis.

Hint: You can move, rotate, and scale the block while the Transformation dialog is open.

6. Scale the block using the following scale factors: X = 2, Y = 33, Z = 1.

The scaled block is 33 feet wide because the room is 32 feet wide and the beam on each end extends 6 inches outside the room. (Remember, scaling always affects the block in the directions of the block definition.)





- **7.** Add eleven duplicate instances of the beam:
 - a) Right-click in the Graphic window, then choose Multiple Duplicate.

The Add Multiple Instances dialog appears.

- **b)** Type 12 in the Number Y box, and type -24 in the Spacing Y box.
- c) Click OK.

This creates a total of 12 block instances in the Y direction with the insertion points spaced 24 inches apart.

- **8.** Switch to the Perspective projection, then click the Deselect All button .
- **9.** Orbit the model to view the decking.

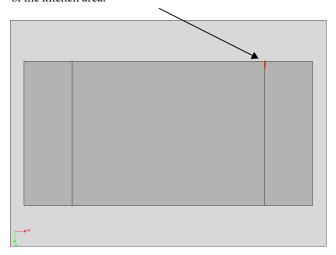
Add a suspended ceiling

A suspended ceiling usually consists of a grid of edges and a set of ceiling panels. You add the edges using the clg.1.grid(x1') block and the Multiple Duplicate feature. (Afterwards, you can add ceiling panels, but an easier way is to assign the ceiling panel material to the existing ceiling surface.)

- **1.** Make the clg.1.grid(x1') layer current.
- **2.** Turn off all layers except clg.1.grid(x1') and geo.1.room(10'x10'x10').
- **3.** Switch to the Bottom projection.
- **4.** Drag the clg.1.grid(x1) from the Blocks table to somewhere on the floor of the office area.

The selected block appears as a short red line.

5. Move the block with the Snap to Nearest Vertex feature so its insertion point snaps to the top-left corner of the kitchen area.





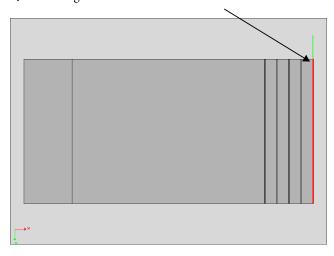
- **6.** Create five grid blocks for the length of the kitchen ceiling:
 - a) Scale the block using the following scale factors: X = 1, Y = 24, Z = 1.

This scales the grid to fit the 24-foot-long ceiling.

b) Multiple duplicate the block using 5 in the Number X box and 24 in the Spacing X box.

This creates a total of 5 block instances in the X direction with the insertion points spaced 24 inches apart.

- **c)** Click the Deselect All button .
- 7. Create 13 grid blocks for the width of the kitchen ceiling:
 - a) Select the grid block that is closest to the wall.



b) To duplicate it, right-click in the Graphic window and choose Duplicate.

The duplicate copy is selected.

c) Scale the block using the following scale factors: X = 1, Y = 0.333, Z = 1.

This scales the grid from 288 to 96 inches so it can be used for the width of the kitchen ceiling.

- **d)** Rotate the short grid block instance 90 degrees around the Z axis.
- e) Multiple duplicate the block using 13 in the Number Y box and 24 in the Spacing Y box.

This creates a total of 13 block instances in the Y direction with the insertion points spaced 24 inches apart.

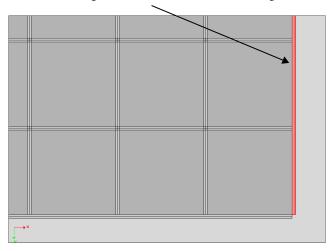
f) Click the Deselect All button .



- **8.** Fix the grid instances in the bottom-right corner of the kitchen:
 - a) In the Bottom projection, use Zoom Window to zoom in on the bottom-right corner of the kitchen.

Notice that the last grid instance in each direction is outside the ceiling surface. To check this, you can toggle the clg.1.grid(x1') layer off and on. To fix this, you can move these grids 1 inch into the kitchen.

b) Select the last grid on the side of the kitchen ceiling.



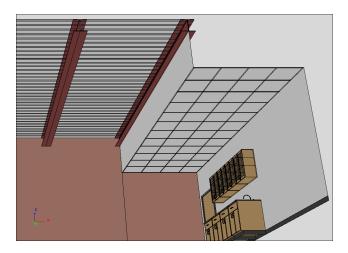
- **c)** Edit the drag increments so the Move X and Move Y boxes are set to 1 inch.
- d) Using interactive Move and the X constraint, drag the selected grid 1 inch to the left.
- **e)** Deselect the grid, then select the last grid on the back of the kitchen ceiling. (This block instance appears at the bottom of the current view.)
- f) Using interactive Move and the Y constraint, drag the selected grid 1 inch upwards.
- **9.** Switch to the Perspective projection, then click the Deselect All button .
- 10. Turn on all the layers.



