



# **Osmose O-Calc® Pro 7.0.1**

## **User Guide**

**Osmose O-Calc® Pro 7.0.1 User Guide****September 2024****Copyright**

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# Osmose O-Calc® Pro Overview

## About Osmose O-Calc® Pro

Osmose O-Calc® Pro automates the calculation of structural loading on new and existing utility poles. Major applications of this innovative software are line design, pole replacement, and joint use loading issues.

In many cases, non-structural personnel at a utility must decide whether more cables can be added, or larger conductors can be used on existing pole lines without overloading the pole or structure. O-Calc® Pro was developed to help technical and non-technical staff alike perform structural load analysis in a simple, straightforward manner. The calculations within O-Calc® Pro are complex, but the operator interface is designed for simplicity of use. In addition to technical load calculations and statistics, the application provides a configurable, three-dimensional visual rendering of each structure's load conditions.

O-Calc® Pro can be used to evaluate whether any structure within a line is already overloaded. It can quickly assess the impact of re-conductoring for upgrading line performance. The O-Calc® Pro analysis of stress along the length of a pole can be used to consider cost-effective alternatives to replacing overloaded poles.

O-Calc® Pro is a valuable resource in evaluating structural load for joint use, safety, network reliability, and network planning purposes.

## Osmose O-Calc® Pro Concepts

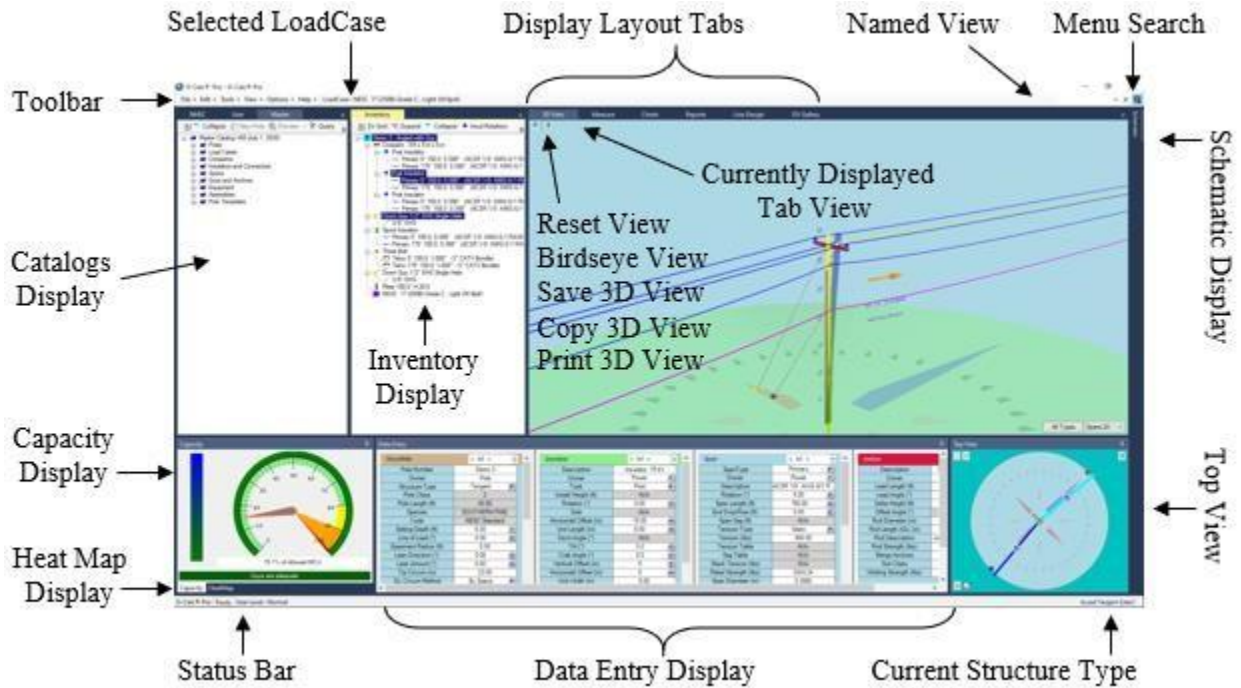
Osmose O-Calc® Pro allows you to model a utility structure (wood, steel, concrete, composite, fiberglass pole, or multi-pole structure) by defining the components of the structure using the Inventory Window or interactively constructing the structure through the 3D View. Both methods can be used simultaneously. The model of the structure is created by adding equipment you manually define or by utilizing predefined components from within the Master or User Catalogs.

The Osmose Master Catalog is installed with the O-Calc® Pro application. It contains a predefined list of common poles, structures, and equipment which are utilized in the field. Master Catalogs contain a list of all available Load Cases, used to add the applicable pole loading safety regulations to the model. Also included, are User Catalogs which offer a series of folders in which you can compile your own list of poles and equipment that you have created. The User Catalog is helpful for modeling additional structures in the Inventory Window. The Catalog Window within O-Calc® Pro provides you with the tools needed to manage and interact with all equipment catalogs.

# Understanding the O-Calc® Pro Workspace

## O-Calc® Pro Workspace

O-Calc® Pro provides you with a variety of options enabling you to interact with new data or existing data.



<i>Workspace Windows</i>	<i>Description</i>
Toolbar	Provides numerous options to interact with the data in O-Calc® Pro.
Selected Load Case	Displays the Load Cases that are currently loaded in the Inventory Window.
Display Layout Tabs	Enables you to switch between different window layouts; 3D View, Measure, Charts, Reports, OV Gallery.
Menu Search	Allows you to easily find and execute menu items.
Schematic Display	Displays the major equipment on the structure and the elevation.
Capacity Display	Summarizes the structure’s capacity as currently loaded.

