Design Master
Photometrics Tutorial

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Introduction

You are reading the tutorial for Design Master Photometrics.

These tutorials teach you the basics of using the software.

The tutorials are sequential and built on each other. It is simplest to follow them from start to finish.

Tutorial Resources

Download the **tutorial drawing files** from our website.

The drawing files contained in this ZIP file are used in the tutorial. The ZIP file also contains a PDF copy of the tutorial. Extract the ZIP file to a folder where you can easily find it again.

You can also **watch the video tutorial**, which follows these tutorials.

Getting Help

Contact us if you need any help while working through the tutorials.

Our support hours are Monday through Friday, 9am to 5pm Eastern time.

Call 866-516-9497 x2, email **support@designmaster.biz**, or **contact us via live chat**.

Drawing Setup

These tutorials teach you how to use Design Master Photometrics. Drawing files that are configured properly are included with the tutorial. For other projects, it is assumed that you have a standard procedure for setting up your drawings.

You can continue to set up your drawings the same way as you do now when using Design Master Photometrics. The software should work with your current workflow.

There are a few settings you should be aware of that might require changes.

All Drawings in the Same Folder

A project is defined as all of the drawing files in a single folder. You need to have all of your electrical drawings together in a single folder in Windows. All of the drawings in a folder share a common database.

This setup makes it very easy to associate drawings with a project. If the drawings are in a folder together, they are part of the project. If they are not in the folder, they are not part of the project.

Creating copies of drawings within a folder is not recommended. Copies will be treated as separate drawings that are part of the project. See **Drawing and Project Management** for more information about how to copy project files.

DIMSCALE

The CAD system variable **DIMSCALE** is used to scale text and some blocks on your drawing. It needs to be set correctly for items to come in the right size.

Visit the **How to Set DIMSCALE** article in the knowledge base for instructions on what value to use for **DIMSCALE**.

LTSCALE

The CAD system variable **LTSCALE** controls how linetypes are displayed in your CAD program. It also needs to be set correctly. Typically, **LTSCALE** is set equal to **DIMSCALE**.

Annotative Scaling

Design Master Photometrics does not support annotative scaling. Each drawing will have a single scale associated with it. You need to use multiple drawings to support multiple scale factors.

Best Practice: XREF the Architect's Background

If you do not have a system for configuring your drawings, there is one best practice we recommend: do not work directly in the drawing file sent to you by the architect. Instead, use the standard CAD **XREF** command to insert it into another drawing and work there.

When you receive an updated plan from the architect, you can overwrite the architect's drawing without losing all of the work you have done.

This best practice applies whether or not you are using Design Master Photometrics.

Saving Your Work

Save Your Drawings; Do Not Close without Saving

When working with Design Master Photometrics, it is important to save your drawings after making any changes. Do not close your drawings without saving.

Design Master Database File

Working with drawings using Design Master Photometrics is a little different than working with just a CAD drawing. Any changes you make using the Design Master Photometrics commands change both the drawing and the database. The changes to the database are made immediately. The changes to the drawing are made when you save the drawing.

If you close a drawing without saving, you can have changes in the database that are not on the drawing. That's bad.

Recovering When a Drawing is Closed with Saving

If a drawing is closed without saving (for example, your CAD program crashes), run the `DM Photometrics->Utilities->Coordinate Drawings and Database` command. The command will look at the drawing and the database and make them match. See the **Coordinate Drawings and Database** section of the user manual for more information about this command.

Anything that is added to the drawing will be marked with a line. You can erase the lines manually or use the `DM Photometrics->Utilities->Erase Coordination Lines` command to remove them all. The fixtures that are added should be modified using standard commands. Erase them if you don't need them, move them if they are not in the right spot, or leave them be if they are correct.

Drawing and Project Management

Design Master Photometrics allows you to create intelligent entities in your drawings. These intelligent entities are stored in both your project drawings and in a project database. This database is a new concept for many of our users and thus may require you to adjust how you think about, organize, and handle your projects and drawing files.

When you start a new project, a database file will be created in the same folder as the current drawing. The file name will be "dm_elec<Name>.dm", where <Name> is the name of the project. This is the database file where all of the information about your project is stored. Your project drawings are now connected to this database file, and the information contained in the drawings and the database must match.

You must consider how changes to your drawings will affect the database. Recommendations for common scenarios when working on a Design Master Photometrics project are listed below. You can also visit the **Project and Database Management Webinar** in the knowledge base.

Project Folders

Each project needs to be in a separate folder that contains one dm_elec.dm database file. All of the drawing files for the project need to be in the same folder as the database. You should not copy drawings from one project to another.

All drawings in a single folder are treated as a single project and will share a common light fixture schedule and light fixture quantity counts. To keep these separate, drawings for different projects should be created in different folders.

Saving Your Changes

Always save your changes to a drawing with Design Master Photometrics devices in it. Never close a drawing without saving your changes.

Any changes you make to the drawing are saved to the database immediately. If you close the drawing without saving, the database and drawing will no longer match. This can result in missing or extra devices, miscalculated photometrics, and other problems.

If you close a drawing without saving, or your CAD program crashes, use the `DM Photometrics->Utilities->Coordinate Drawings and Database` command to make the drawing and database match again. See the **Coordinate Drawings and Database** section of the user manual for more information about this command.

Creating a Backup

To back up your project, you must copy both the drawings and the database file. Copying just the drawings is not enough.

The two simplest methods are copying the entire folder to a new location, or using the `DM Photometrics->Utilities->Copy or Backup Project` command.

Alternative Designs

To try an alternative design in your project, do not copy drawings inside the same project folder. This will result

in inaccurate light fixture quantity counts. Instead, make a copy of the project in its own folder. Treat the alternative design as a separate project.

Copy the entire folder to a new location, or use the `DM Photometrics->Utilities->Copy or Backup Project` command.

Copying a Drawing

To copy a drawing that contains Design Master fixtures, use the `DM Photometrics->Utilities->Copy Drawing` command. This will create an exact copy of the drawing in the project folder. Quantity counts for all of the devices on the drawing will be doubled in the database.

(You can use Windows Explorer or the standard CAD **SAVEAS** command to copy a drawing, but these methods add some complications so we do not recommend them.)

Renaming a Drawing

To rename a drawing that contains Design Master fixtures, use the `DM Photometrics->Utilities->Rename Drawing` command. This will rename the drawing. The original drawing will no longer exist.

(You can use Windows Explorer or the standard CAD **SAVEAS** command to rename a drawing, but these methods add some complications so we do not recommend them.)

Cad Program Crashes

CAD program crashes can leave your drawing and your database in an inconsistent state. This is a special situation that needs to be handled carefully to prevent your database from being corrupted.

Your CAD Program Created a Recover Drawing

If your CAD program created a recovery drawing, try to open that file. If it opens, compare it with the original drawing file. Decide which you want to use. If you want to use the recovery drawing, rename the original drawing something different using Windows Explorer, then rename the recovery drawing to the original drawing name using Windows Explorer. Run the `DM Photometrics->Utilities->Coordinate Drawing and Database` command on the drawing to make the drawing and database match, then continue working.

If you choose to work in the original drawing, delete any recovery drawings that were created. Run the `DM Photometrics->Utilities->Coordinate Drawings and Database` command on the original drawing to make the drawing and database match, then continue working.

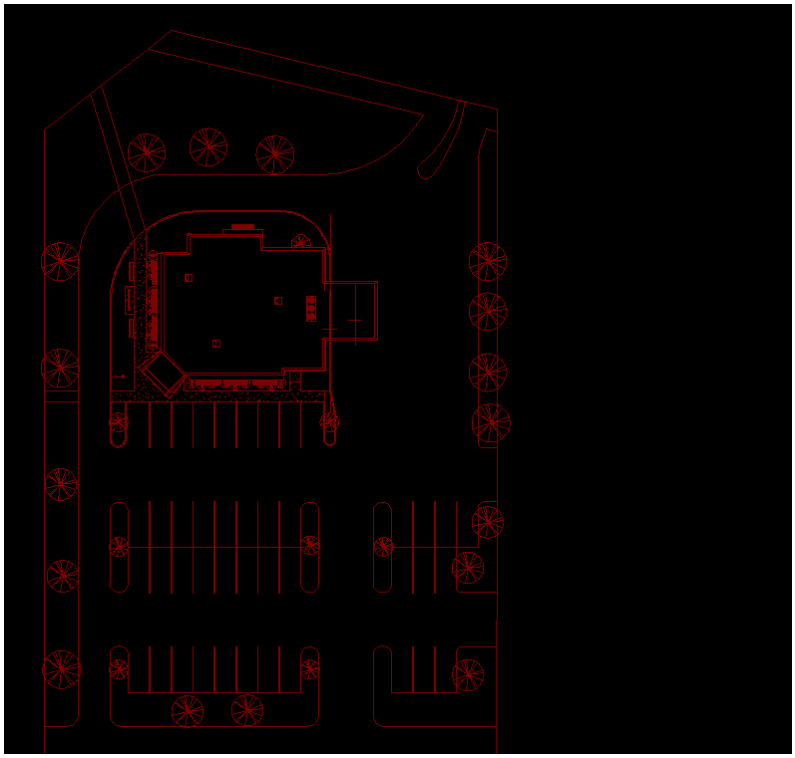
Your CAD Program Did Not Create a Recover Drawing

If your CAD program did not create a recover drawing, then you must open your original drawing. Run the `DM Photometrics->Utilities->Coordinate Drawings and Database` command on the drawing to make the drawing and database match, then continue working.

Starting a New Project

This section teaches you how to start a Design Master Photometrics project.

Open drawing **e-site** in the **01 Starting a New Project** folder. Your drawing should look like this:



Run the `Start New Electrical Project` command. The **Start New Electrical Project** dialog box will open.

Ribbon: `DM Photometrics->Utilities->` `Start New Photometrics Project`

Pulldown Menu: `DM Photometrics->Start New Photometrics Project`

You do not need to change any settings in the dialog box. All of the default values are fine for starting a project. In future projects, you might make changes these values to use different customization settings.

Press the **OK** button. Design Master Photometrics will initialize the project.

A database file named **dm_elec.dm** will be created in the same folder as the drawing. All of the information about your project will be stored in this database file. All of the drawings in the folder will use the same database.

If you need more drawings in your project, create them in the same folder as the drawing and database. All of the drawings in the folder will use the same database file. The light fixture project schedule and quantity counts will be shared across all of the drawings.

When you want to start another project, create a drawing file in a new folder and run the `Start New Photometrics Project` command again. That will create another database file in the new folder that will be a separate project.

Do not create the drawing in a folder that already has a project started. The two drawings in the same folder will be seen by Design Master Photometrics as a single project. The light fixture schedule and quantity counts will be shared across both drawings.

Creating Light Fixtures

This section teaches you how to create light fixture types in your schedule.

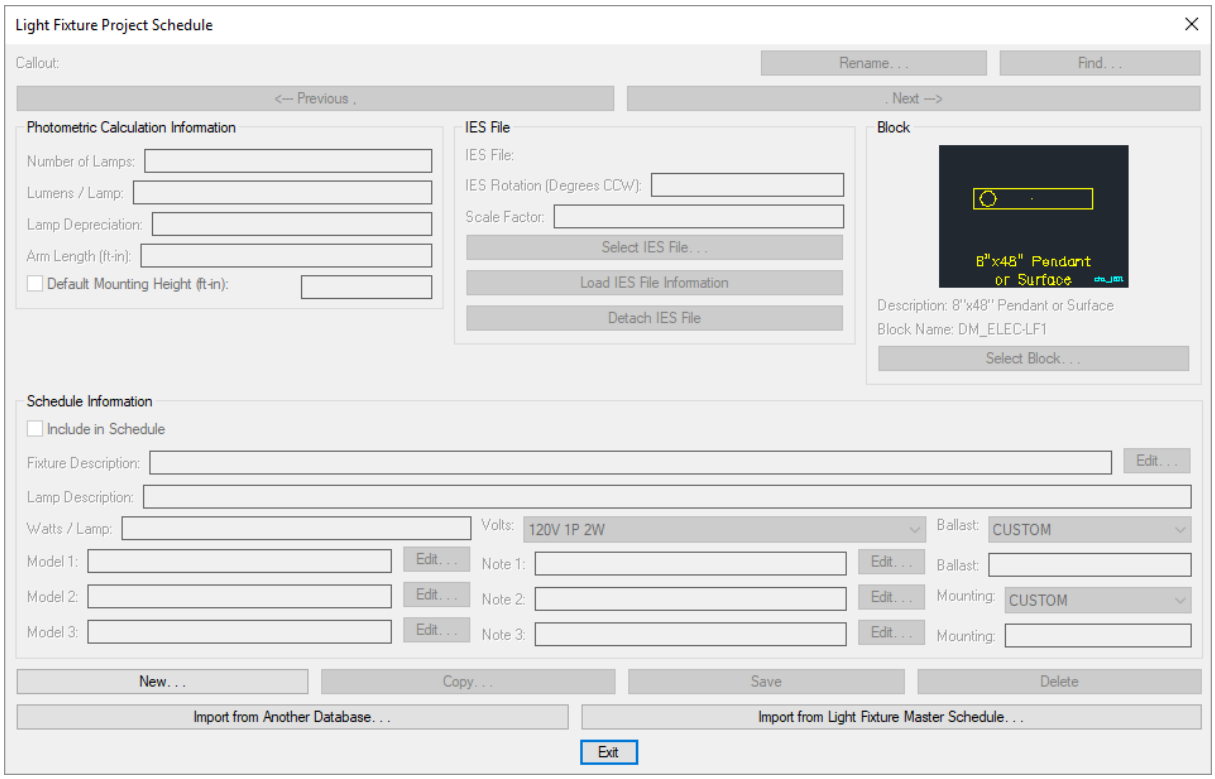
Each project contains a light fixture schedule. When you insert a light fixture on your drawing, you must choose a type from your schedule. Before you can insert a light fixture, you must first define at least one type in your schedule.

Open drawing **e-site** in the **02 Creating Light Fixtures** folder, or continue to use the drawing you were working on in the last tutorial section.