Assign a material to the suspended ceiling

The ceiling.1.blk block library also contains a 2-foot by 2-foot ceiling panel named clg.1.panel(2'x2') that uses a gypsum material, but it is easier to just apply the material to the existing ceiling surface. You loaded the misc.1.gypsum material in the beginning of this exercise.

1. Orbit and zoom in to view the kitchen ceiling.



- Drag the misc.1.gypsum material from the Materials table to the kitchen ceiling.Release the mouse button when the blue line highlights the ceiling surface.
- 3. If necessary, turn on Textures to view the gypsum material.
- **4.** Click the View Extents button 🕀 .
- **5.** To save the Preparation file, choose File | Save.



Exercise 5: Add Furniture Blocks

In this exercise, you add several furniture blocks to the model:

- · Dining table and chairs to the kitchen area
- · Cubicles, steno chairs, sofa, and table to the office area
- Framed picture to the partition wall
- · Rug and trees to the entrance area

You can arrange the blocks using interactive Move and Rotate (with or without Drag Increments) and the Transformation dialog. Use whichever method is easiest or fastest in each situation.

Load the Furniture, Etcetera, and Organic blocks

The blocks for this exercise are found in six different block libraries.

1. Load the following block library:

C:\Program Files\Lightscape\Lib\Blocks\3. Furniture\Misc.furniture.1.blk

From this library, load this block:

mF.1.cubicles(16'x16')

Note: When you load this block, a luminaire for the cubicle named mF.1.cubicle light automatically loads. This luminaire is built into the cubicles that you add to the model.

2. Load the following block library:

C:\Program Files\Lightscape\Lib\Blocks\3. Furniture\Chairs.1.blk

From this library, load these two blocks:

chr.1.dining

chr.1.steno

3. Load the following block library:

C:\Program Files\Lightscape\Lib\Blocks\3. Furniture\Seating.1.blk

From this library, load this block:

seat.1.sofa(66"x30")

4. Load the following block library:

C:\Program Files\Lightscape\Lib\Blocks\3. Furniture\Tables.1.blk

From this library, load these two blocks:

tbl.1.coffee(3'x3')

tbl.1.dining(4'x4')



5. Load the following block library:

C:\Program Files\Lightscape\Lib\Blocks\4. Etcetera\Etc.home.1.blk

From this library, load these two blocks:

etc.home.1.framed picture(48"x38")

etc.home.1.rug.Persian(60"x38")

6. Load the following block library:

C:\Program Files\Lightscape\Lib\Blocks\5. Organic\Landscape.1.blk

From this library, load this block:

ls.1.Ficus(5')+pot

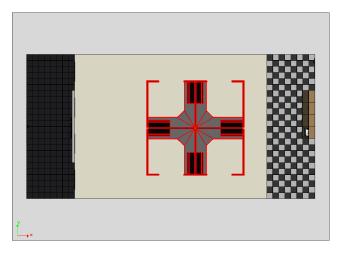
Add a set of cubicles

- **1.** Switch to the Top projection.
- 2. Turn off the following layers so you can see through the top of the model as you are placing furniture:

struc.1.steel.'W'section(1'x1'x1')

struc.1.steel.decking(1'x1')

- **3.** Make the mF.1.cubicles(16'x16') layer current.
- **4.** Drag the mF.1.cubicles(16'x16') from the Blocks table to the floor of the office area.
- 5. Using interactive Move and the XY constraint, drag the cubicles to the position shown below.



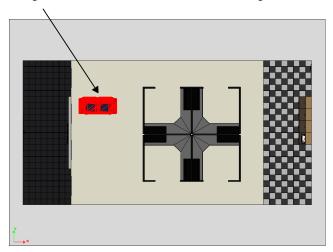
6. Click the Deselect All button

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Add two sofas and two tables

- **1.** Make the seat.1.sofa(66"x30") layer current.
- **2.** Drag the seat.1.sofa(66"x30") from the Blocks table to the floor of the office area.
- 3. Using interactive Move and the XY constraint, drag the sofa between the partition wall and cubicles.

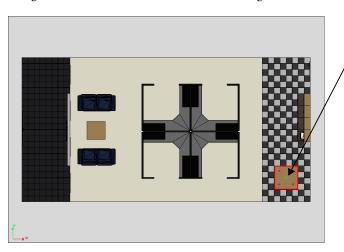


Hint: You can undo an interactive Move before you release the left mouse button by right-clicking.