Heat Map Display	Provides a color-coded two-dimensional representation of specific load values for the current structure.
Data Entry Display	Allows you to enter or change equipment attributes.
Status Bar	Displays the path information to the currently loaded PPLX file, the Capacity Summary Window calculation status and the user’s access level.
Current Structure Type	Displays the pole model structure type.
“R” Reset and “B” Birdseye View	Allows you to quickly reset the selected pole to the center of the ground line compass in the 3D View. Or to toggle to/from the Birdseye view of the top of the structure.
Save Copy Print 3D View	The grey button between the Reset and Birdseye View buttons provides access to save, copy, and print functionality.
Named View	Allows you to name, save, and recall any one of the multiple screen layouts you create based on work tasks and/or user preferences.
Top View	Displays the pole model view from the top and provides access to the Gang Editor tool.
Catalogs Display	Displays the repository of equipment and assemblies available to construct the pole model.
Inventory Display	Displays the inventory of the structure as you construct it. Additionally, the inventory offers functionality using basic windows commands, including the drag and drop method for substitution and copying.

<b><i>Default Windows</i></b>	<b><i>Description</i></b>
Catalogs Display	Repository of equipment and assemblies available to construct inventory. The catalogs are the primary way to add items to the inventory.
Inventory Display	Displays the inventory of the structure as you construct it.
3D View Display	Displays a 3D view of the structure and the surroundings.
Measure Display	Allows the measurement of pole features from image data. This process is referred to

	as Digital Measurement Technology or DMT.
Charts Display	Displays a predefined list of charts to be used to help complete a structure’s analysis.
Reports Display	Displays a list of reports to be used to help complete a structure’s analysis.

## O-Calc® Display Options

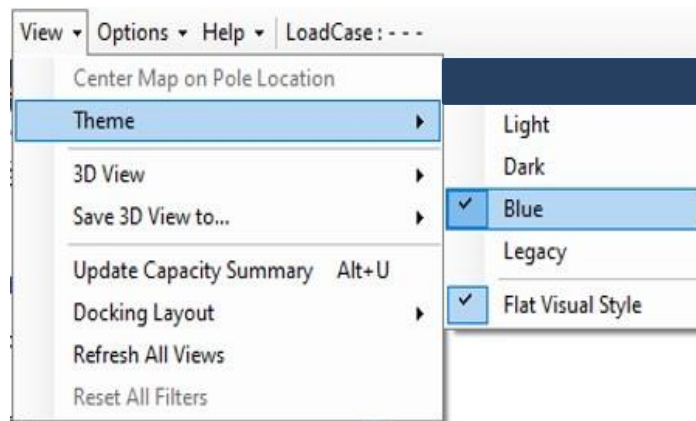
### Utilizing O-Calc® Pro Display Options

Several advanced display options and tools are provided within the O-Calc® Pro application.

#### Changing the Theme

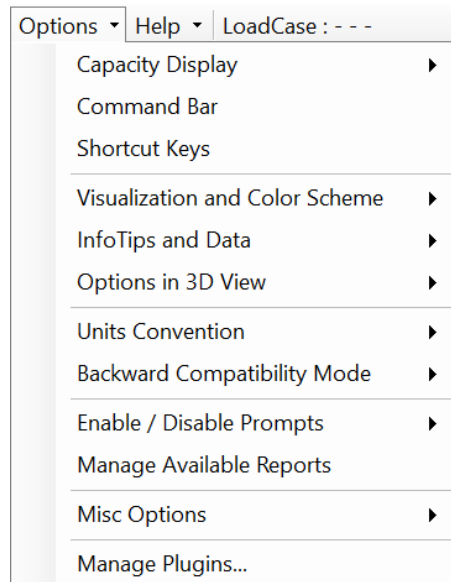
The View tool bar menu provides you with an ability to change the theme of your O-Calc® Pro display.

1. On the Toolbar, select the **View** menu.
2. Hover the mouse over the **Theme** options to view possible choices.
3. Select either **Light, Dark, Blue** or **Legacy**.
4. Restart the application for the changes to take effect.



#### General Display Options

The Options tool bar menu provides you with a variety of display options.



<p><b>Capacity Display</b></p>	<p><b>Auto Capacity Summary.</b> Select the Auto Capacity Summary option to automatically update the Capacity Window whenever data changes.</p> <p><b>Capacity Meter Display.</b> Select the Capacity Meter Display option to have the Capacity Window display in a metered format.</p> <p><b>Capacity Numeric Display.</b> Select the Capacity Numeric Display option to have the Capacity Window display in a numeric format.</p> <p><b>Factor of Safety Display.</b> Select the factor of Safety Display option to have the Capacity Window display the Factor of Safety Values and active loadcase.</p>
<p><b>Command Bar</b></p>	<p>Toggle on the <b>Command Bar</b> to activate it. The command bar feature displays in the Data Entry area. Enter a “?” mark to display the list of commands. Using Alt+ C can also activate the command bar.</p>
<p><b>Shortcut Keys</b></p>	<p>Presents the <b>Shortcut Key</b> Editor window which allows you to create any desired shortcut keys to replace common commands. Select from the menu of commands, choose an available option, and select Apply.</p>
<p><b>Visualization Color Scheme</b></p>	<p>Select the <b>Visualization Color Scheme</b> option to change the color representation throughout the application.</p>