1. Run the `Light Fixture Project Schedule` command. The **Light Fixture Project Schedule** dialog box will open.

   Ribbon: `DM Photometrics->Schedule->` `Light Fixture Project Schedule`

   Pulldown Menu: `DM Photometrics->Light Fixture Project Schedule`



2. Press the **New** button. The **New** dialog box will open.

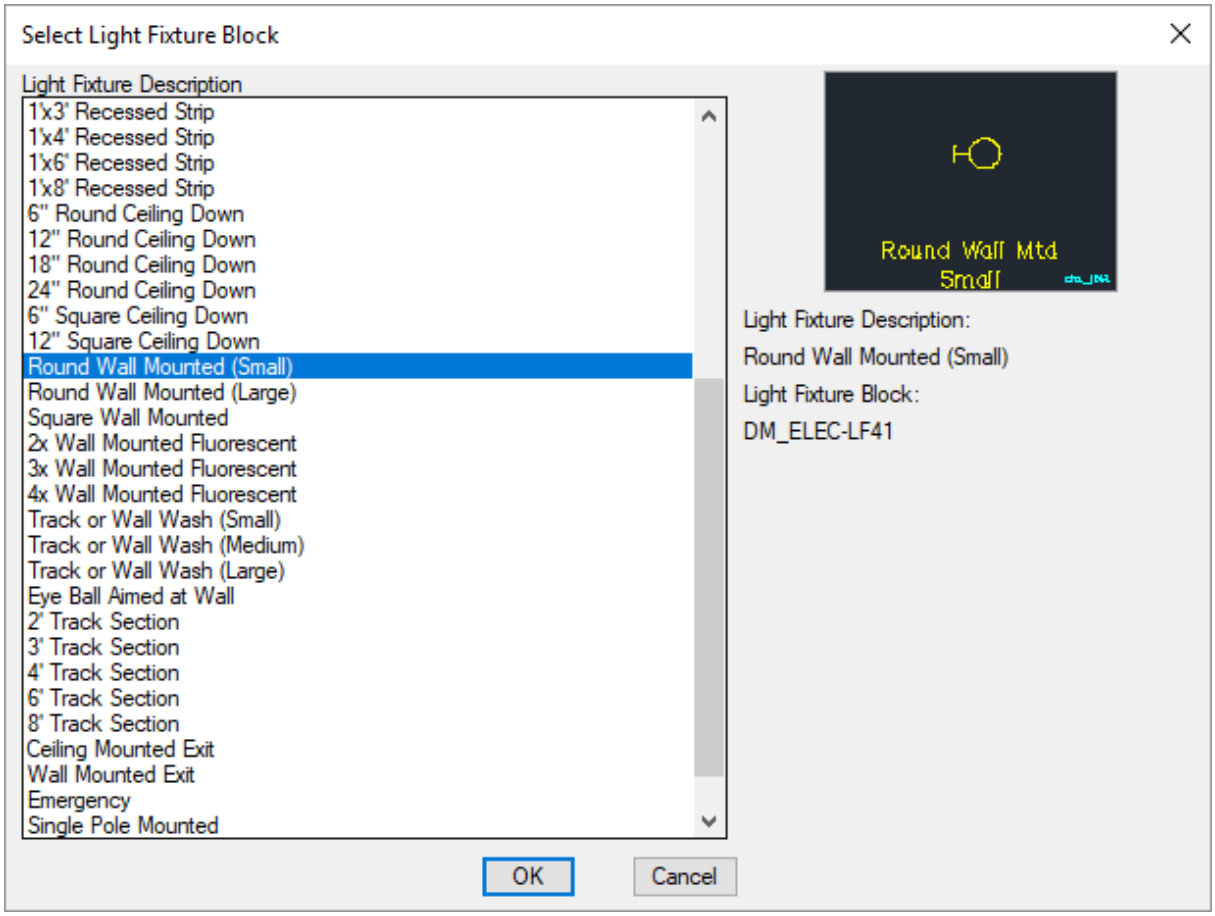
3. Set *New Light Fixture Callout* to **W** and press the **OK** button. A new light fixture type called W will be created in the schedule. All of the information for the light fixture type will be set to default values.

4. Press the **Select Block** button to change the block that will be displayed on the drawing when you insert this light fixture.

5. Choose the *Round Wall Mounted (Small)* block from the **Select Light Fixture Block** dialog box.

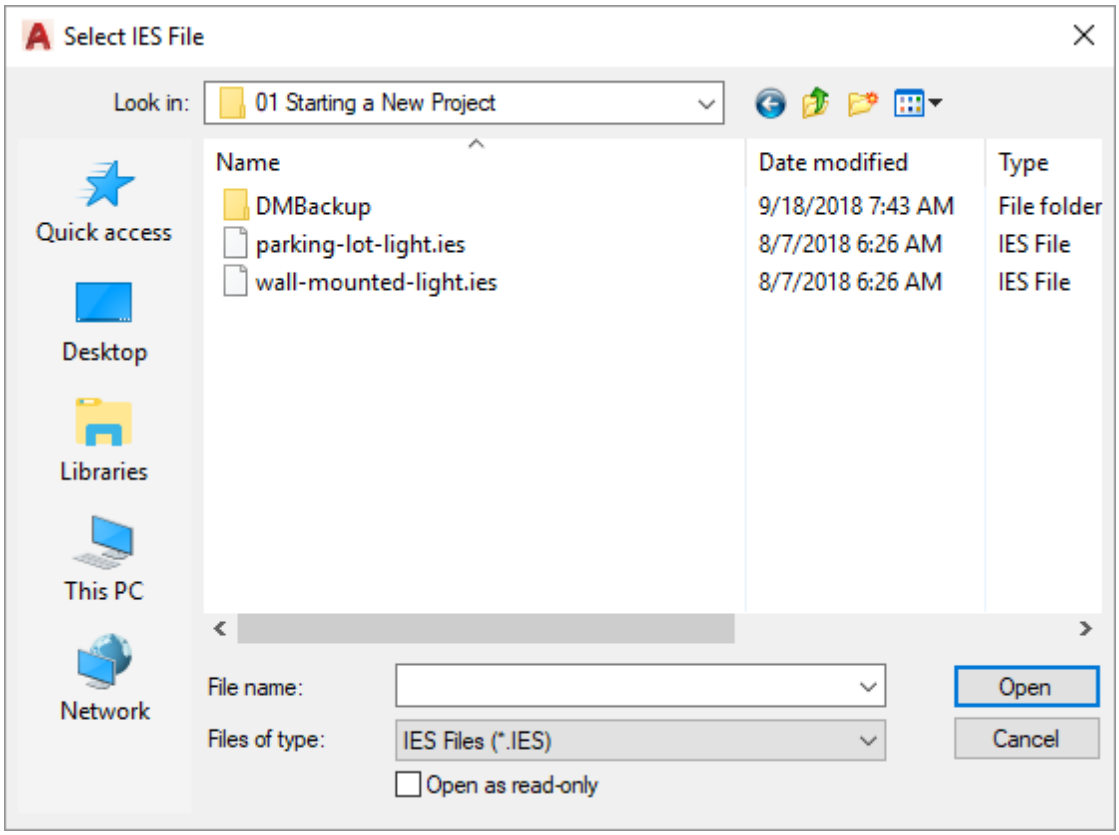
6. Press the **OK** button.

The graphic displayed in the dialog box and the *Description* and *Block Name* labels will be updated.



Next, you will identify the IES file associated with this fixture. The IES file defines the light output for the light fixture. These files are required to calculate the foot-candle levels. We have included IES files for use in this project. For future projects, you will need to obtain these from the light fixture manufacturer's website.

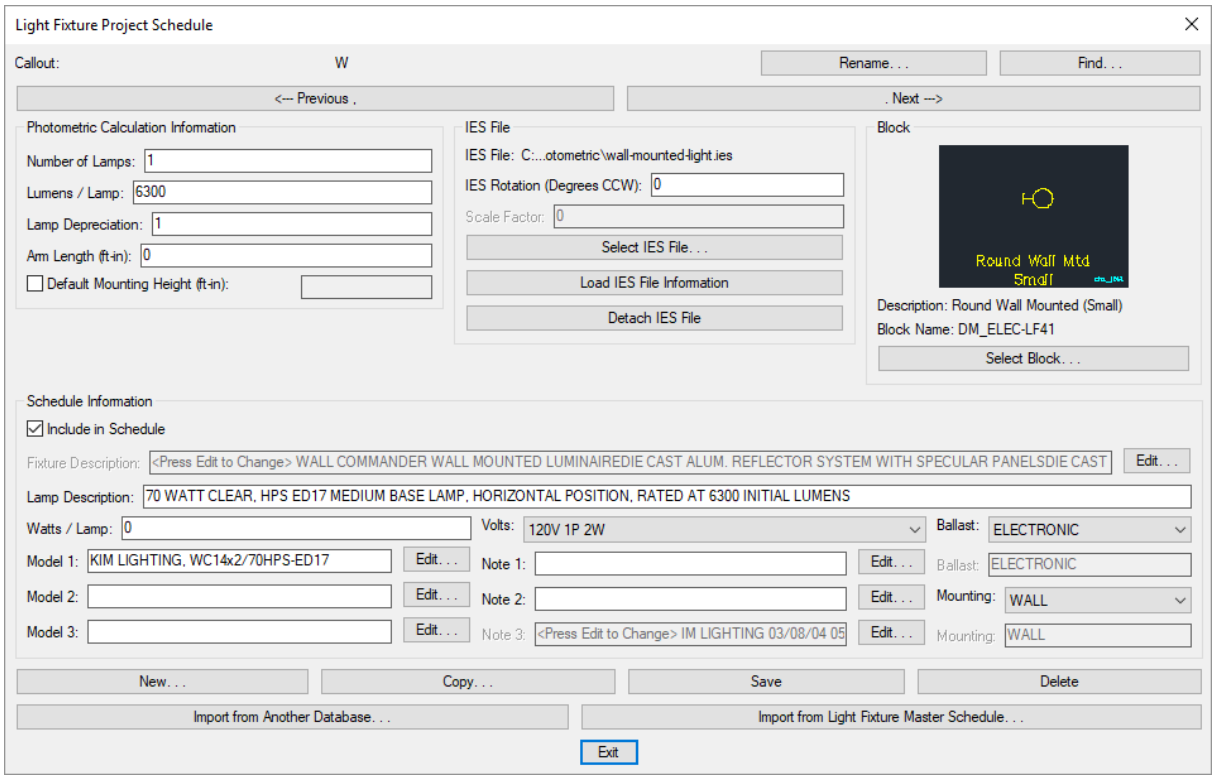
1. Press the **Select IES File** button. The **Select IES File** dialog box will open.



2. Select the **wall-mounted-light.ies** file and press the **Open** button. A **Design Master Photometrics** dialog box will open and ask you to verify that you want to load information from the IES file.

3. Press the **Yes** button.The IES file will be attached to the light fixture. The photometric calculation information and schedule information will be updated from data stored in the IES file. Once the information is updated from the IES file, you can edit it manually as needed for your project.
   If you press the **No** button in the previous dialog box, the IES file will be attached to the light fixture but the information will not be updated.

4. Set *Mounting* to **Wall**.



5. Press the **Save** button to save your changes to the database.

Create a Second Light Fixture Type

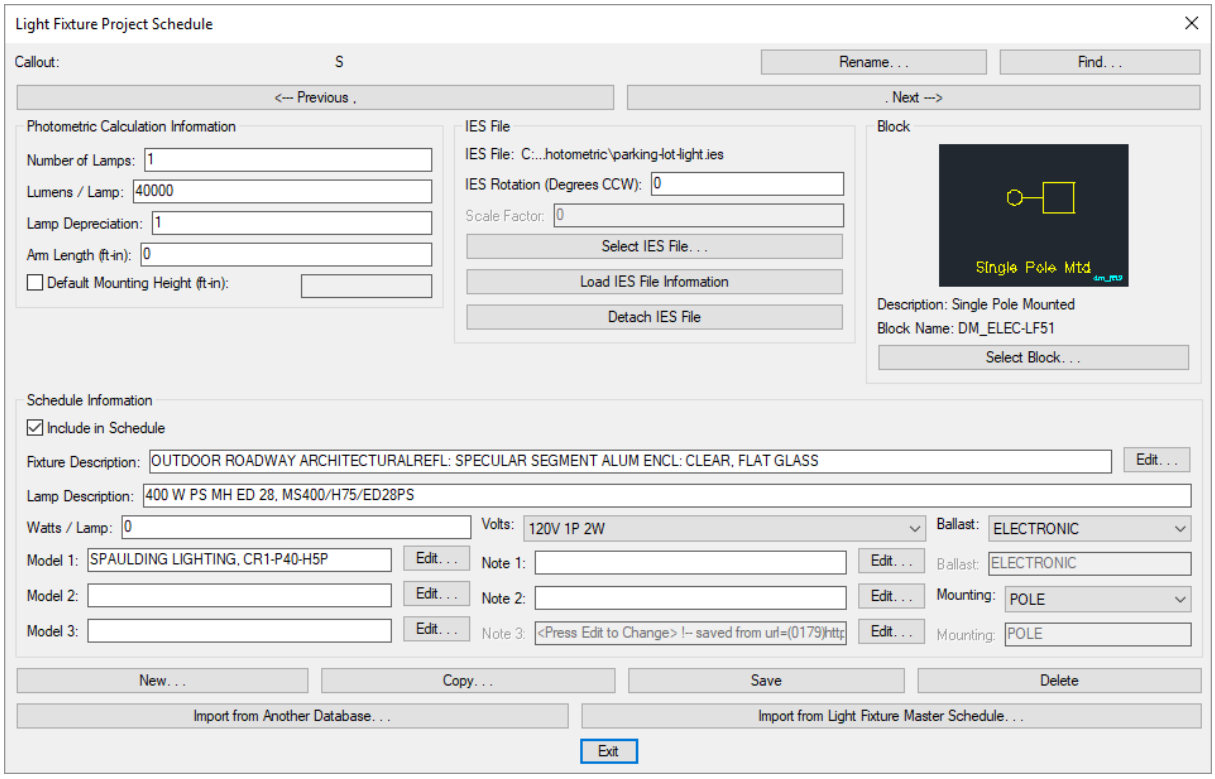
1. Press the **New** button. Set *New Light Fixture Callout* to **S**.

2. Press the **Select Block** button and select the **Single Pole Mounted** block.

3. Press the **Select IES File** button and select the **parking-lot-light.ies** file.

4. Press the **Yes** button when asked if you want to load the information from the IES file.

5. Set *Mounting* to **Pole**.



6. Press the **Save** button to save your changes to the database.

7. Press the **Exit** button to close the dialog box.

Inserting Light Fixtures

This section teaches you how to insert light fixtures on your drawing.

Open drawing **e-site** in the **03 Creating Light Fixtures** folder, or continue to use the drawing you were working on in the last tutorial section.