- **4.** Create a second sofa:
 - a) Duplicate the selected sofa.
 - **b)** Using interactive Move and the Y constraint, drag the sofa down about 9 feet.
 - c) Using interactive Rotate, rotate the duplicate sofa 180 degrees around the Z axis.
 - **d)** Click the Deselect All button .
- **5.** Make the tbl.1.coffee(3'x3') layer current.
- **6.** Drag the tbl.1.coffee(3'x3') from the Blocks table to the floor of the office area.
- **7.** Using interactive Move and the XY constraint, drag the table between the two sofas.
- **8.** Click the Deselect All button .
- **9.** Make the tbl.1.dining(4'x4') layer current.
- **10.** Drag the tbl.1.dining(4'x4') from the Blocks table to the floor of the kitchen area.



11. Using interactive Move and the XY constraint, drag the table to the front side of the kitchen.



12. Click the Deselect All button

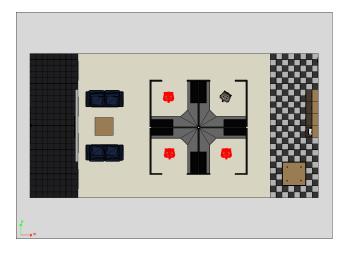
Add steno and dining chairs

As you add chairs to the cubicles and the kitchen, you can practice various ways to fine-tune the position and rotation of block instances.

- 1. Make the chr.1.steno layer current.
- **2.** Drag the chr.1.steno from the Blocks table into one of the four cubicles.
- **3.** Using interactive Rotate, rotate the chair around the Z axis until it faces the cubicle desk.

Hint: You should turn off the Use Drag Increments feature or change the Rotate Z value (which is currently set to 90 degrees).

4. Create three more chairs for the other cubicles.



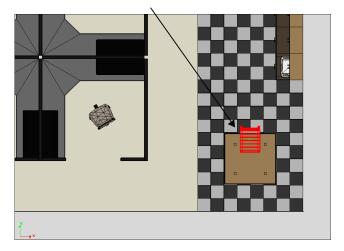
Hint: You can drag the instances from the Blocks table or duplicate the block instance you just created.



5. Rotate the other steno chairs (around the Z axis) to face different directions.

Hint: Select only one chair at a time. Otherwise, all the selected chairs will be rotated at the same time. You may want to turn off the Accumulate Pick feature while you do this.

- **6.** Click the Deselect All button
- 7. Make the chr.1.dining layer current.
- 8. Drag the chr.1.dining from the Blocks table to the floor of the kitchen area.
- **9.** Slide the chair slightly under the table:
 - **a)** Using interactive Move and the XY constraint, drag the chair to the side of the dining table closest to the sink.



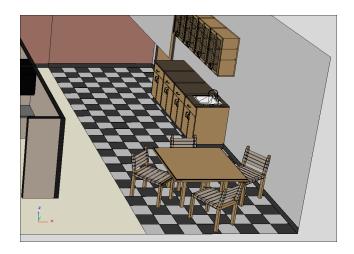
- **b)** Switch to the Front projection to check that the chair legs are not intersecting the table legs. Move with the X Constraint to fix this problem.
- **c)** Switch to the Right projection to check that the chair back is not intersecting the table top. Move with the Y Constraint to fix this problem.
- **d)** Switch to the Top projection.
- **10.** Create three more chairs for the other sides of the dining table.
- 11. Rotate the other dining chairs (around the Z axis) to face different directions.

Hint: You can use a hot key to quickly select the block instances as you rotate and move them. For example, after you use interactive Rotate to rotate a chair, you can press 1 and then select another chair. When you release the key, the interactive Rotate mode is active again.

- **12.** Click the Deselect All button
- **13.** Turn on all the layers.



14. Switch to the Perspective projection, then zoom in on the kitchen table to check the placement of the chairs.



Hint: You can turn off the tbl.1.dining(4'x4') layer to make sure none of the chairs occupy the same space under the table.

15. Click the View Extents button (4).

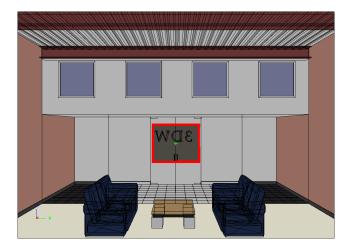
Add a framed picture and a rug

- **1.** Make the etc.home.1.framed picture(48"x38") layer current.
- 2. Drag the etc.home.1.framed picture(48"x38") from the Blocks table to the partition wall.

 Due to the rotation of the block instance, the framed picture intersects the wall.
- **3.** Using interactive Rotate, rotate the picture 90 degrees around the Z axis so it faces the office. **Note:** Remember to turn on the Use Drag Increments feature.
- **4.** Change the view so you can see the partition wall from the office.