<p><b>Info Tips and Data</b></p>	<p><b>Inventory Info Tips.</b> Select the Inventory Info Tips option to see a subset of an object’s attributes when you hover over the object’s icon in the <i>Inventory Window</i>.</p> <p><b>Component Load Info Tips.</b> Select the Component Load Info Tips option to display what the percent of pole capacity that is consumed by the object components on the pole. The tip will display as you hover over an object in the <i>Inventory Window</i>.</p> <p><b>Catalog Info Tips.</b> Select the Catalog Info Tips option to see an object’s attributes when you hover over the object icon in the <i>Catalog Window</i>.</p> <p><b>Heat Map Segment Tips Enabled.</b> Select the Heat Map Segment Tips Enabled option to see a subset of an object’s attributes. The tip will display as you hover over an object in the <i>HeatMap Window</i>.</p> <p><b>Heat Map Moment and Load Details.</b> Select the Heat Map Moment and Load Details option to display the full loading details for each element in the Heat map when the cursor is hovered over the element.</p> <p><b>Show All Attributes in Info Tips.</b> Select the Show All Attributes in Info Tips option to see an object’s editable attributes when you hover over the object’s icon in the <i>Inventory Window</i>.</p> <p><b>Expand All Attributes in Data Entry Panel.</b> Select the Expand All Attributes in Data Entry Panel option to display all an object’s attributes in the Data Entry Panel</p> <p><b>Remember Attribute Filter Settings in DEP.</b> Select the Remember Attribute Filter Settings option to always use the last filter selected in the Data Entry Panel, when selecting another object.</p> <p><b>Show TBD Item Status.</b> Select the Show TBD Item Status option to indicate TBD items in the Inventory window.</p>
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<p><b>Options in 3D View</b></p>	<p><b>Options in 3D View.</b> See <a href="#">3D View Display Options</a>.</p> <p><b>Camera.</b> Toggle on/off user specific options. Select from an Additional Light Source, adjust Mouse Tracking Rates for orbit, pan, zoom functionality. Use the Alternate Control Scheme to allow enhanced camera control and movement.</p> <p><b>Labels.</b> Toggle on/off user specific options. Select from Label Elements in 3D View, Measure Cursor, Show Damage and Decay Markers, Show Sub-Damage and Decay Markers, Display Wind Direction Arrow, Display Wind Pressure, Display Heights / Ruler, and Show Pole Label.</p> <p><b>Show Messenger Only for Bundles.</b> Prevents communication wires from appearing.</p> <p><b>Height Filtering and Angle Filtering.</b> Narrows the scope of the data displayed.</p> <p><b>Visualization.</b> Ghost and Sweep visualization controls.</p> <p><b>Animate Selected Object (Flash).</b> Requires advanced device drivers to display flashing graphics features.</p> <p><b>Show 3D View When Pole Opened.</b> Displays the pole model in the 3D View when opening a PPLX file.</p> <p><b>Render 3D in Sperate Thread.</b> Displays the pole model in a separate window.</p> <p><b>Image Brush Opacity.</b> Users set the opacity value.</p>
<p><b>Units Convention</b></p>	<p>See <a href="#">Change the Unit Convention</a>.</p>
<p><b>Backward Compatibility Mode</b></p>	<p>Use to save PPLX files in a format from a previous version of O-Calc® Pro. The Backward Compatibility Mode also allows a person using a newer version of OCalc® Pro to create a PPLX that can be conveniently used by a user of an older version of O-Calc® Pro.</p>
<p><b>Enable / Disable Prompts</b></p>	<p>Lists various prompts throughout the application that can be enabled or disabled.</p>
<p><b>Manage Available Reports</b></p>	<p>Use to enable or disable various reports on a user-byuser basis.</p>
<p><b>Misc. Options</b></p>	<p>Use to enable or disable several display options.</p>

<b>Manage Plugins</b>	Use to enable or disable various plugins on a user-byuser basis. See <a href="#">Manage Plugins</a> .
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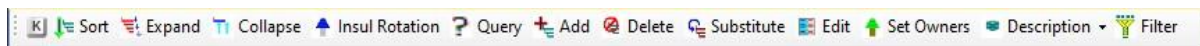
## Working Within the O-Calc® Pro Workspace

### Working with the Inventory Window


#### Inventory Window Overview

The Inventory Window provides you with the ability to construct a model of a utility pole. This model includes the structure, the equipment attached and its environment.

#### Toolbar Menu Options



<b>Sort</b>	Use to sort the inventory object to match how they display on the pole from the pole tip to the ground.
<b>Expand</b>	Use to expand all the plus sign nodes in the Inventory tree.
<b>Collapse</b>	Use to collapse all the plus sign nodes in the Inventory tree.
<b>Insul Rotation</b>	Use to rotate an insulator to the appropriate angle for attached span angles.
<b>Query</b>	Use to search the data within the Inventory Window.
<b>Add</b>	Use to add attachments to the selected equipment. Shortcut Key: Select the Insert button on the keyboard.
<b>Delete</b>	Use to delete selected equipment. Select multiple pieces of equipment, while holding down the Shift key, to delete them simultaneously. Another option is to use the Delete key on the keyboard.
<b>Substitute</b>	Use to substitute the selected equipment. Multiple pieces of equipment of the same type that have been selected can be substituted simultaneously. Shortcut Key: Select Alt + Insert on the keyboard.
<b>Edit</b>	Use to edit the selected equipment attributes.

<b>Set Owners</b>	Use to set bulk or selected object ownership operations.
<b>Description</b>	Use to set bulk or selected object description operations, or to clear selected or all descriptions.
<b>Filter</b> 	Use to display only the expanded inventory objects in the 3D View. The sunglasses icon indicates a filter is active.

*Note:* To enable/disable the text that displays next to the Inventory Window toolbar, see [Change the Inventory Window Toolbar Display](#).