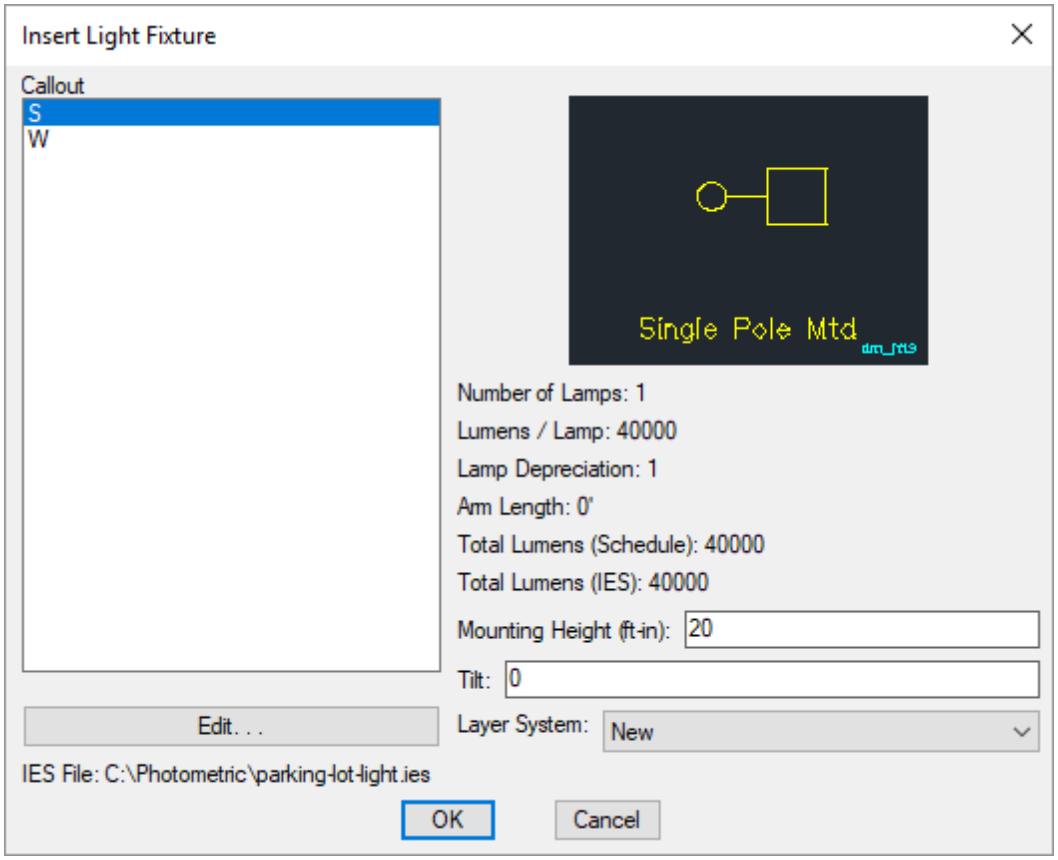
1. Run the `Insert Light Fixture` command.The **Insert Light Fixture** dialog box will open.

   Ribbon: `DM Photometrics->Light Fixtures->` `Insert Light Fixture`

   Pulldown Menu: `DM Photometrics->Insert Light Fixture`

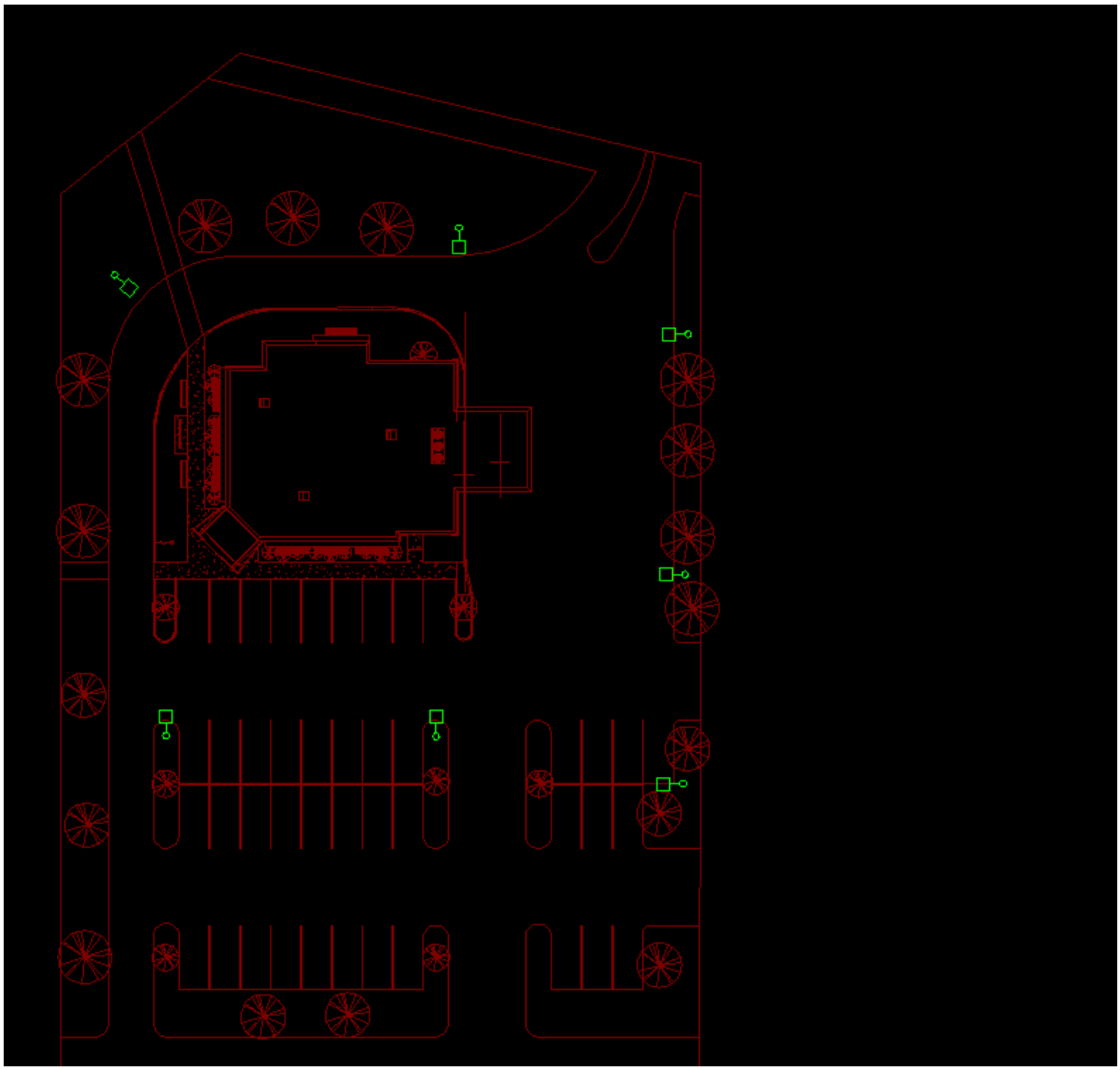
2. Set *Mounting Height* to **20**.

3. Make sure that *Callout* is set to **S**, *Tilt* is set to **0**, and *Layer System* is set to **New**.



4. Press the **OK** button.

5. You will be prompted to insert the light fixture on the drawing by specifying the insertion point and rotation angle. Insert light fixtures on the drawing as shown below.



6. Run the `Insert Light Fixture` command. The **Insert Light Fixture** dialog box will open.

   Ribbon: `DM Photometrics->Light Fixtures->` `Insert Light Fixture`

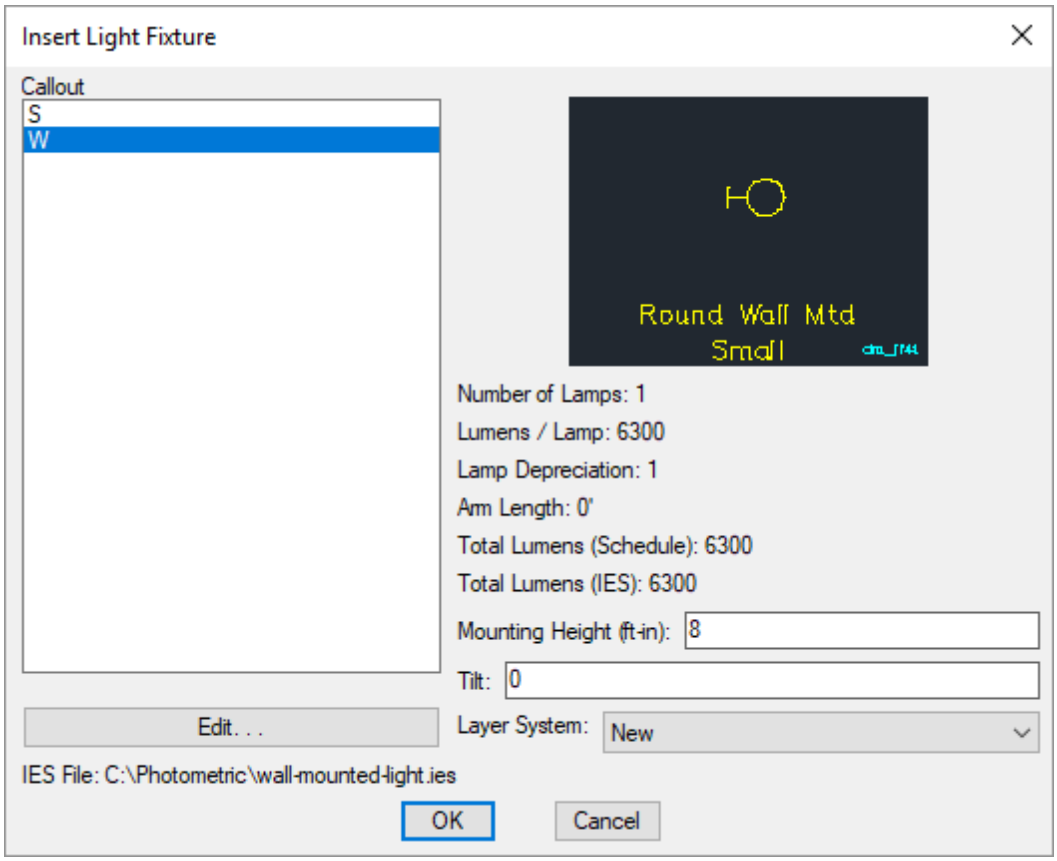
   Pulldown Menu: `DM Photometrics->Insert Light Fixture`

7. Set *Callout* to **W**.

8. Set *Mounting Height* to **8**.

9. Set *Tilt* to **45**.

10. Make sure that *Layer System* is set to **New**.



11.Press the **OK** button.

12.Insert light fixtures on the drawing as shown below.

Inserting a Calculation Area

This section teaches you how to insert a calculation area on your drawing. The calculation area defines where foot-candle levels will be calculated on the drawing

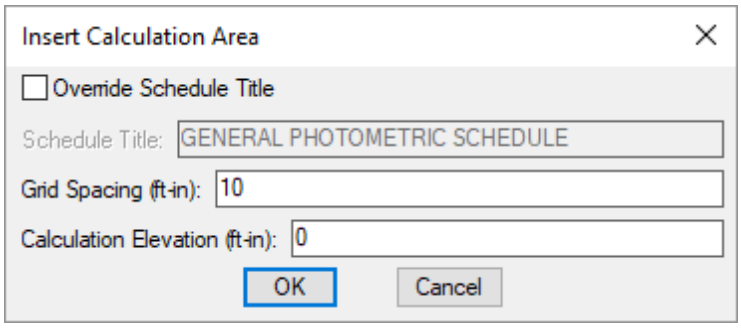
Open drawing **e-site** in the **04 Inserting a Calculation Area** folder, or continue to use the drawing you were working on in the last tutorial section.

1. Run the `Insert Calculation Area` command. The **Insert Calculation Area** dialog box will open.

   Ribbon: `DM Photometrics->Calculation Areas->` `Insert Calculation Area`

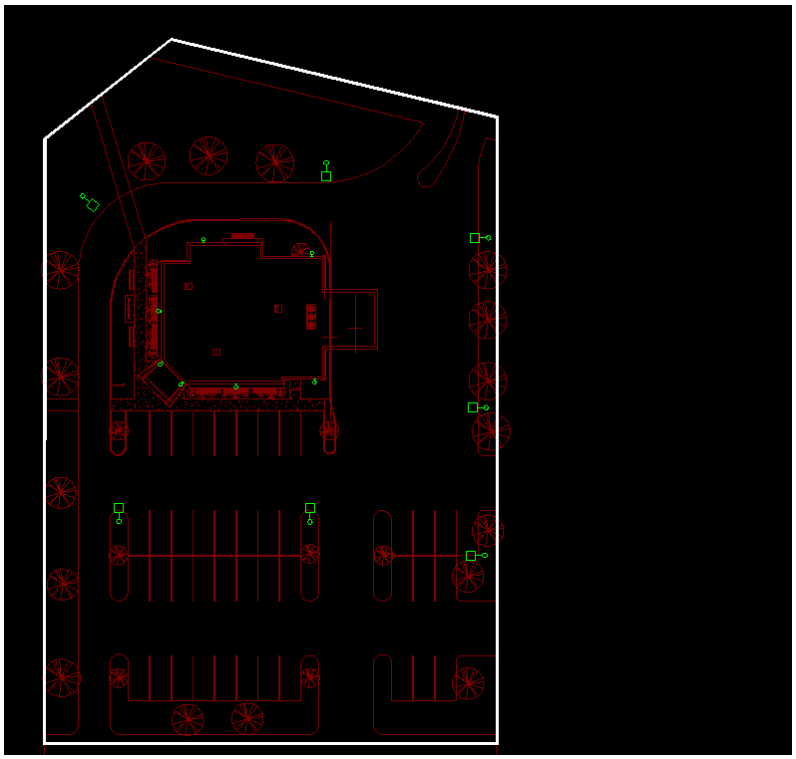
   Pulldown Menu: `DM Photometrics->Insert Calculation Area`

2. Make sure the *Override Schedule Title* is not checked, *Grid Spacing* is set to **10** and *Calculation Elevation* is set to **0**.