5. Using interactive Move and the YZ constraint, center the framed picture on the partition wall.



Hint: An easy way to center the picture is to switch to the Left projection while the picture is selected. Since it is highlighted, you can use the doors to the entrance area as a reference.

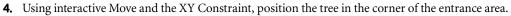
- **6.** Click the Deselect All button .
- 7. Make the etc.home.1.rug.Persian(60"x38") layer current.
- **8.** Switch to the Top projection.
- 9. Drag the etc.home.1.rug.Persian(60"x38") from the Blocks table to the floor of the entrance area.
- **10.** Using interactive Rotate, rotate the rug 90 degrees around the Z axis.
- 11. Using interactive Move and the XY Constraint, center the rug in front of the partition wall.
- **12.** Click the Deselect All button .
- **13.** Switch to the Perspective projection, then click the View Extents button .
- 14. If necessary, turn on Textures so you can see the abstract painting and the Persian rug.

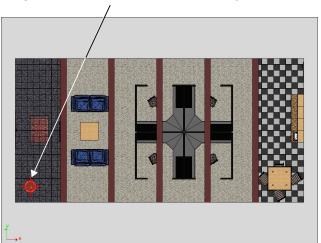
Add two trees to the entrance area

The Ficus tree belongs to the Landscape block library. The illusion of a 3D model is created by intersecting two copies of an image at right angles. The image of the tree uses an alpha channel and the Cutout option (on the Texture panel of the Material Properties dialog).

- 1. Make the ls.1.Ficus(5')+pot layer current.
- **2.** Switch to the Top projection.
- **3.** Drag the ls.1.Ficus(5')+pot from the Blocks table to the floor of the entrance area.







- **5.** Click the Deselect All button .
- **6.** Drag another instance of the tree block from the Blocks table to the entrance area.
- **7.** Move the second tree to the opposite corner of the entrance area.
- **8.** Click the Deselect All button .
- **9.** Switch to the Perspective projection to view the trees with their textures.
- **10.** To save the Preparation file, choose File | Save.



Exercise 6: Add Luminaires

The Lightscape libraries include hundreds of lights: some are generic while others are specific from manufacturers (Peerless Lighting, Bega, Kurt Versen, Lithonia, ERCO). The Peerless group contains luminaires that are 4 feet long and ready to be dragged and dropped into the scene. It also contains component parts so you can create your own custom Peerless fixtures. You add both types of Peerless lights in this exercise.

Load the Generic and Peerless luminaires

The luminaires for this exercise are found in three different block libraries. You also need to load a block from a library of Peerless component parts.

Note: Luminaires are blocks with photometric properties. Since luminaires are stored in block libraries just like blocks, you follow the same steps to load a luminaire. The only difference is that you right-click in the Luminaires table (instead of the Blocks table) and choose Load. For more information, see "How to load a block from a block library" on page 5. The luminaire preview on the Available Luminaires dialog works the same as the block preview on the Available Blocks dialog.

1. Load the following block library:

C:\Program Files\Lightscape\Lib\Lights\Generic\Bulb.1.blk

From this library, load these two generic luminaires:

BULB.1.MR-16(50W)

BULB.1.fluor.tube(4')

2. Load the following block library:

C:\Program Files\Lightscape\Lib\Lights\Peerless\7x3.INDIRECT\PL.1.7x3.Indirect.blk

From this library, load this Peerless luminaire:

PL.1.LD7-010450

3. Load the following block library:

C:\Program Files\Lightscape\Lib\Lights\Peerless\LS.PARTS\PL.1.LS.Lumin.blk

From this library, load this Peerless luminaire:

PL.1.LS.lumin(4')

4. Load the following block library:

C:\Program Files\Lightscape\Lib\Lights\Peerless\LS.PARTS\PL.1.LS.Parts.blk

Note: For the following component part, you need to load the block from the Blocks table.

From this library, load this block:

PL.1.LS.parts.end.sculpt

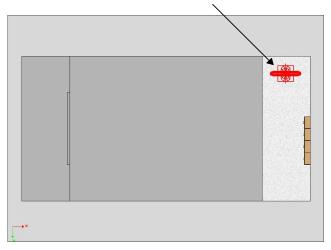


Add Peerless luminaires to the kitchen

1. Turn off all layers except the following:

```
cw.1.storage.2glassdoors(24"x12"x30")
geo.1.room(10'x10'x10')
PL.1.LD7-010450
wal.1.partition(5"x1'x10')
w&d.1.window(1'x1')
```

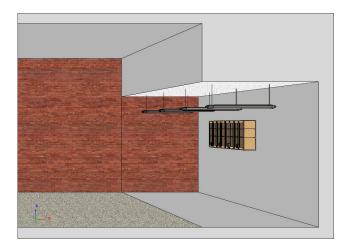
- 2. Make the PL.1.LD7-010450 layer current.
- **3.** Switch to the Bottom projection.
- **4.** Drag the PL.1.LD7-010450 from the Luminaires table to the kitchen area.
- **5.** Using interactive Rotate, rotate the luminaire 90 degrees around the Z axis.
- **6.** Using interactive Move and the XY constraint, drag the luminaire to the top of the kitchen.