*Note:* When using the keyboard shortcut keys for Delete, Add and Substitute the **Edit > Undo** option can be used to undo any changes that have been made using these shortcut keys.

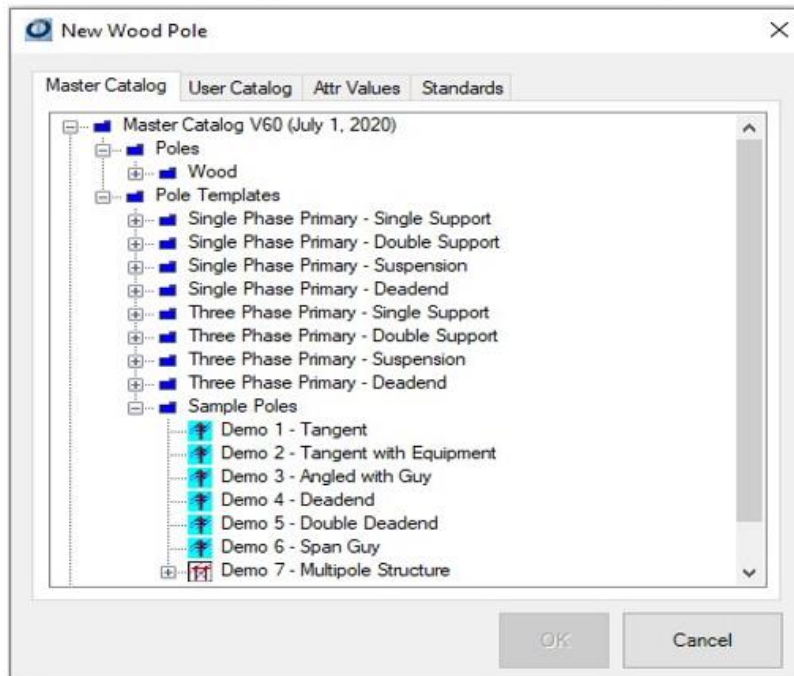
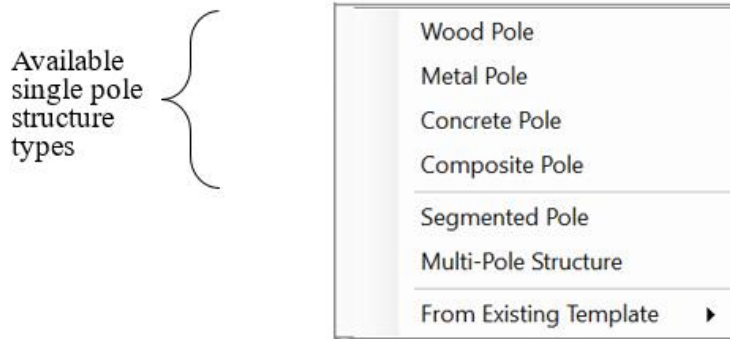
## Creating a Single Pole Structure

### Creating a Single Pole

To create a new Wood, Steel, Concrete, Composite or Segmented Fiberglass pole in the Inventory Window, complete the following steps:

1. Select the structure type from the **File > New Pole** menu.

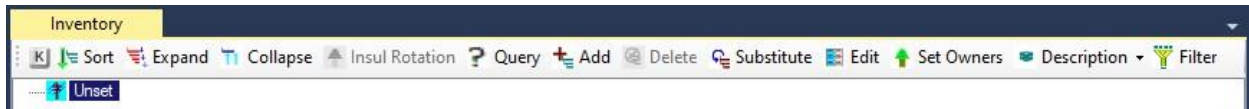
*Note:* Available tabs are dependent on corresponding structure types displayed in your catalogs.



<b>Master Catalog</b>	The Master Catalog tab displays a list of folders that contain structure types which coincide with the new pole type that you have selected.
<b>User Catalog</b>	The User Catalog tab displays a list of folders that contain structure types which coincide with the new pole type that you have selected.
<b>Attr Values</b>	The Attr Values tab displays an editable list of all the attribute values for the selected poles. After a pole is added to the Inventory Window these same attributes are available to edit in the Data Entry Window.
<b>Standards</b>	The Standards tab provides a quick way to manually select the species, length, and class of the pole based on the ANSI 05.1 Standards.

2. Select a **pole** from the Master Catalog, User Catalog or the Standards tab.  
*Note: For additional information on catalogs see [Working With the Catalog Window](#).*
3. Select the **Attr Values tab** to modify the selected poles attribute values.
4. Click **OK**.

*Note: Undo is not available when a pole is added. It is not possible to Delete a pole in the inventory. Use File > Close Pole to remove the pole. Or use the drag and drop method from a Catalog, to substitute for a different pole.*

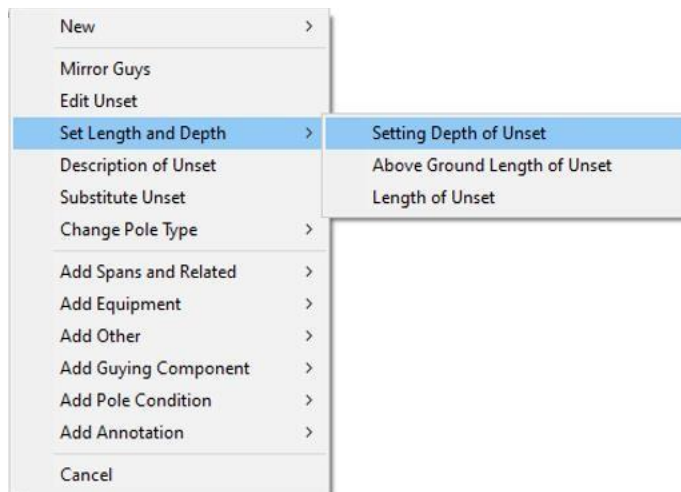


*Note: If a default LoadCase has been set it displays automatically in the Inventory Window when a pole is added. To set a Default LoadCase see [Set a Default Load Case](#).*