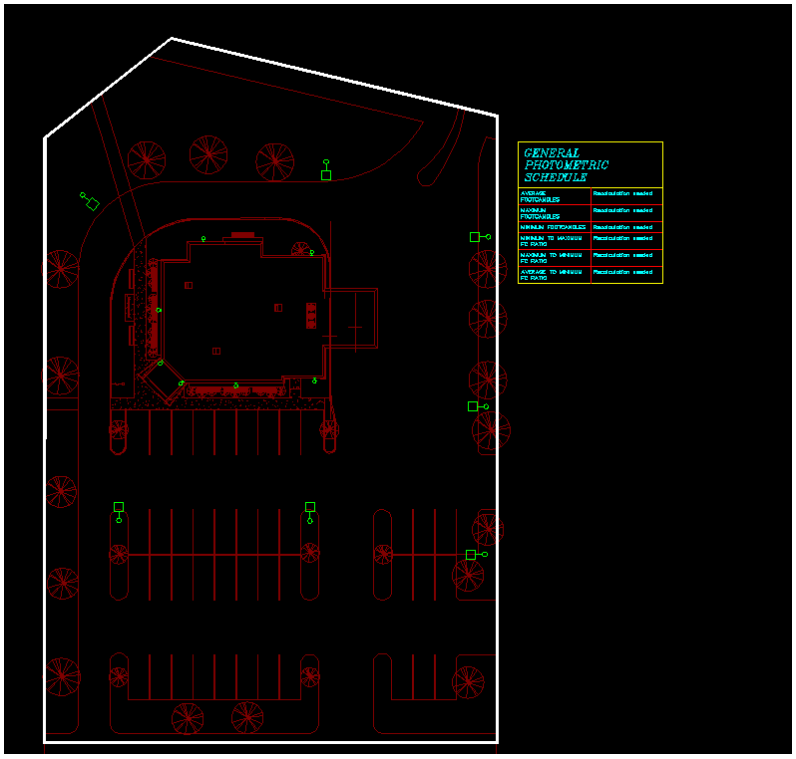


3. Press the **OK** button.

4. You will be prompted to specify the boundary of the calculation area. Insert the boundary surrounding the parking lot as shown below.



5. Next you will be prompted to insert the calculation schedule for the area. Insert it to the right of the area as shown below.



Inserting Solids

This section teaches you how to insert solids on the drawing.

Solids are used to represent objects that will block light. In this tutorial, the building is the only object that will be inserted as as solid. In future projects, you can use solids to model other objects, such as overhangs and trees.

Open drawing **e-site** in the **05 Inserting Solids** folder, or continue to use the drawing you were working on in the last tutorial section.

1. Run the `Insert Solid: Shape` command. The **Insert Solid: Shape** dialog box will open.

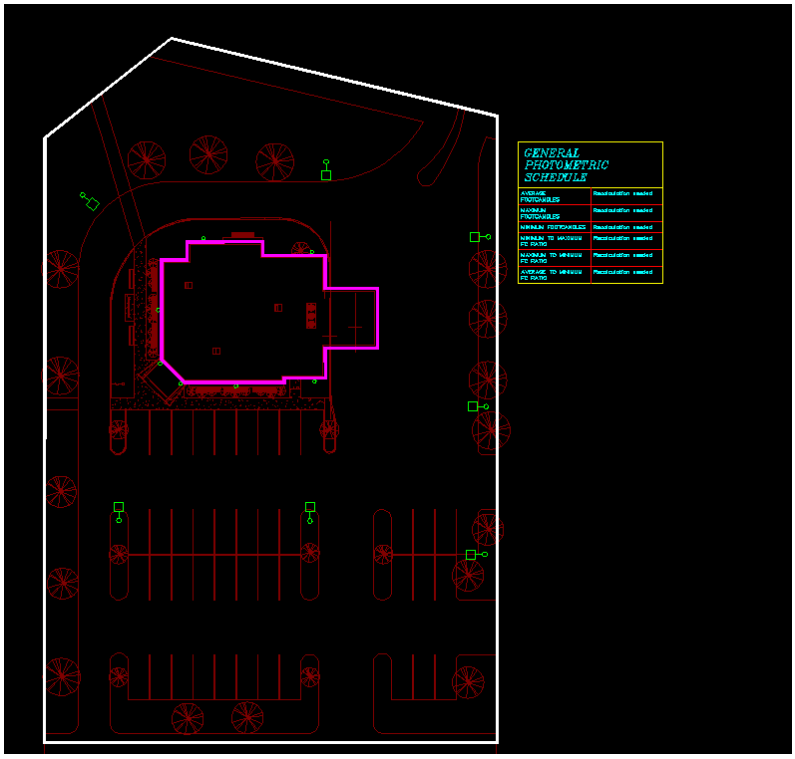
   Ribbon: `DM Photometrics->Solids->` `Insert Solid: Shape`

   Pulldown Menu: `DM Photometrics->Insert Solid: Shape`

2. Make sure that *Starting Elevation* is set to **0**, *Ending Elevation* is set to **20**, and *Reflectance* is set to **0.5**.

3. Press the **OK** button.

4. You will be prompted to specify the boundary of the solid. Insert the boundary surrounding the building as shown below.



Calculating Photometrics

This section teaches you how to calculate and display the foot-candle levels and contour lines on your drawing.

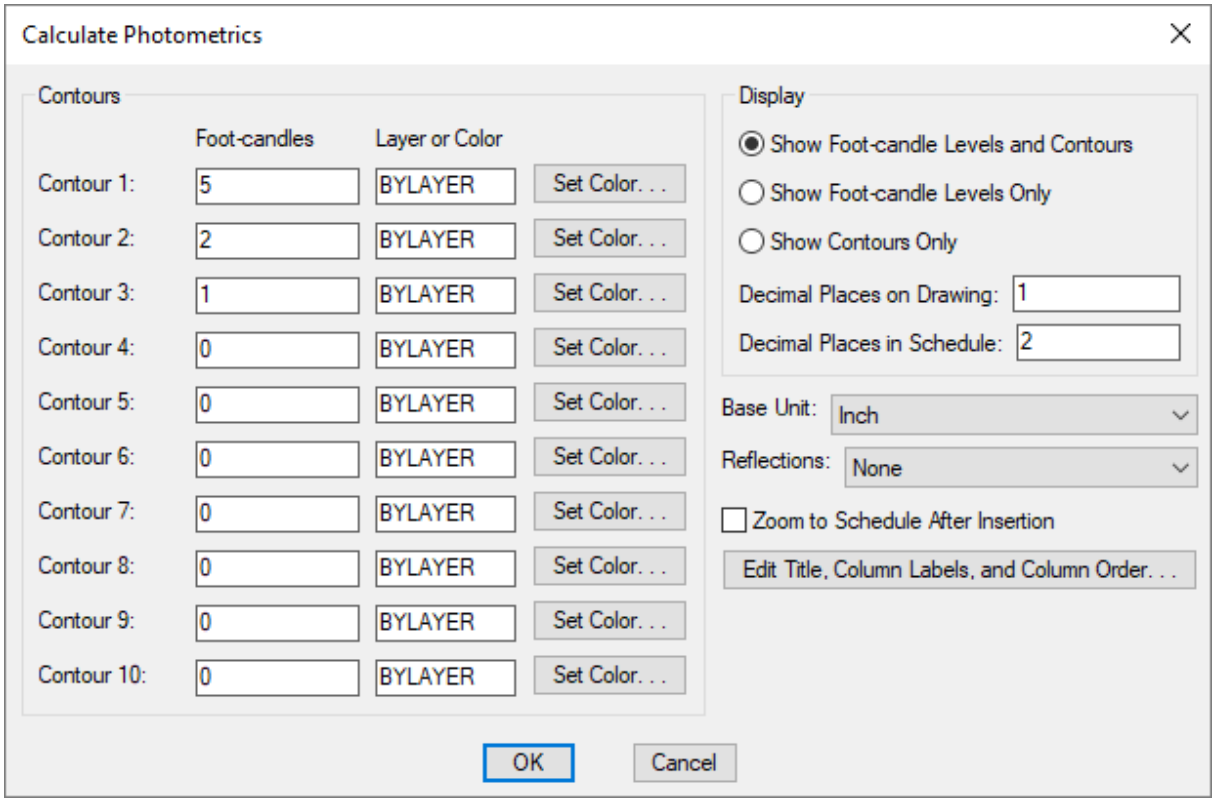
Open drawing **e-site** in the **06 Calculating Photometrics** folder, or continue to use the drawing you were working on in the last tutorial section.

1. Run the `Calculate` command. The **Calculate Photometrics** dialog box will open.

   Ribbon: `DM Photometrics->Calculate->` `Calculate`

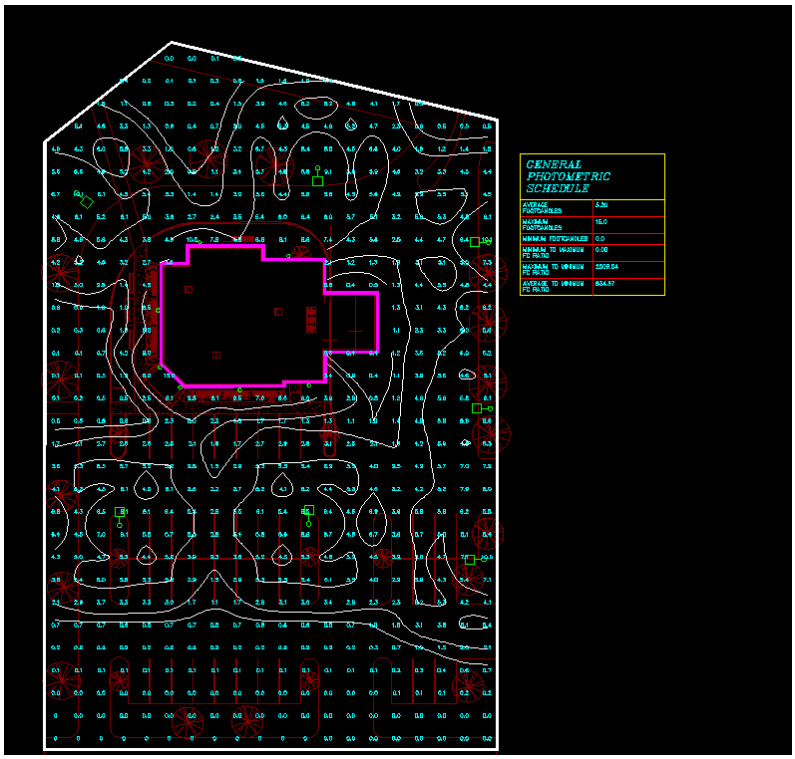
   Pulldown Menu: `DM Photometrics->Calculate`

2. Make sure *Zoom to Schedule after Insertion* is not checked.



3. Press the **OK** button.

Design Master Photometrics will take a moment to perform the calculations. The foot-candle values and contours will be draw in the calculation area boundary. The schedule will be updated with the newly calculated values. Your drawing should match the one shown below.


GENERAL
PHOTOMETRIC
SCHEDULE
AVERAGE FOOTCANDLES
5.30
MAXIMUM FOOTCANDLES
16.0
MINIMUM FOOTCANDLES
0.0
MINIMUM TO MAXIMUM UNIFORMITY RATIO
0.00
MAXIMUM TO MINIMUM UNIFORMITY RATIO
2509.54
AVERAGE TO MINIMUM UNIFORMITY RATIO
884.57

Modifying Light Fixtures

This section teaches you how to modify light fixtures that are inserted on your drawing. You will modify the mounting height of one fixture and of multiple fixtures, move a fixture, copy a fixture, and delete a fixture.

Open drawing **e-site** in the **07 Modifying Light Fixtures** folder, or continue to use the drawing you were working on in the last tutorial section.

Changing Settings on One Fixture

1. Run the `Query` command.

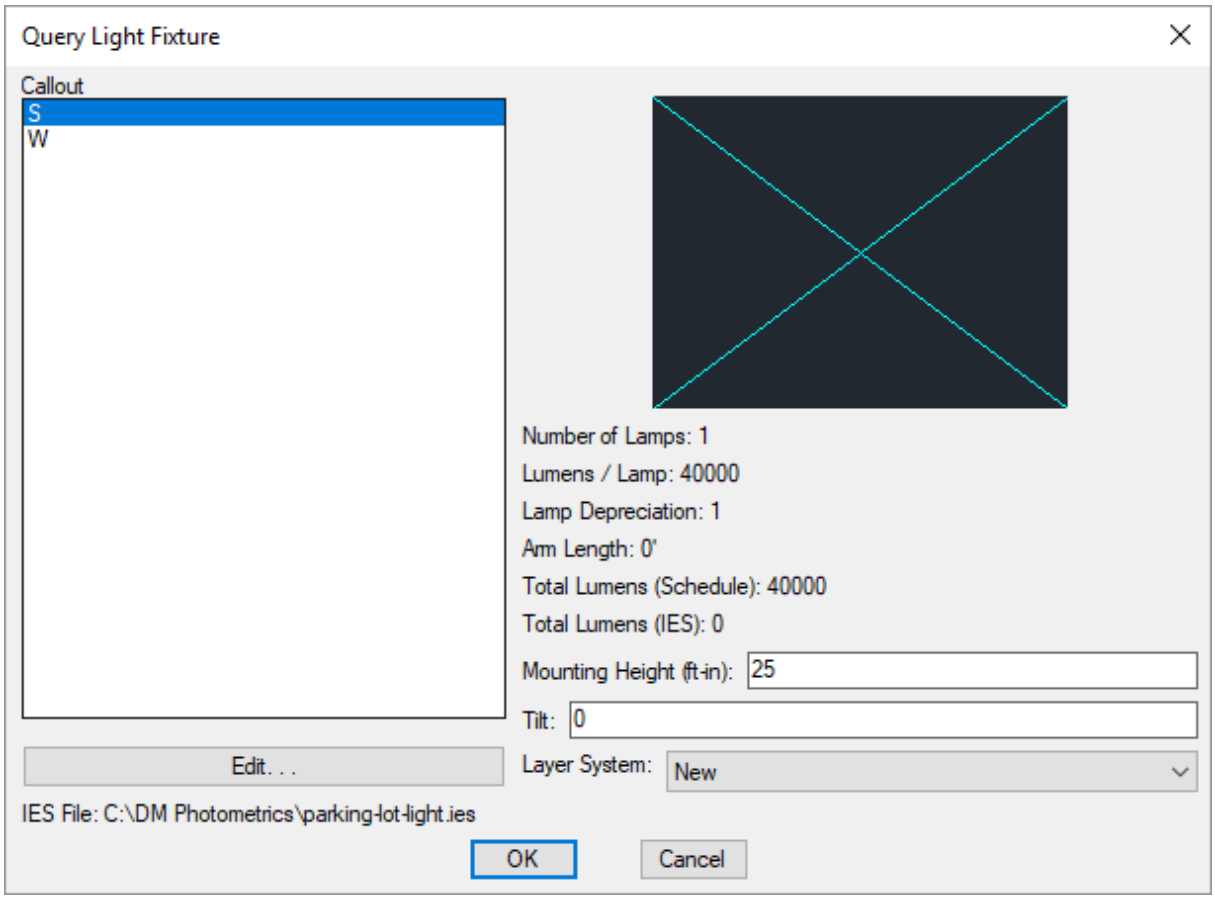
   Ribbon: `DM Photometrics->Query->` `Query`

   Pulldown Menu: `DM Photometrics->Query`

2. You will be prompted to select an item to query. Select the light fixture in the top-left of the drawing.

3. The **Query Light Fixtures** dialog box will open. It will display the current settings for the selected light fixture.