- 7. Multiple duplicate the luminaire using 4 in the Number Y box and 72 in the Spacing Y box.
 This creates a total of 4 block instances in the Y direction with the insertion points spaced 72 inches apart.
- **8.** If necessary, use interactive Move to center the four selected luminaires on the kitchen ceiling.
- **9.** Click the Deselect All button .



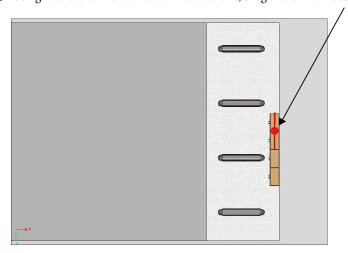
10. Switch to the Perspective projection to view the luminaires.



Notice that they are hanging on cables. The insertion point for each luminaire is on the top between the two cables. Since you placed the luminaires in Bottom projection, the insertion points snapped to the kitchen ceiling.

Add fluorescent luminaires under the storage cabinets

- **1.** Turn on the BULB.1.fluor.tube(4') layer.
- **2.** Make the BULB.1.fluor.tube(4') layer current.
- **3.** Switch to the Bottom projection.
- **4.** Drag the BULB.1.fluor.tube(4') from the Luminaires table onto the storage cabinets.
- **5.** Using interactive Move and the XY constraint, drag the luminaire to the center of the two top cabinets.





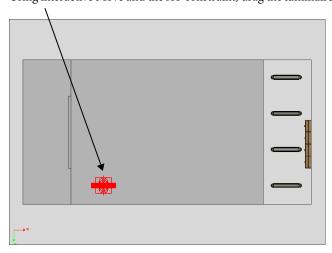
- **6.** Multiple duplicate the luminaire using 2 in the Number Y box and 48 in the Spacing Y box.

 This creates a total of 2 block instances in the Y direction with the insertion points spaced 48 inches apart.
- **7.** Switch to the Perspective projection, then zoom in to view the bottom of the cabinets.
- **9.** Click the View Extents button **4**.

Add luminaires using the Peerless Lightscreen (LS) Kit of Parts

Since Peerless Lighting fixtures can be assembled in custom configurations, the Lightscape libraries include a Peerless kit of parts. You can create a custom Peerless fixture using the connector and end pieces in conjunction with the luminaires. Using the kit of parts, you can devise an infinite variety of lighting layouts.

- 1. Turn on the PL.1.LS.lumin(4') layer.
- 2. Make the PL.1.LS.lumin(4') layer current.
- **3.** Switch to the Bottom projection.
- **4.** Drag the PL.1.LS.lumin(4') from the Luminaires table to the ceiling of the office area.
- **5.** Using interactive Rotate, rotate the luminaire 90 degrees around the Z axis.
- 6. Using interactive Move and the XY constraint, drag the luminaire to the position shown below.



7. Move the luminaire with the Transformation dialog. On the Move panel, enable Relative and type -36 in the Offsets Z box.

Note: Unlike the PL.1.LD7-010450 luminaire used in the kitchen, the PL.1.LS.lumin(4') does not include cables. Thus, you must lower the luminaire to the position where it would hang on the cables.



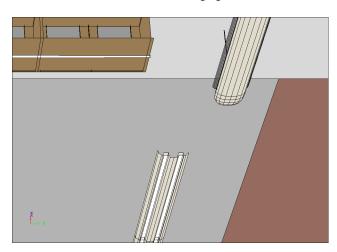
- **8.** Multiple duplicate the luminaire using 6 in the Number X box and 48 in the Spacing X box.

 This greates a total of 6 block instances in the X direction with the insertion points enced 48 inches
 - This creates a total of 6 block instances in the X direction with the insertion points spaced 48 inches apart.
- **9.** If necessary, fine-tune the position of the six selected luminaires so they are aligned with the first luminaire in the kitchen area.
- **10.** Switch to the Perspective projection to view the luminaires.
- **11.** Click the Deselect All button .

Add ends to the set of Peerless lights

The 24-foot-long series of fixtures will be duplicated after you add two end parts to it. The sculpted end block is already loaded.

- 1. Turn on the PL.1.LS.parts.end.sculpt layer.
- 2. Make the PL.1.LS.parts.end.sculpt layer current.
- **3.** Orbit the model until you have a good view of the bottom and end of the series of fixtures, closest to the kitchen area, as shown in the following figure.