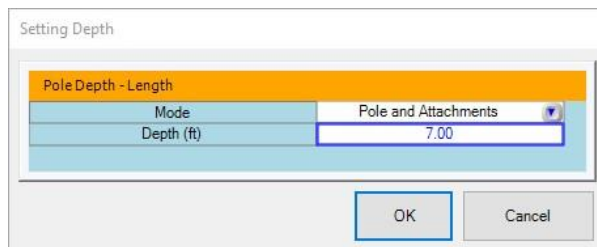
### Setting the Depth of a Pole

To set the depth of a pole, complete the following steps:

1. Right click on the Pole you want to set the depth for.
2. Select Set Length and Depth > **Setting Depth of Unset (or Pole name displays)**.



3. In the Setting Depth window, select the **Mode** from the drop-down list and enter the **Depth in Feet**.
4. Select **OK**.

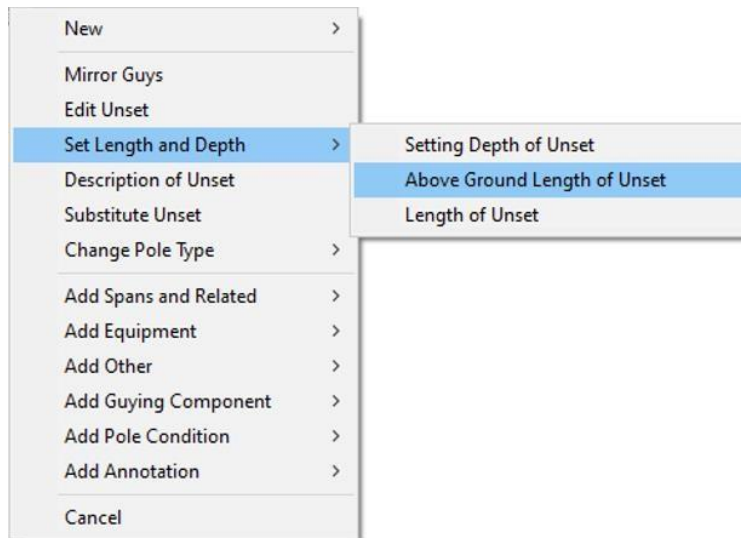


*Note: The Depth in Feet field will automatically display the default pole depth when initially opened. The Mode moves either the pole and all its attachments to the new set depth or just the pole keeping the attachments at the same height above groundline.*

## Setting the Above Ground Length of a Pole

To set the length of a pole, complete the following steps:

1. Right click on the Pole you want to set the length for.
2. Select Set Length and Depth > **Above Ground Length of Unset** (*Pole name*).



3. Select the **Mode** from the drop-down list and enter the **AGL in Feet**.
4. Select **OK**.

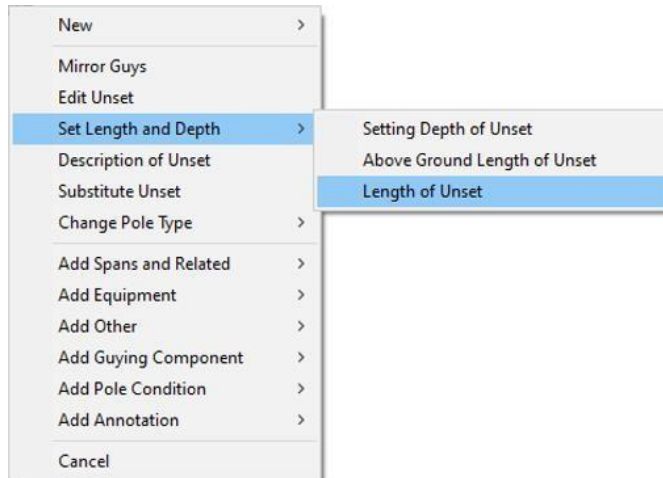
The image shows the 'AGL Length' dialog box. It has a title bar 'AGL Length' and a header 'Pole Depth - Length'. Below the header is a table with two columns: 'Mode' and 'Pole and Attachments'. The 'Mode' cell contains 'Length AGL (ft)' and the 'Pole and Attachments' cell contains '43.00'. At the bottom of the dialog are 'OK' and 'Cancel' buttons.

**Note:** To undo the Setting Depth change, select *Edit > Undo*. Setting the Above Ground Length is the complimentary function to the Setting Depth.

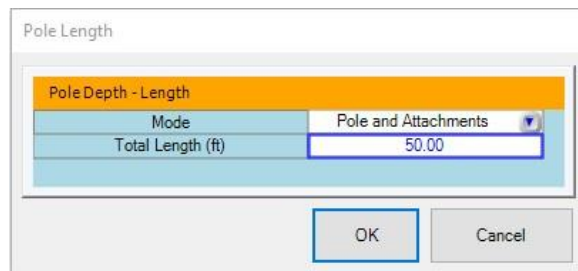
## Setting the Length of a Pole

To set the length of a pole, complete the following steps:

1. Right click on the Pole you want to set the length for.
2. Select Set Length and Depth > **Length of Unset** (*or Pole name displays*).