4. Set *Mounting Height* to **25**.



5. Press the **OK** button. The drawing will not change, but the mounting height stored in the database will be updated.

6. Run the `Calculate` command to see the changes in the foot-candle levels. Leave the settings as they are and press the **OK** button.

   Ribbon: `DM Photometrics->Calculate->` `Calculate`

   Pulldown Menu: `DM Photometrics->Calculate`

Changing Settings on Multiple Fixtures

1. Run the `Edit Multiple Light Fixtures` command.

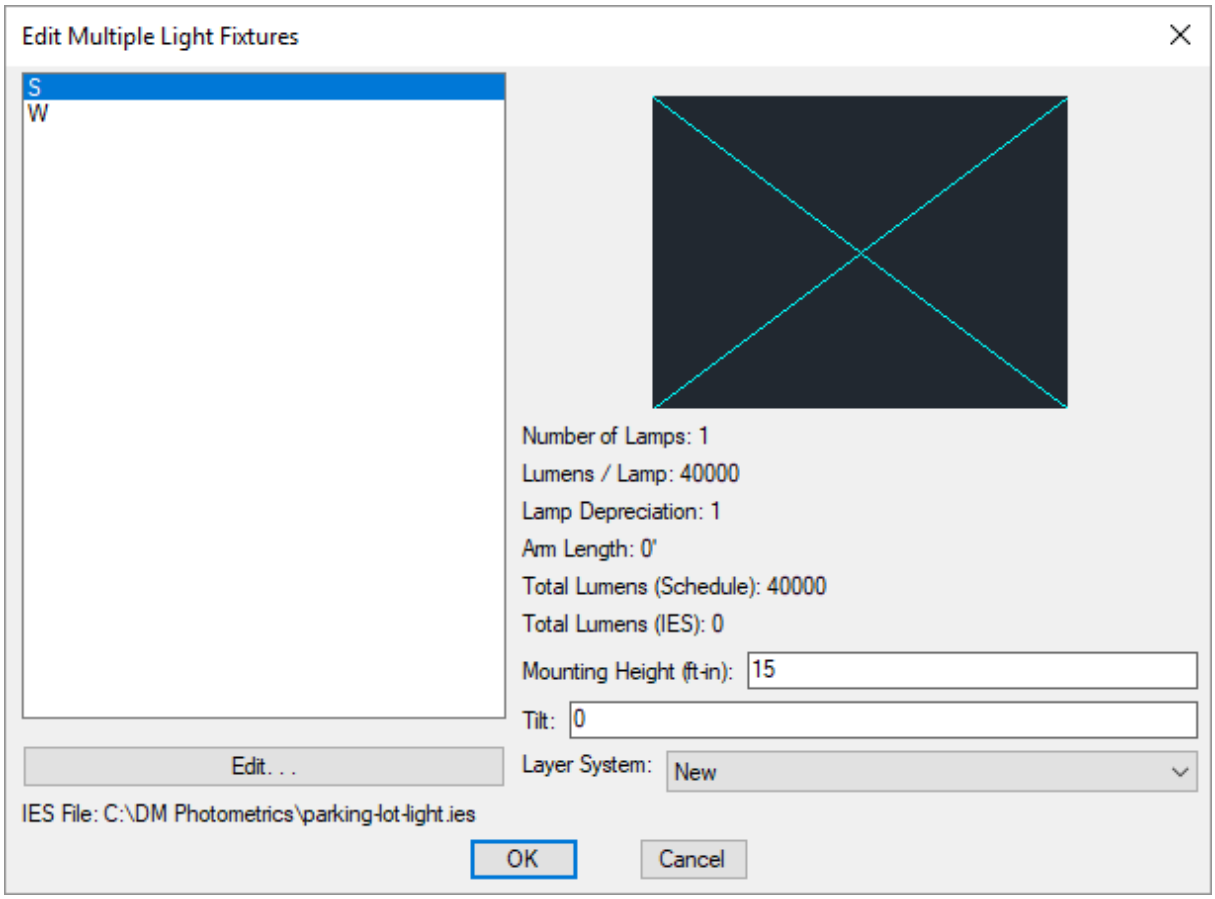
   Ribbon: `DM Photometrics->Light Fixtures->` `Edit Multiple Light Fixtures`

   Pulldown Menu: `DM Photometrics->Edit Multiple Light Fixtures`

2. You will be prompted to select multiple light fixtures to edit. Select the three light fixtures on the right side of the drawing.

3. The **Edit Multiple Light Fixtures** dialog box will open. It will display the current settings for the selected light fixtures.

4. Set *Mounting Height* to **15**.



5. Press the **OK** button. The drawing will not change, but the mounting height stored in the database for all of the selected light fixtures will be updated.

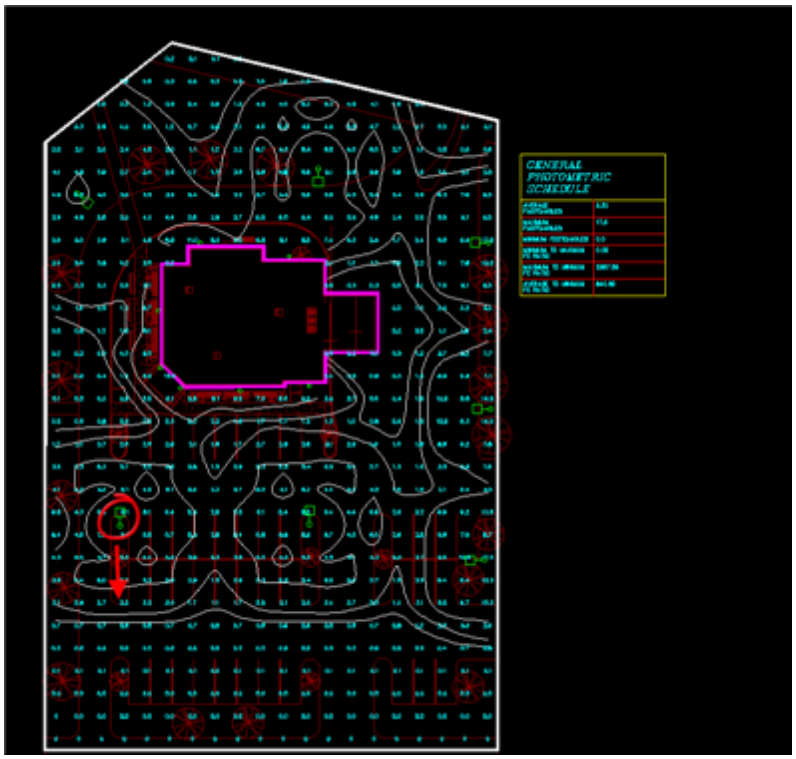
6. Run the `Calculate` command to see the changes in the foot-candle levels. Leave the settings as they are and press the **OK** button.

Ribbon: `DM Photometrics->Calculate->` `Calculate`

Pulldown Menu: `DM Photometrics->Calculate`

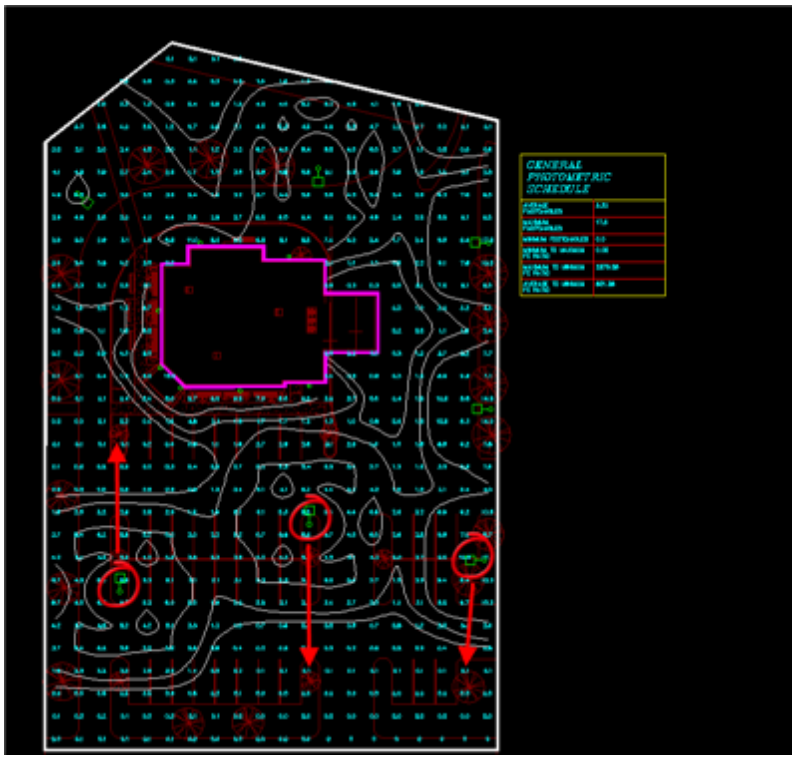
Moving a Fixture

Use the standard CAD **MOVE** command to move the light fixture in the bottom-right of the drawing down.



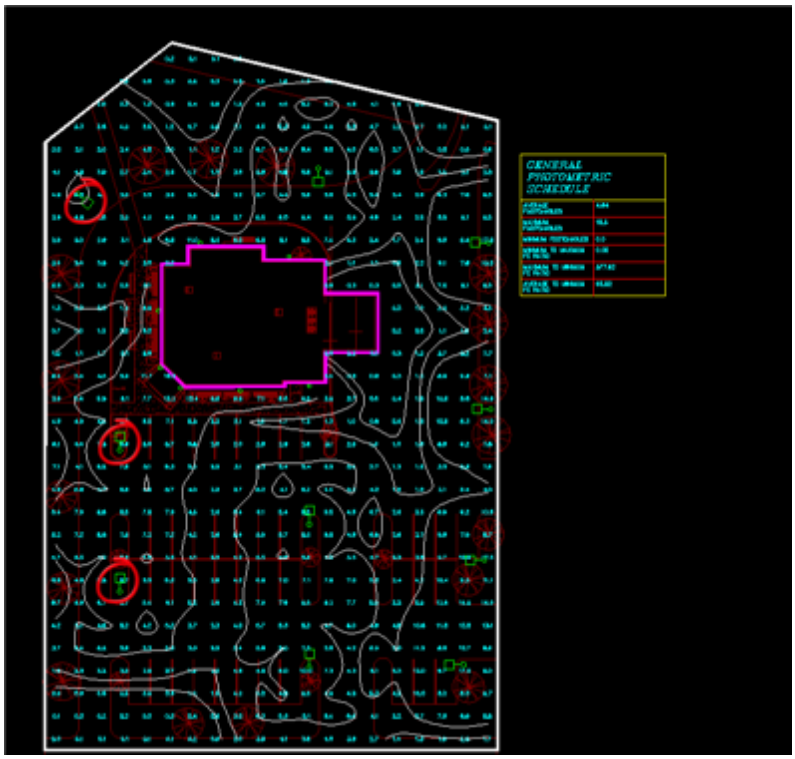
Copying a Fixture

Use the standard CAD **COPY** command to copy the three fixtures at the bottom of the drawing.



Deleting a Fixture

Use the standard CAD **ERASE** command to erase the three fixtures on the left side of the drawing.



Modifying Areas

This section teaches you how to modify a calculation area that has been inserted on your drawing.

Open drawing **e-site** in the **08 Modifying Areas** folder, or continue to use the drawing you were working on in the last tutorial section.

1. Run the `Query` command.

   Ribbon: `DM Photometrics->Query->` `Query`

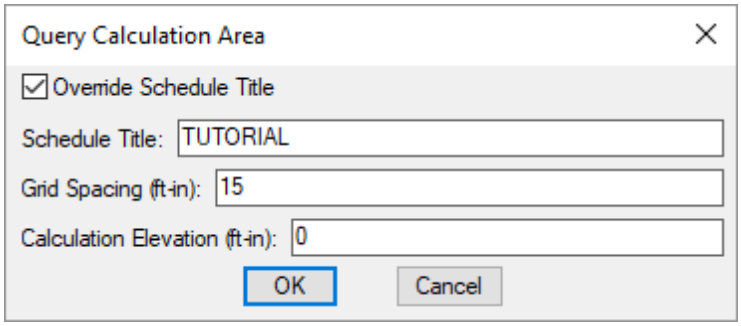
   Pulldown Menu: `DM Photometrics->Query`

2. You will be prompted to select an item to query. Select the white calculate area boundary. The **Query Calculation Area** dialog box will open.

3. Check the *Override Schedule Title* box.

4. Set *Schedule Title* to **TUTORIAL**.

5. Set *Grid Spacing* to **15**.



6. Press the **OK** button.

The title in the photometric schedule will change, but the grid spacing will not.

To see the change, run the `Calculate` command. Leave the settings as they are and press the **OK** button.

Ribbon: `DM Photometrics->Calculate->` `Calculate`

Pulldown Menu: `DM Photometrics->Calculate`

Modifying Solids

This section teaches you how to modify solids that are inserted on your drawing. You will move, copy, delete, and change the elevation of a solid.

Open drawing **e-site** in the **09 Modifying Solids** folder, or continue to use the drawing you were working on in the last tutorial section.

First insert a new solid that you can then modify.