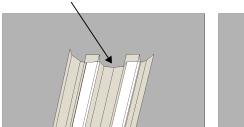
One way to get this view is to orbit under the kitchen and then use the Zoom Window feature to see a close-up of the end of the fixture.

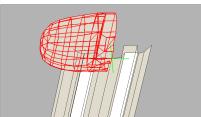
4. Right-click the PL.1.LS.parts.end.sculpt block in the Blocks table and choose Create Single Instance.

You cannot see the new block in this view, but it is at the origin and it is the only block that is selected. This is important because you can move a selected block without seeing it.



5. Move the block with the Snap to Nearest Vertex feature so its insertion point snaps to the bottom-most vertex at the end of the luminaire as shown below.





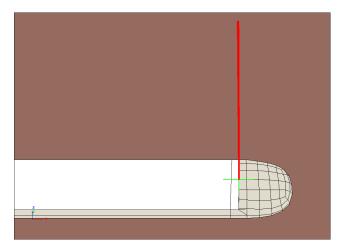
The fixture before the end is moved

The fixture after the end is moved

- 6. Using the Rotate panel on the Transformation dialog, rotate the block 90 degrees around the Z axis.
- **7.** Click the Deselect All button .
- **8.** Repeat steps 3 to 7 for the other end of the series of fixtures (the end near the entrance area). When you rotate the block, enter -90 degrees in the Offsets Z box.
- **9.** Click the View Extents button .

You have just successfully made your own custom Peerless fixture. The other connection pieces (L joints, T joints, and X joints) work exactly the same way by snapping to the bottom-most vertex of the luminaire section.

10. (Optional) Since the PL.1.LS.lumin(4') does not include cables, you can add them to the top of the sculpted end parts. The luminaires will also look good without these cables.



The PL.1.misc.cable(18") block is in the *PL.1.LS.Parts.blk* block library. After you load the block, create a single instance and move it with the Snap to Nearest Vertex feature. Scale the cables to be 36 inches long so they reach the ceiling.

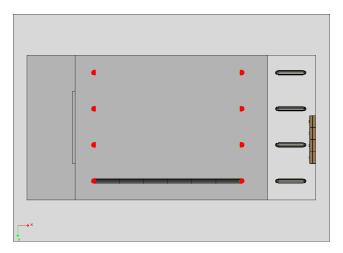
65



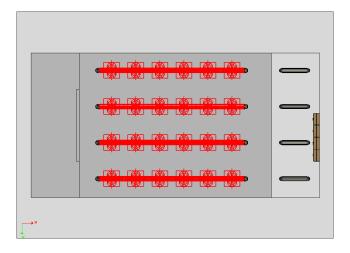
Duplicate the luminaires and block ends

You cannot multiple duplicate a selection set that includes both luminaires and blocks, so you must do each separately. First, you duplicate the blocks, then you duplicate the luminaires.

- **1.** Switch to the Bottom projection.
- **2.** Click the Block button then select both of the sculpted end blocks. If you added the cables, select them also.
- **3.** Multiple duplicate the two blocks using 4 in the Number Y box and -72 in the Spacing Y box.



- **4.** Click the Deselect All button .
- **5.** Click the Luminaire button , then select the six luminaires in the office area.
- **6.** Multiple duplicate the six luminaires using 4 in the Number Y box and -72 in the Spacing Y box.



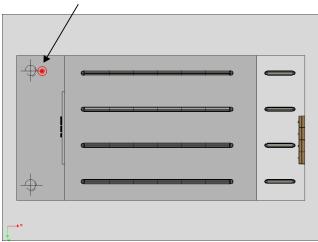
7. Click the Deselect All button



- **8.** Switch to the Perspective projection.
- **9.** Click the View Extents button **4.** .

Add spotlights to the entrance area

- 1. Turn on the BULB.1.MR-16(50W), sign.1.serif typeface(1'), and ls.1.Ficus(5')+pot layers.
- **2.** Make the BULB.1.MR-16(50W) layer current.
- **3.** Switch to the Bottom projection.
- **4.** Drag the BULB.1.MR-16(50W) from the Luminaires table to the ceiling of the entrance area.
- **5.** Using interactive Move and the XY constraint, drag the luminaire beside the top tree.



- **6.** Multiple duplicate the two blocks using 4 in the Number Y box and 72 in the Spacing Y box.
- **7.** Select the four luminaire instances:
 - a) Click the Deselect All button 🔝 .
 - **b)** Click the Select button , then click the Luminaire button .
 - **c)** Select the four luminaire instances.

Hint: You can select the luminaires quickly using Select Area All Vertices.