3. Select the **Mode** from the drop-down list and enter the **Length in Feet**. **OK**.



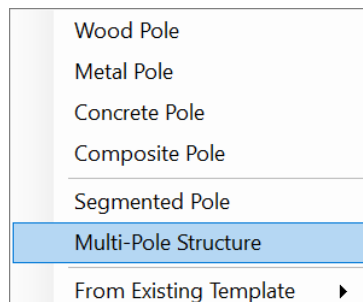
*Note: Changing the Length is typically for shorting the pole length because it has been stubbed in the field. Only the length attribute of the pole changes. But not the manufactured length, so that the other parameters of the pole such as the circumference and taper, remain unchanged.*

## Creating Additional Structure Types

### Creating a Multi-Pole Structure

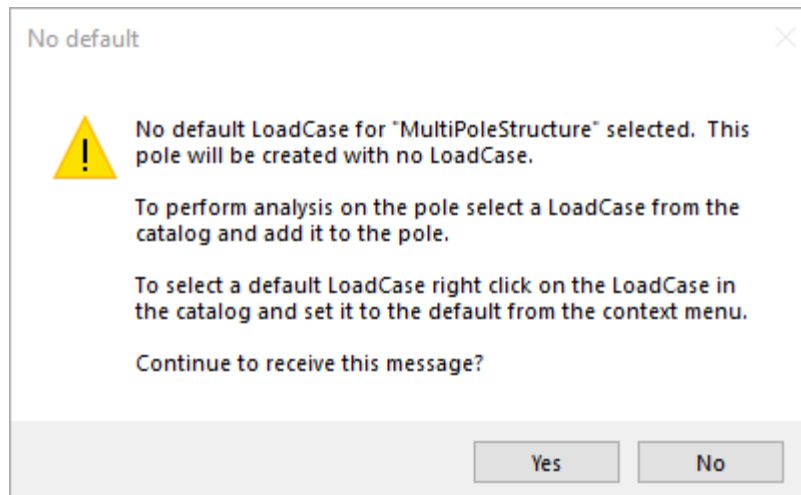
To create a new Multi-Pole structure in the Inventory Window, complete the following steps:

1. Select the Multi-Pole Structure type from the **File > New Pole** menu.



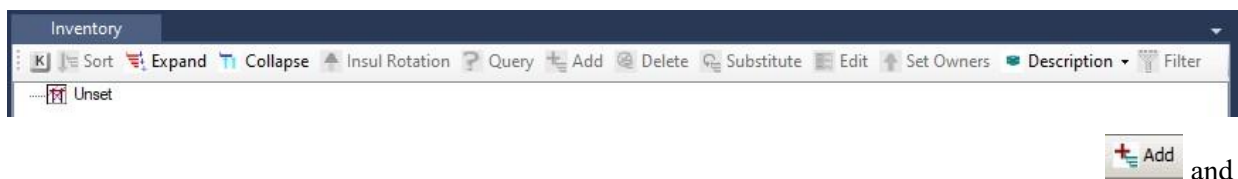
2. The **No default** load case message box appears, select **Yes** or **No**.



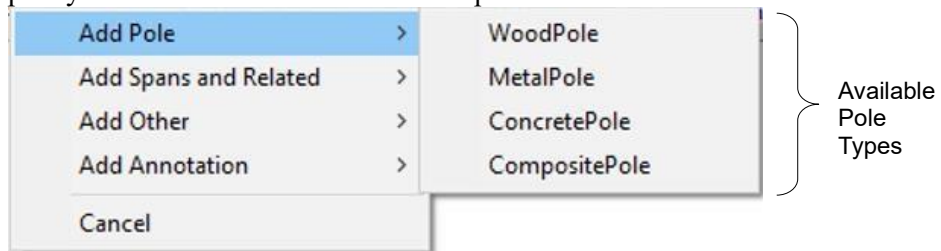


3. Add an applicable Load Case to the pole from the Load Cases folder in the Catalog, using the drag and drop method. To set a Default LoadCase see [Set a Default Load Case](#).

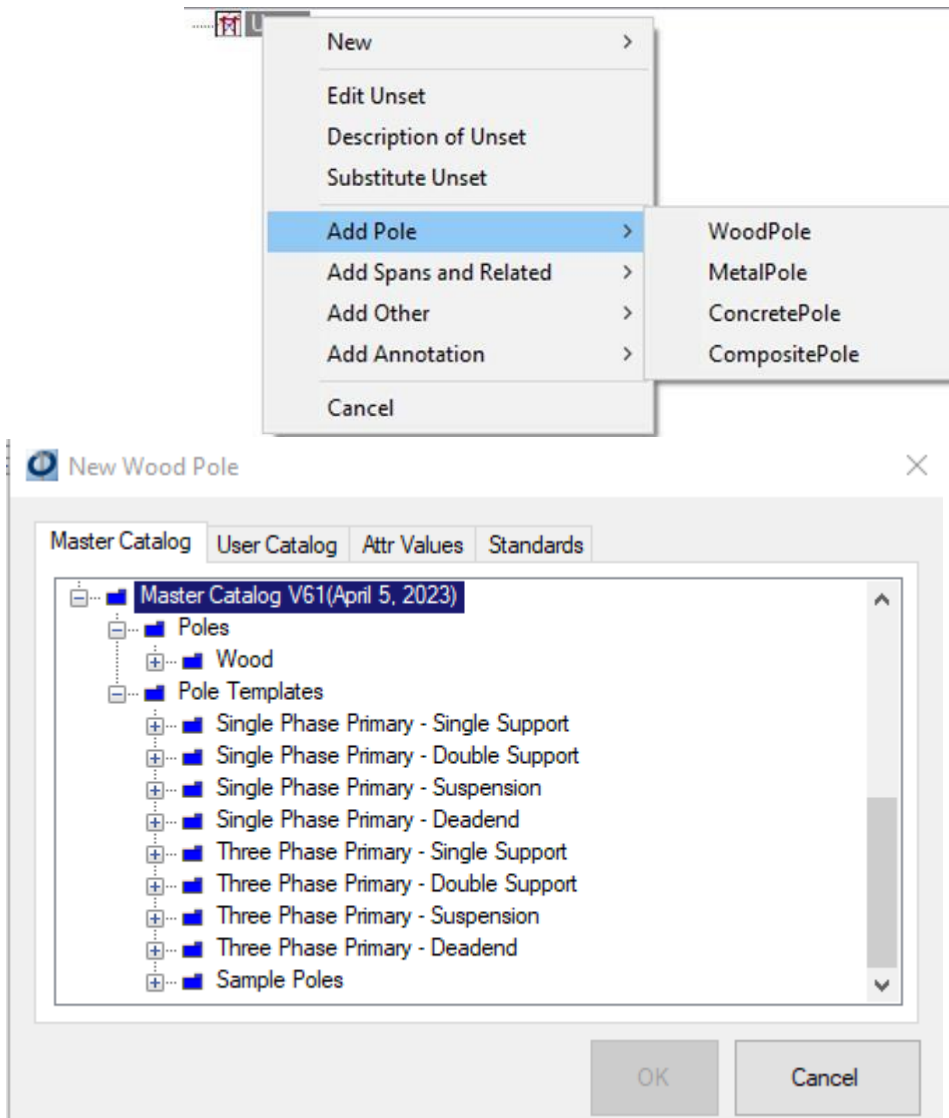
*Note: If a default Load Case has been set it displays automatically in the Inventory Window when the structure is created.*