1. Run the `Insert Solid: Shape` command. The **Insert Solid: Shape** dialog box will open.

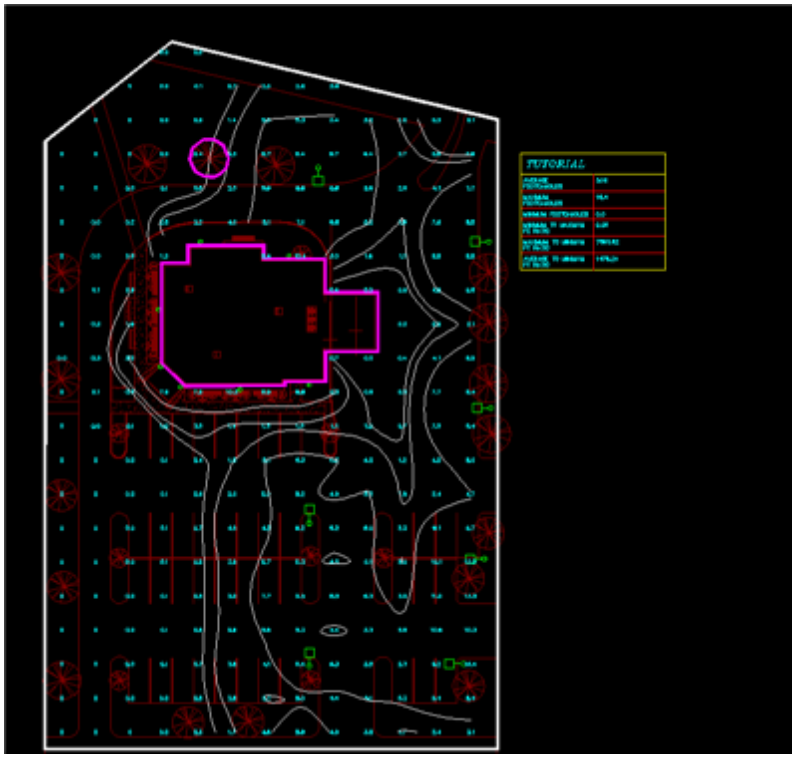
   Ribbon: `DM Photometrics->Solids->` `Insert Solid: Shape`

   Pulldown Menu: `DM Photometrics->Insert Solid: Shape`

2. Make sure that *Starting Elevation* is set to **0**, *Ending Elevation* is set to **20**, and *Reflectance* is set to **0.5**.

3. Press the **OK** button.

4. You will be prompted to specify the boundary of the solid. Insert the boundary surrounding the middle tree at the top of the site as shown below. Approximate the circle by drawing a polygon around it.



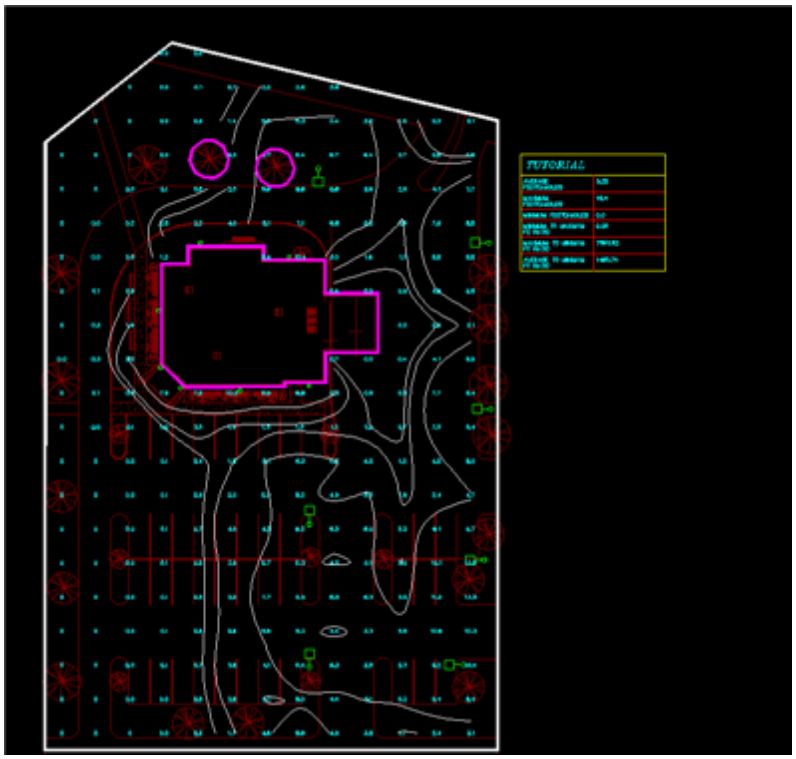
5. Run the `Calculate` command to see the changes in the foot-candle levels. Leave the settings as they are and press the **OK** button.

   Ribbon: `DM Photometrics->Calculate->` `Calculate`

Pulldown Menu: `DM Photometrics->Calculate`

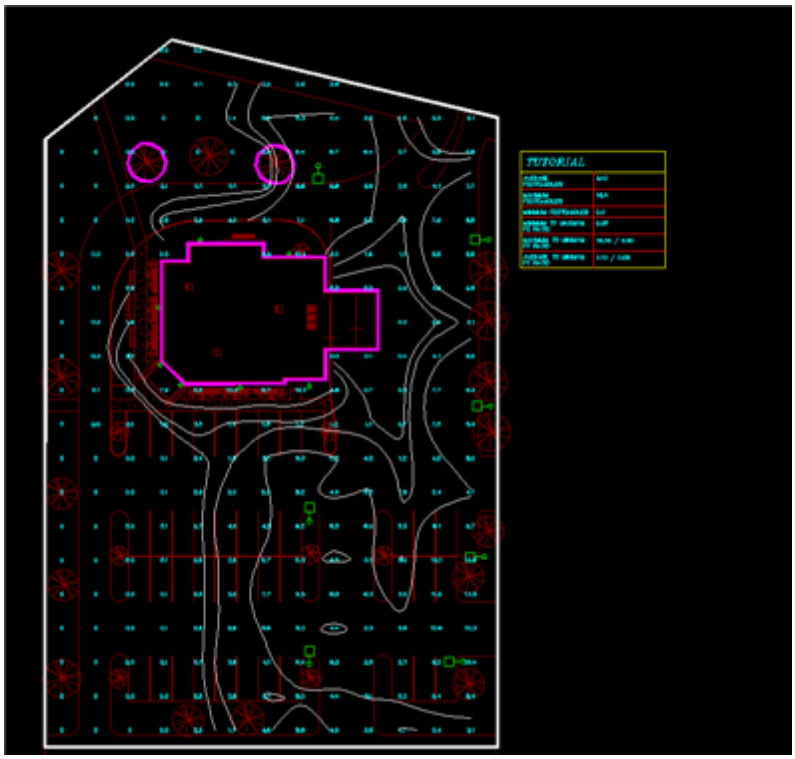
Copying a Solid

Use the standard CAD **COPY** command to copy the solid to cover the tree to the right.



Moving a Solid

Use the standard CAD **MOVE** command to move the solid on the left to cover the tree to the left.



Changing Settings on a Solid

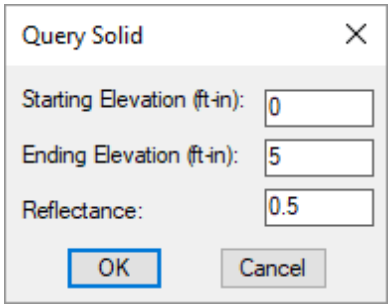
1. Run the `Query` command.

   Ribbon: `DM Photometrics->Query->` `Query`

   Pulldown Menu: `DM Photometrics->Query`

2. Select the solid on the right that is closest to the light fixture. The Query Solid dialog box will open. It will display the current settings for the selected solid.

3. Change *Ending Elevation* to **5**.



4. Press the **OK** button.

5. The drawing will not change, but the elevation associated with the solid will be updated.

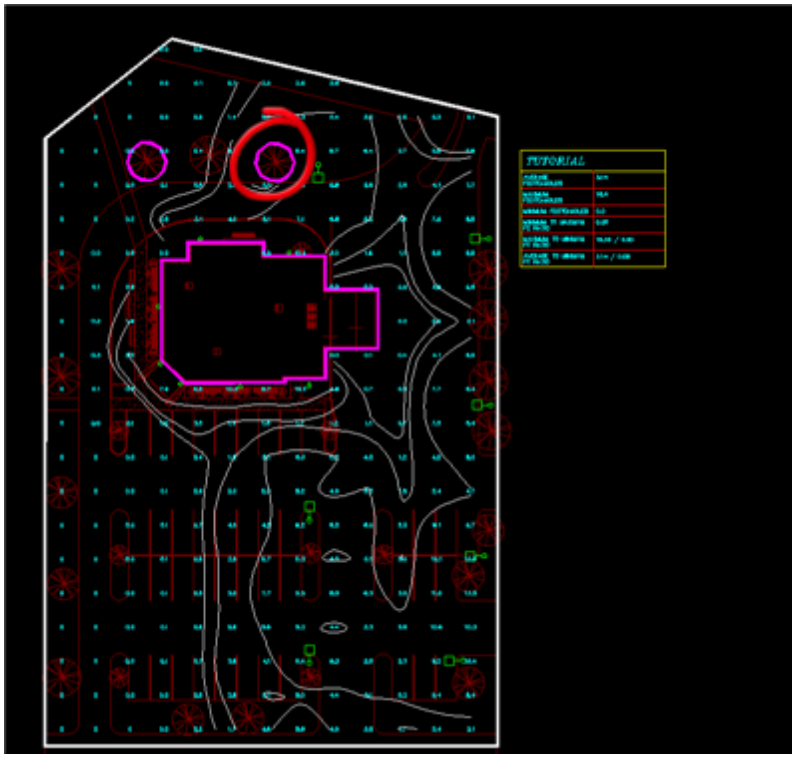
6. Run the `Calculate` command to see the changes in the foot-candle levels. Leave the settings as they are and press the **OK** button.

   Ribbon: `DM Photometrics->Calculate->` `Calculate`

   Pulldown Menu: `DM Photometrics->Calculate`

Deleting a Solid

Use the standard CAD **`ERASE`** command to delete the solid on the right that is closest to the light fixture.



Inserting a Light Fixture Schedule

This section teaches you how to insert and modify a light fixture schedule on your drawing.

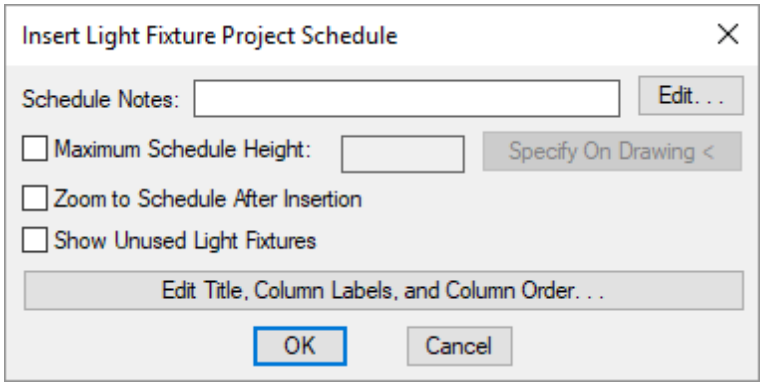
Open drawing **e-site** in the **10 Inserting Light Fixture Schedule** folder, or continue to use the drawing you were working on in the last tutorial section.

1. Run the `Insert Light Fixture Project Schedule` command. The **Insert Light Fixture Project Schedule** dialog box will open.

   Ribbon: `DM Photometrics->Schedule->` `Insert Light Fixture Project Schedule`

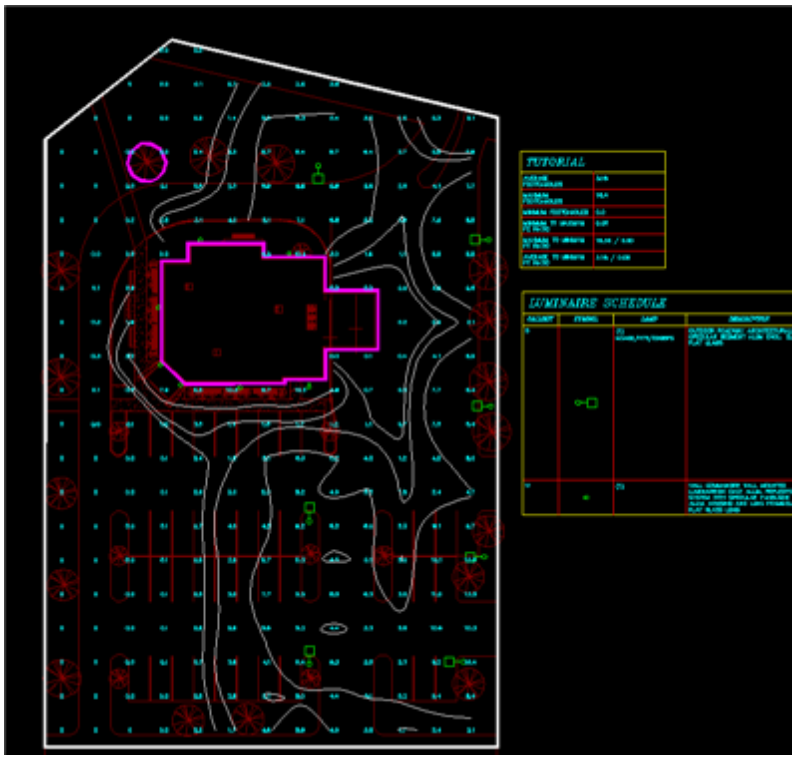
   Pulldown Menu: `DM Photometrics->Insert Light Fixture Project Schedule`

2. Make sure *Zoom to Schedule After Insertion* is not set.



3. Press the **OK** button.

4. You will be prompted to specify the insertion point for the light fixture schedule. Choose a point below the calculation area schedule as shown below.



The schedule can be customized to display the information you need:

1. Run the `Insert Light Fixture Project Schedule` command. The **Insert Light Fixture Project Schedule** dialog box will open.