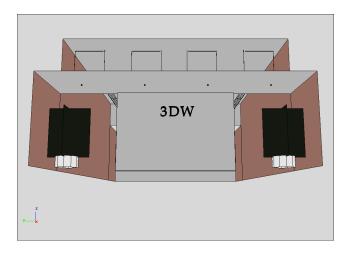
8. Switch to the Perspective projection.



- **9.** Change the processing of the selected luminaires so that direct illumination is ray traced:
 - a) Right-click in the Graphic window, then choose Luminaire Processing.
 - b) In the Luminaire Processing dialog, enable Ray Trace Direct Illumination.

Direct illumination from the light will be recalculated during the ray tracing calculation so the light will look better in the final ray-traced image.

- c) Click OK.
- **10.** Click the Deselect All button
- 11. Orbit around to view the entrance area as shown below.

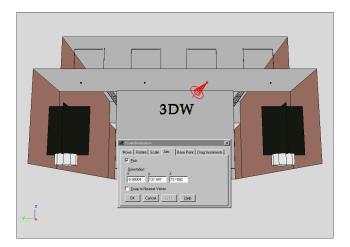


- **12.** If necessary, turn off the Accumulate Pick feature.
- **13.** Aim the left-most spotlight:
 - a) Select the left-most spotlight.
 - **b)** Right-click in the Graphic window and choose Transformation.
 - c) Click the Aim tab.
 - **d)** Enable Pick to start the special Pick mouse mode.
 - e) Click on the back of the left Ficus tree.
- **14.** Repeat step 13 for the right-most spotlight.

Hint: You can use a hot key to quickly select the luminaire instances as you aim them. For example, after you aim the left-most luminaire, you can press 1 and then select the right-most luminaire. When you release the key, the Pick mouse mode is active again.



15. Repeat step 13 to point the two middle spotlights at the 3DW sign on the partition wall.



When you are finished, close the Transformation dialog.

- **16.** Click the Deselect All button .
- **17.** Turn on all layers, then click the View Extents button \bigoplus .
- **18.** To save the Preparation file, choose File | Save.



Exercise 7: Generate a Solution File

Your model is now complete. All the necessary blocks and luminaires have been added. You can set the processing parameters, create a radiosity solution, and render a few ray-traced images.

Open several different views

Five views of the model are given in the *Views* folder. View1 shows the entrance area, View2 shows the sofas, View3 shows the back wall (looking towards the entrance area), View4 shows the kitchen area, and View5 shows the front wall (looking towards the entrance area).

- 1. Click the Textures button 🔞 to display the textures.
- **2.** Open the views to see your completed model:
 - a) Choose View | Open.

The Open dialog appears.

- **b)** Open a view from the following folder:
- C:\Program Files\Lightscape\Projects\Library Lesson\Views
- c) Click Open.
- 3. Create another interesting view and save it.

Set the processing parameters

1. Choose Process | Parameters.

The Process Parameters dialog appears.

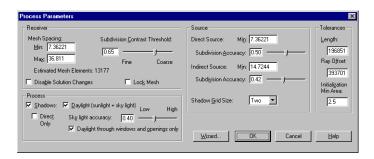
The numerical values in the various boxes of the dialog control the quality and speed of the Lightscape radiosity process. Although the values can be set individually, you use a wizard in this exercise to set them automatically.

- 2. Click the Wizard button to start the Process Parameters Wizard.
- 3. Select 3 for a medium quality level, then click Next to show the next page of the wizard.
- **4.** Select Yes so daylight is considered in this model.
- **5.** Enable the option that states the model is an interior space illuminated by daylight only through windows or openings.

Sunlight will only enter through the four windows on the clerestory wall.



6. Click Finish to update the processing parameters based on the selections made in the wizard.



Notice the change in the numerical values in the various boxes of the dialog.

7. Click OK to close the Process Parameters dialog.

Set the daylight settings

1. Choose Light | Daylight.

The Daylight Setup dialog appears.

2. Enable Direct Control (beside the OK button).

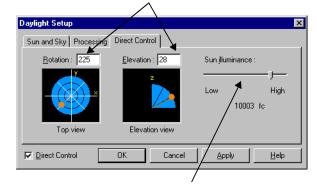
In the dialog, the Direct Control panel replaces the Place and Time panels.

Note: The Place and Time panels are usually used to set the sun's position. In this exercise, you use the Direct Control panel so sunlight enters the windows on the clerestory wall.

3. Set the Sky Conditions slider to the medium setting.

Leave the other settings on the Sun and Sky panel as the defaults.

- **4.** Set the sun location:
 - a) Click the Direct Control tab.
 - **b)** Set the Rotation to 225 degrees and the Elevation to 28 degrees.