4. Select the **Structure** in the Inventory window then select the **Add** button select the pole you would like to add to the multi-pole structure.



*Note: Additionally, the same list of available poles can be accessed by right clicking on the multi-pole structure in the Inventory Window.*



*Note:* Available tabs are dependent on corresponding structure types displayed in your catalogs.

5. Select a **pole** from the Master Catalog, User Catalog or the Standards tab.

*Note:* For additional information on catalogs see [Working With the Catalog Window](#).

6. Select the **Attr Values** tab to modify the selected poles attribute values.
7. Select **OK**.

*Note:* Complete step 2- 5 to add additional poles to the structure.

*Note:* Undo is not available when a pole is added.

8. Select a **pole** and modify the **Offset** value in the Data Entry Panel.

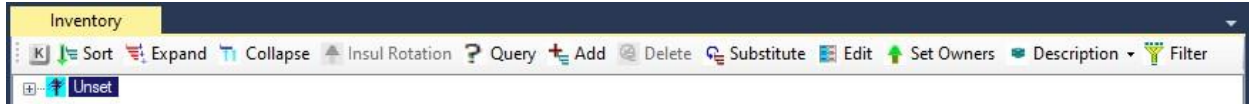
*Note:* For additional information on changing attributes in the Data Entry panel see [Working With the Data Entry Window](#).


## Adding Attachments to a Structure

### Adding Equipment to a Pole

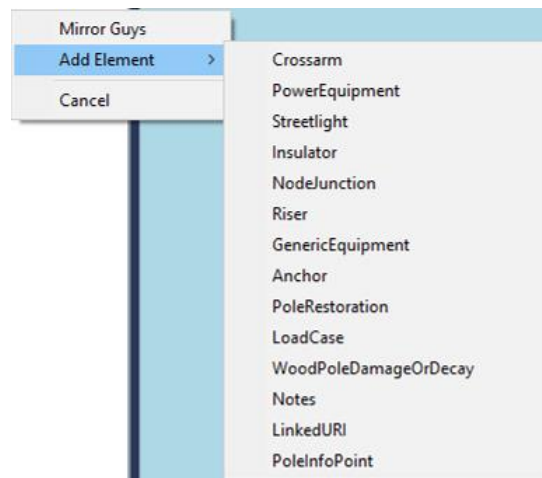
To add equipment to a pole, complete the following steps:

1. Select the **Pole** you want to add equipment to.



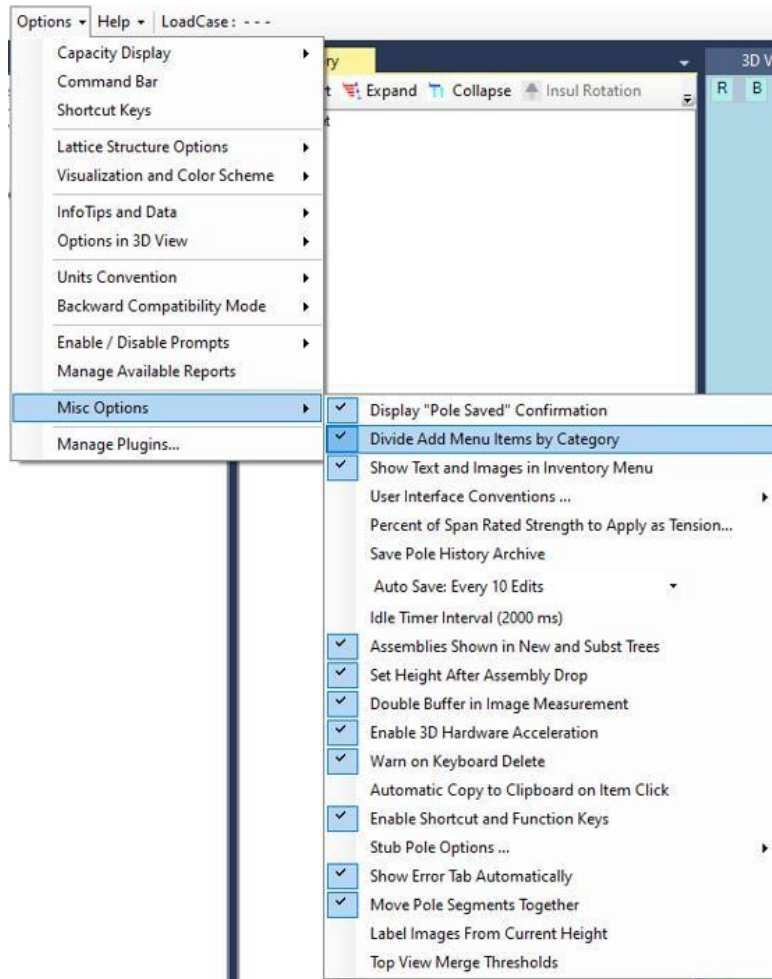
2. Select the **Add** button  and select the **equipment** or elements to be added to the pole.