   Ribbon: `DM Photometrics->Schedule->` `Insert Light Fixture Project Schedule`

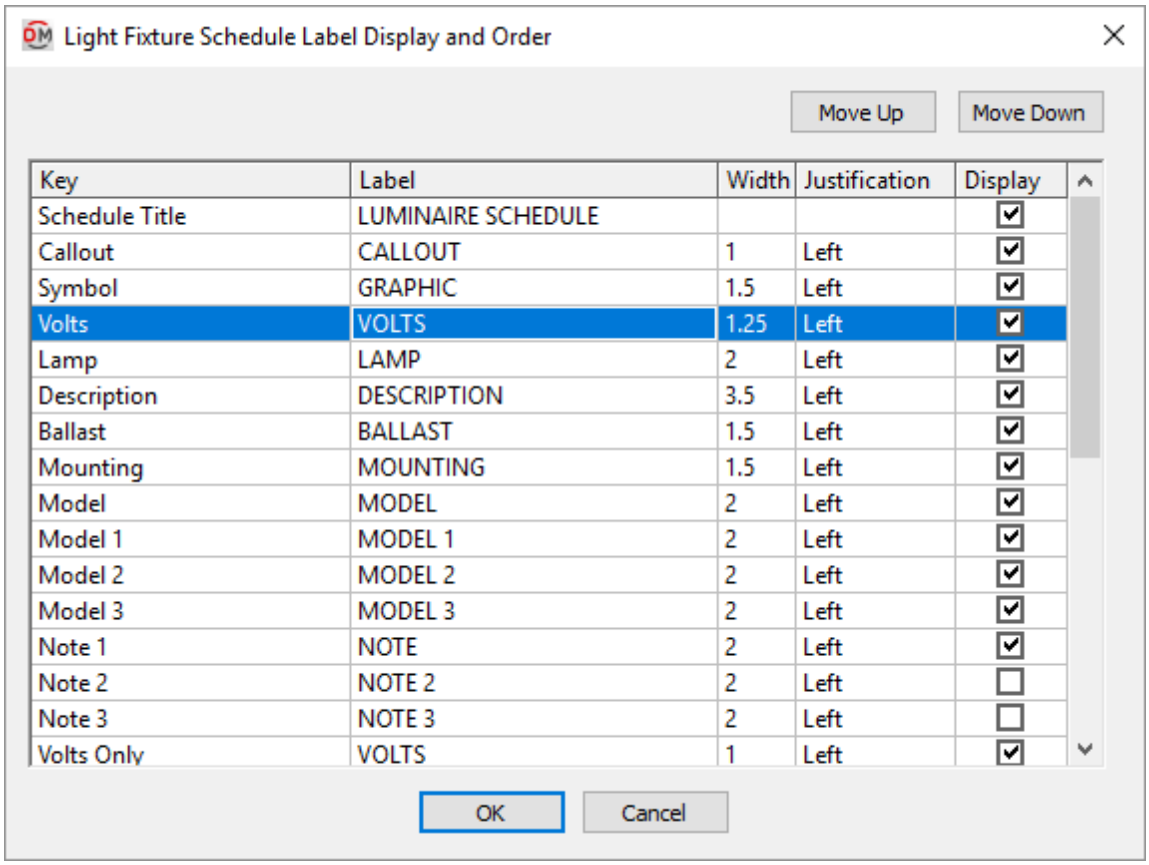
   Pulldown Menu: `DM Photometrics->Insert Light Fixture Project Schedule`

2. Press the **Edit Title, Column Labels, and Column Order** button. The **Light Fixture Schedule Label Display and Order** dialog box will open.

3. Uncheck the boxes in the *Display* column for the *Note 2*, *Note 3*, and *Quantity* rows.

4. In the *Note 1* row, change the *Label* column value to **NOTE**.

5. Select the *Volts* row and press **Move Up** until it is below the *Symbol* row.



6. Press the **OK** button.

7. Press the **OK** button again in the **Insert Light Fixture Project Schedule** dialog box.

The light fixture schedule on the drawing will update with the customized columns and labels.

Inserting Multiple Calculation Areas

This section teaches you how to insert and group multiple calculation areas.

Open drawing **e-site** in the **11 Inserting Multiple Calculation Areas** folder, or continue to use the drawing you were working on in the last tutorial section.

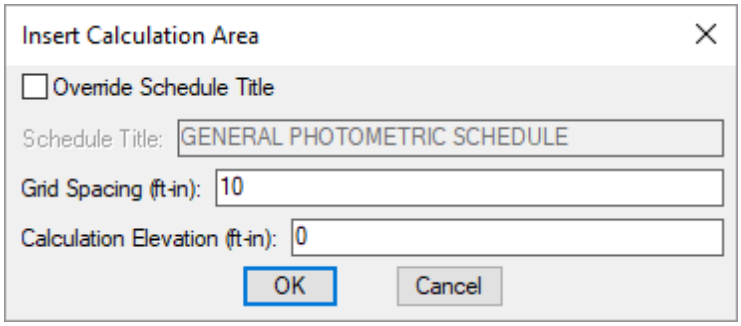
If you are continuing to work in a drawing that you previously worked in, use the standard CAD **ERASE** command to erase the calculation area boundary on your drawing. If you are using the drawing in the **11 Inserting Multiple Calculation Areas** folder, this area will already be erased.

1. Run the `Insert Calculation Area` command. The **Insert Calculation Area** dialog box will open.

   Ribbon: `DM Photometrics->Calculation Areas->` `Insert Calculation Area`

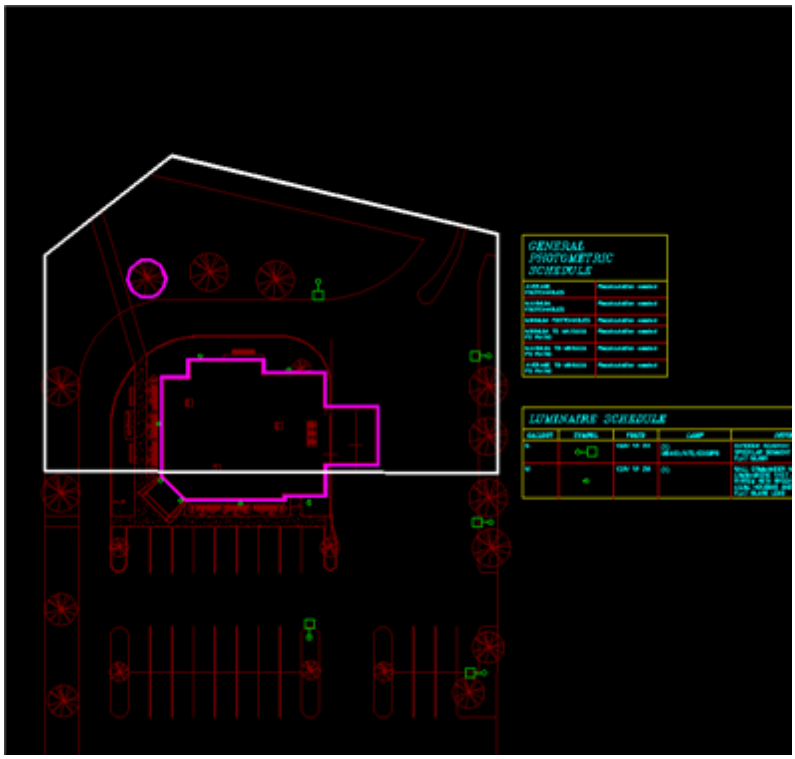
   Pulldown Menu: `DM Photometrics->Insert Calculation Area`

2. Make sure the *Override Schedule Title* is not checked, *Grid Spacing* is set to **10** and *Calculation Elevation* is set to **0**.



3. Press the **OK** button.

4. Insert the boundary on the top half of the parking lot as shown below. Insert the schedule for the area to the right.



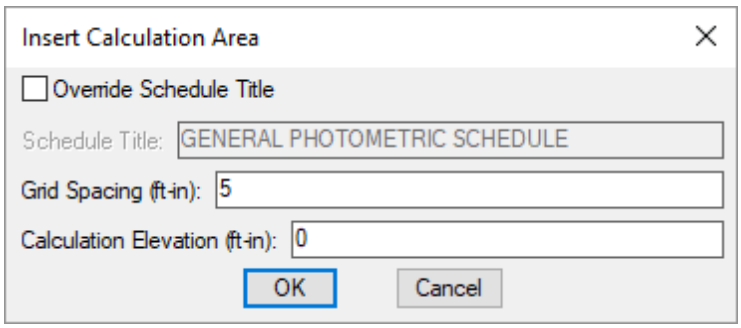
Inserting an Additional Area Linked to Another Area

1. Run the `Insert Calculation Area` command. The **Insert Calculation Area** dialog box will open.

   Ribbon: `DM Photometrics->Calculation Areas->` `Insert Calculation Area`

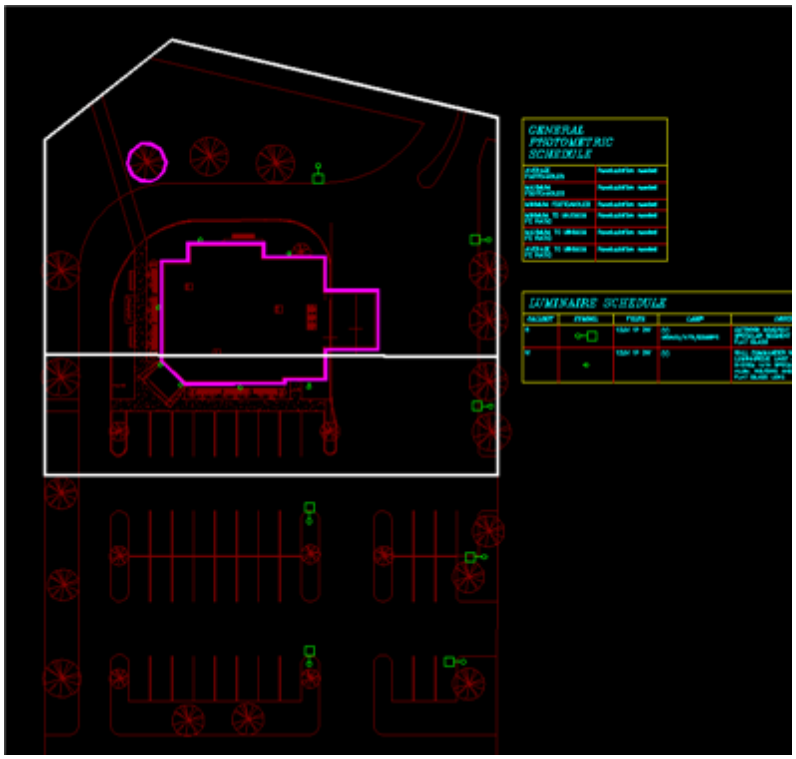
   Pulldown Menu: `DM Photometrics->Insert Calculation Area`

2. Set *Grid Spacing* to **5**.



3. Press the **OK** button.

4. Insert the boundary below the first boundary you inserted as shown below. When you are prompted to insert the schedule, select a point inside the first boundary you inserted.



The newly inserted area and the first area will be grouped together. The values in the calculation schedule will be based upon the foot-candle levels in both areas.

Run the `Calculate` command to see the changes in the foot-candle levels. Leave the settings as they are and press the **OK** button.

Ribbon: `DM Photometrics->Calculate->` `Calculate`

Pulldown Menu: `DM Photometrics->Calculate`

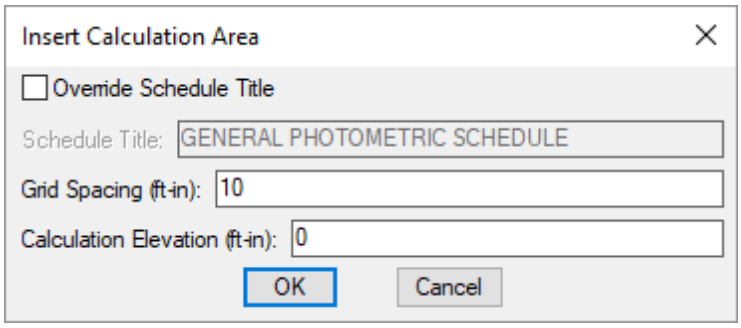
Inserting an Additional Area with a Separate Schedule

1. Run the `Insert Calculation Area` command. The **Insert Calculation Area** dialog box will open.

   Ribbon: `DM Photometrics->Calculation Areas->` `Insert Calculation Area`

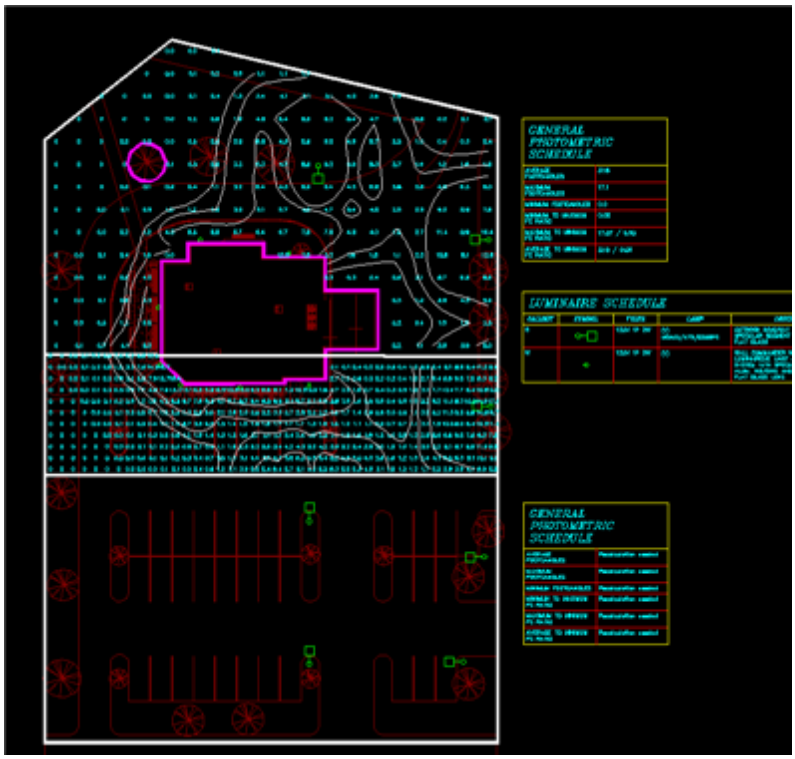
   Pulldown Menu: `DM Photometrics->Insert Calculation Area`

2. Set *Grid Spacing* to **10**.



3. Press the **OK** button.

4. Insert the boundary on the bottom half of the parking lot as shown below. Insert the schedule for the area to the right.



The values in the calculation schedule on top will be based upon the foot-candle levels in the top two areas. The values in the calculation schedule on bottom will be based upon the foot-candle levels in the bottom area.

Run the `Calculate` command to see the changes in the foot-candle levels. Leave the settings as they are and press the **OK** button.

Ribbon: `DM Photometrics->Calculate->` `Calculate`

Pulldown Menu: `DM Photometrics->Calculate`

You will be prompted to specify which area to calculate. Specify a point inside the bottom area.

The foot-candle levels in the bottom area will be calculated. The foot-candle levels in the upper two areas will not be calculated.