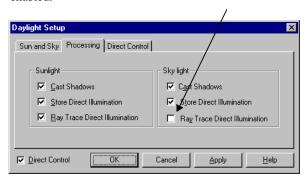


Hint: You can also set the Rotation and Elevation by clicking in the Top view and Elevation view, respectively.

c) Adjust the Sun Illuminance slider to about 10003 fc.



- **5.** Check the Processing settings:
 - **a)** Click the Processing tab.
 - **b)** Make sure that all options except "Ray Trace Direct Illumination" in the Sky light group box are enabled.



With these settings, the sunlight and skylight are both calculated and displayed in the radiosity solution, and only the direct sunlight is ray traced when you render an image.

- **6.** Click OK to update the sun parameters and close the dialog.
- 7. Increase the brightness and contrast settings:
 - a) Choose File | Properties.

The Document Properties dialog appears.

b) On the Display panel, set Brightness to 70 and Contrast to 65.

You can adjust these settings again after the radiosity solution is processed.

c) Click OK.

Process the radiosity solution

- **1.** Click the Solid button
- **2.** Click the Initiate button .

When the warning appears, click Yes to save changes.

This updates the *Office.lp* model with the latest changes and causes the program to create the Solution model. Notice that the filename changes to *Office.ls* when the initiation process completes.

3. Click the Go button | 次|.

Lightscape calculates the light distribution in the given environment. The green highlight on the screen indicates which light source is currently being distributed.

Notice the various statistics shown on the status bar such as the number of iterations and percentage of the total energy distributed.



4. When the percentage of energy shot exceeds 80%, click the Stop button •

The processing stops after the current iteration finishes. This may take a while (depending on the speed of your computer).

Render several views

1. Choose File | Render.

The Rendering dialog appears.

- **2.** Click the Browse button to set the path and name for the output file.
- 3. Enable Ray Tracing and Ray Trace Direct Illumination.
- **4.** Select Two from the Antialiasing Samples list.
- 5. Click OK and confirm the additional processing.

The following rendered image shows View2. Notice the sharp shadows on the masonry wall.



6. Compare your results with the five images in the following folder:

C:\Program Files\Lightscape\Projects\Library Lesson\Solution Images

Note: Some of the solution images that are provided are slightly different than the images that you make. For example, the kitchen cabinets are a bit different in View4.jpg, the partition wall and logo are a bit different in View1.jpg, and daylight is not considered in View5.jpg.

7. To save the Solution file, choose File | Save.

In the Save As dialog, check that the path points to the *Library Lesson* folder, then click Save.



- 8. For more exercise with your model, you can do any of the following:
 - Change the default material assigned to most of the walls.
 - Return to the Preparation file and replace some of the furniture blocks to create an alternate layout.
 - Change the Daylight settings.
 - Experiment with different processing parameters.
 - Create a walk-through animation for the model.

Summary

Congratulations! You have reached the end of the Library lesson. At this point, you should be able to:

- · Load blocks and luminaires from block libraries
- Duplicate instances of blocks
- Create block instances using the Create Single Instance feature
- Create block instances by dragging them from the Blocks table
- Explode block instances so you can modify their geometry
- Move block instances with the Snap to Nearest Vertex feature
- Interactively move and rotate block instances with the Drag Increments feature
- Transform block instances using the Transformation dialog
- Rotate and scale block instances relative to their insertion points
- Create surfaces to complete the geometry of a model
- Assign a texture to a material and orient it
- Assign a material to a surface
- Use the selection filter to select surfaces with specific materials and attributes
- Build a lighting layout using luminaires and components parts
- Aim luminaires at specific surfaces

Acknowledgements

We are pleased to acknowledge the following manufacturers which have licensed digital representations of their products for the Lightscape libraries:

Luminaires

Bega, 1005 Mark Ave., Carpenteria, CA 93013 (www.bega-us.com)
Erco Leuchten GmbH, brockhauser Weg 80-82, D-58507 Ludenscheid, Germany (www.erco.com)
Kurt Versen Company, 10 Charles St., P.O. Box 677, Westwood, New Jersey 07675
Lithonia Lighting, 1400 Lester Rd., Conyers, GA 30207 (www.lithonia.com),
including the Peerless Lighting line (www.peerless-lighting.com)
Additional luminaires are available at www.professional.erco.com

Materials

Appalachian Millwork & Lumber Co., 8230 Expansion Way, Huber Heights, OH 45424 Mannington Carpets, Inc., P.O. Box 12281, Calhoun, GA 30703 (www.mannington.com) Marble and Granite, Inc., 29 Tower Road, Newton MA 02464 (www.marbleandgranite.com) National Terrazzo and Mosaic Association, 110 East Market St., Leesburg VA 20176 (www.ntma.com)