Linking an Area with Another Area

1. Run the `Add Calculation Area to Group` command.

   Ribbon: `DM Photometrics->Calculation Areas->` `Add to Group`

   Pulldown Menu: `DM Photometrics->Add Calculation Area to Group`

2. You will be prompted to specify a point inside an area. Specify a point inside one of the top two areas.

3. You will then be prompted to specify a point inside another area to group with the first area. Specify a point inside the bottom area.

The bottom calculation schedule will be erased. The bottom area is now grouped with the top two areas. The values in the remaining calculation schedule will be based upon the foot-candle levels in all three areas.

Run the `Calculate` command to see the changes in the foot-candle levels. Leave the settings as they are and press the **OK** button.

Ribbon: `DM Photometrics->Calculate->` `Calculate`

Pulldown Menu: `DM Photometrics->Calculate`

There is now only one group on the drawing, so you will not be prompted to select which area to calculate. All three areas will be calculated and the calculation schedule updated.

Remove Link between Areas

1. Run the `Remove Calculation Area from Group` command.

   Ribbon: `DM Photometrics->Calculation Areas->` `Remove from Group`

   Pulldown Menu: `DM Photometrics->Remove Calculation Area from Group`

2. You will be prompted to specify a point inside an area to remove from a group. Specify a point inside the middle area.

3. Next you will be prompted to insert the calculation schedule for the area. Insert it to the right of the area.

4. Run the `Calculate` command to see the changes in the foot-candle levels. Leave the settings as they are and press the **OK** button.

   Ribbon: `DM Photometrics->Calculate->` `Calculate`

   Pulldown Menu: `DM Photometrics->Calculate`

5. You will be prompted to specify which area to calculate. Specify a point inside the top area. The foot-candle levels in the top and bottom areas will be calculated. The foot-candle levels in the middle area will not be calculated.

6. Run the `Calculate` command again. Leave the settings as they are and press the **OK** button.

   Ribbon: `DM Photometrics->Calculate->` `Calculate`

   Pulldown Menu: `DM Photometrics->Calculate`

7. You will be prompted to specify which area to calculate. Press **ENTER**. The foot-candle levels will be calculated in all areas on the drawing and all of the calculation schedules will be updated.

Inserting a Fixture with Multiple Heads

This section teaches you how to create a light fixture with multiple heads that point in different directions. You will create a light fixture with multiple heads and aim each head individually.

To create a light fixture with multiple heads, you need to insert a Design Master Photometrics light fixture for each of the heads. You should arrange the light fixtures on the drawing so that they look like a single fixture when printed. However, in the project database it will be multiple light fixtures.

Creating light fixtures in this way will cause the quantity counts in your schedule to be wrong. To avoid this, use two light fixtures: one that is displayed in the schedule, and one that is not. The count for the first fixture will be correct, and the light output will be correct based on all of the lights.

The two methods are described in the following tutorial sections:

Simple Method, Quantity Counts are Wrong: This method is the easier of the two to use. It requires no changes to the light fixture schedule. The drawback is that the quantity counts in the light fixture schedule will be wrong.

Complex Method, Quantity Counts are Right: This method is the more complicated of the two to use. It requires creating additional fixture types in the fixture schedule. The benefit is that the quantity counts in the light fixture schedule are correct.

Simple Method, Quantity Counts are Wrong

This section teaches you the simplest way to create a light fixture with multiple heads. If you use this method, the quantity counts in your light fixture schedule will be wrong.

Open drawing **e-site** in the **12 Inserting a Fixture with Multiple Heads** folder, or continue to use the drawing you were working on in the last tutorial section.

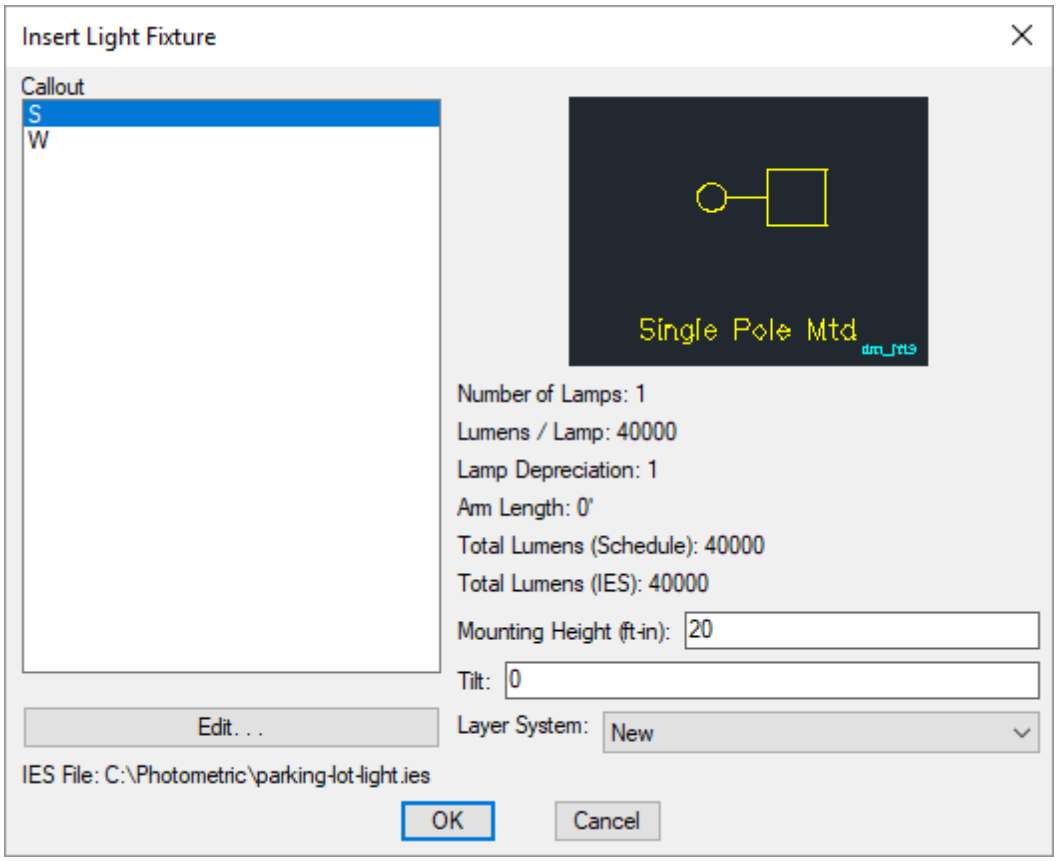
1. Run the `Insert Light Fixture` command.The **Insert Light Fixture** dialog box will open.

   Ribbon: `DM Photometrics->Light Fixtures->` `Insert Light Fixture`

   Pulldown Menu: `DM Photometrics->Insert Light Fixture`

2. Set *Mounting Height* to **20**.

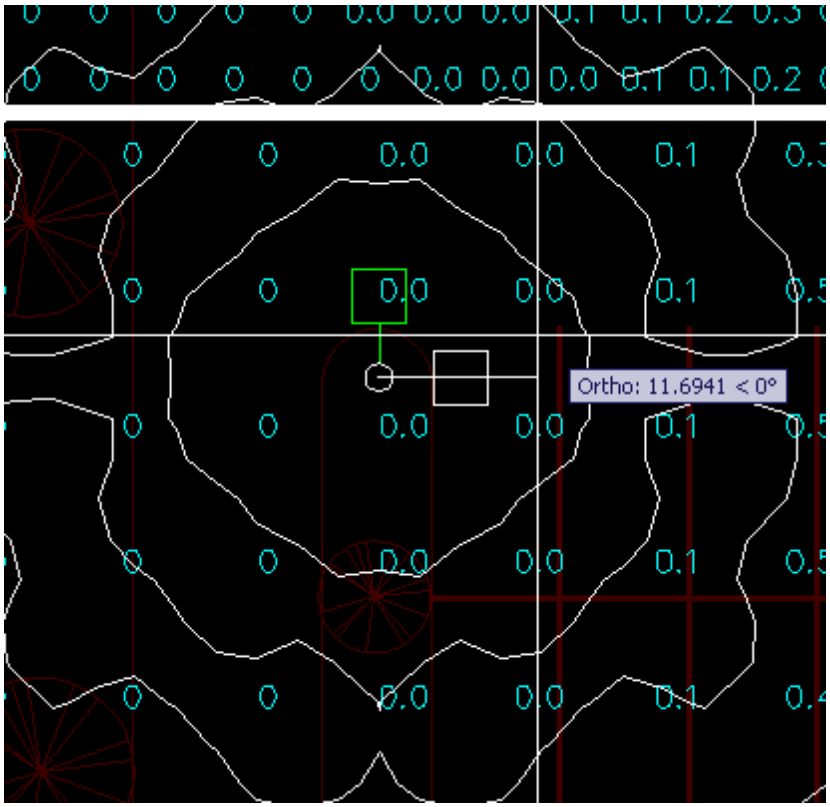
3. Make sure that *Callout* is set to **S**, *Tilt* is set to **0**, and *Layer System* is set to **New**.



4. Press the **OK** button.

5. Insert a fixture on the drawing.

6. Insert a second fixture on the drawing with the same insertion point. Using the center snap setting can make it easier to line the two fixtures up.



The two light fixtures will look like a single pole with multiple heads. The lighting calculation will be correct based upon the two fixtures representing the two heads.

The quantity in the light fixture schedule will include a count of 2 for this fixture, rather than 1. Be careful when using quantities when you use this method to create multiple head fixtures.

Complex Method, Quantity Counts are Right

This section teaches you a more complex way to create a light fixture with multiple heads that results in correct quantity counts in the light fixture schedule.

Open drawing **e-site** in the **12 Inserting a Fixture with Multiple Heads** folder, or continue to use the drawing you were working on in the last tutorial section.

Start by creating two new fixture types in the schedule:

1. Run the `Light Fixture Project Schedule` command. The **Light Fixture Project Schedule** dialog box will open.

   Ribbon: `DM Photometrics->Schedule->` `Light Fixture Project Schedule`

   Pulldown Menu: `DM Photometrics->Light Fixture Project Schedule`

2. Press the **New** button.

3. Set *New Light Fixture Callout* to **2 HEAD POLE** and press the **OK** button.

4. Press the **Select Block** button.

5. Choose the *Round (Small)* block from the **Select Light Fixture Block** dialog box.

6. Press the **OK** button.

7. Press the **Save** button.
   You have created a fixture type that will be used to represent the pole on the drawing. It will be displayed in the schedule with the correct quantity.

8. Press the **New** button.

9. Set *New Light Fixture Callout* to **HEAD** and press the **OK** button.

10. Press the **Select Block** button.

11. Choose the *Single Pole Mounted* block from the **Select Light Fixture Block** dialog box.

12. Press the **OK** button.

13. Uncheck the *Include in Schedule* box.

14. Press the **Save** button.
    You have created a fixture type that will be used to represent the head on the drawing. It will not be displayed in the light fixture schedule.

Now that the two fixture types are created, insert them on the drawing to make the pole with two heads on it:

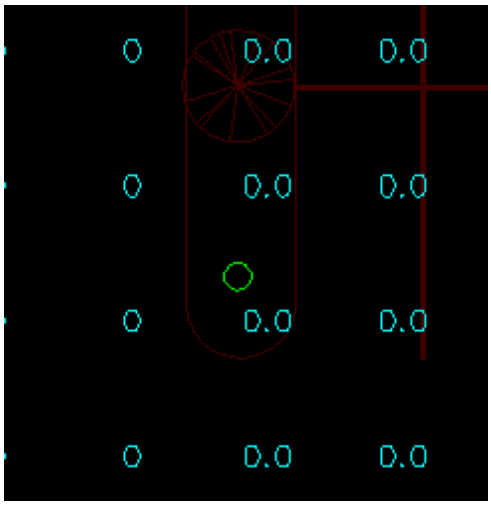
1. Run the `Insert Light Fixture` command. The **Insert Light Fixture** dialog box will open.

   Ribbon: `DM Photometrics->Light Fixtures->` `Insert Light Fixture`

   Pulldown Menu: `DM Photometrics->Insert Light Fixture`

2. Set *Callout* to **2 HEAD POLE**. Press the **OK** button.

3. Insert the light fixture on the drawing.



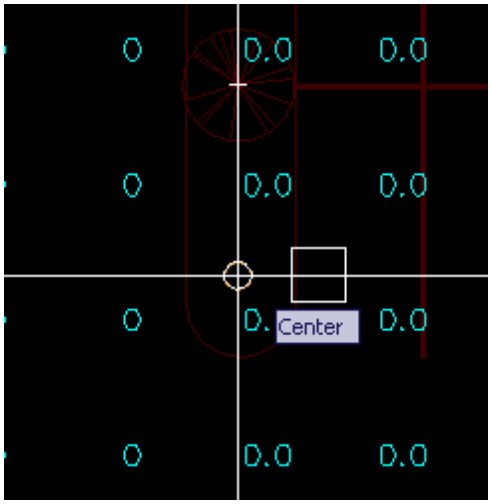
4. Run the `Insert Light Fixture` command.The **Insert Light Fixture** dialog box will open.

   Ribbon: `DM Photometrics->Light Fixtures->` `Insert Light Fixture`

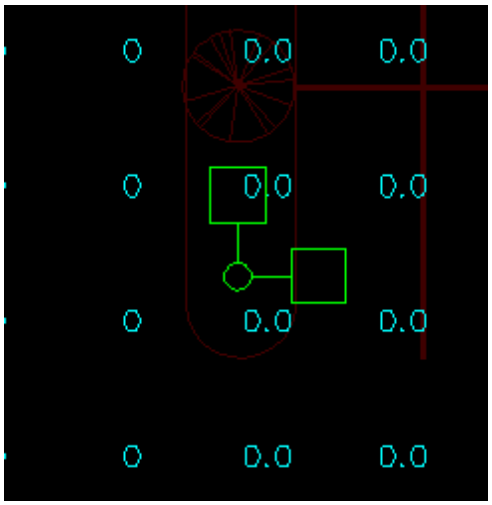
   Pulldown Menu: `DM Photometrics->Insert Light Fixture`

5. Set *Callout* to **HEAD** and *Mounting Height* to **20**. Press the **OK** button.

6. Insert the light fixture on the drawing. Center the insertion point on the 2 HEAD POLE fixture that was just inserted.



7. Insert a second fixture on the drawing for the second head.



Once you have one light fixture pole set up this way, use the standard CAD **COPY** command to insert it in other areas of your drawing.