**Note:** If the *Divide Add Menu Items by Category* option is unchecked in *Misc Options*, the resulting menu items appear as shown below.

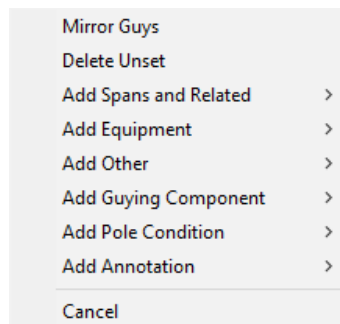


**Note:** The list of available equipment can also be accessed by right clicking on the pole in the *Inventory Window*. See menu options instructions below.

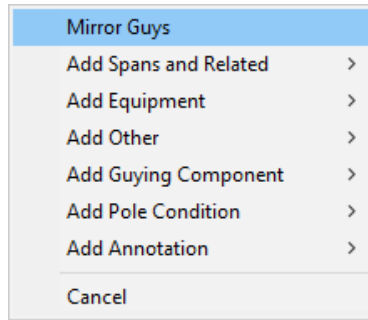
**Note:** If the *Divide Add Menu Items by Category* option is checked in *Misc Options*, the resulting menu items appear by category as shown below.



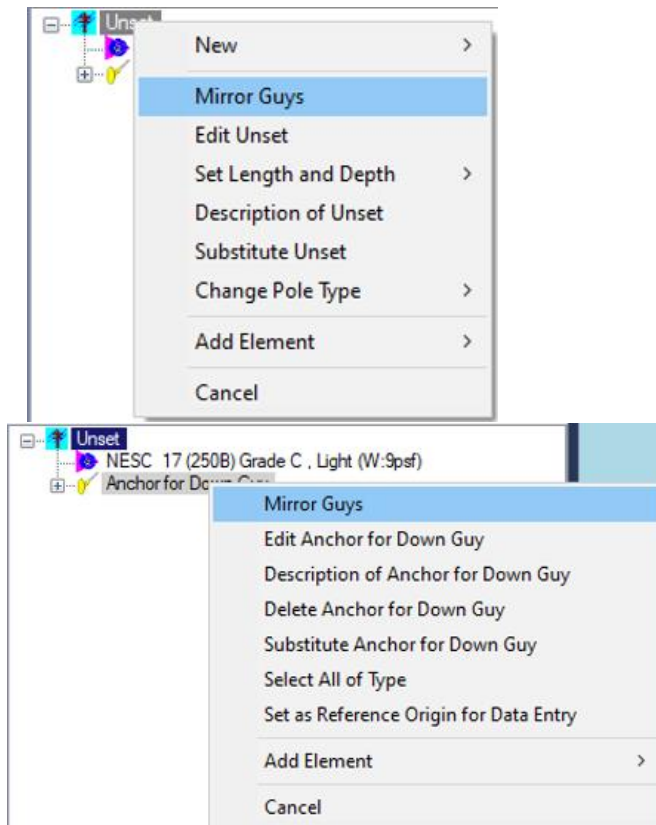
*Note: Display results for the **Divide Add Menu Items by Category** option:*



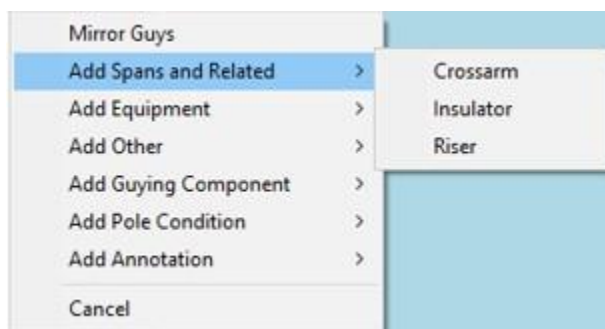
*Note: The **Mirror Guys** option is used to easily copy, in the opposite (mirror) direction, any guy object in the Inventory that is attached to the pole.*



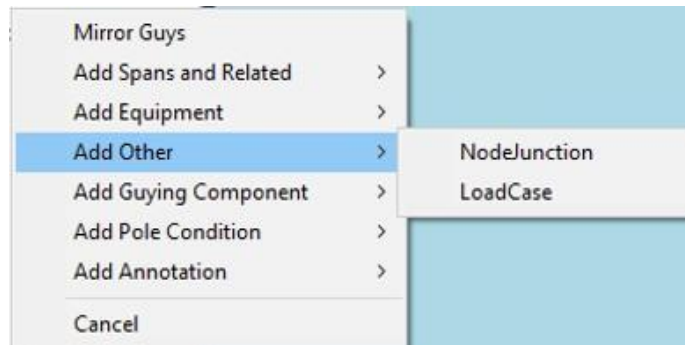
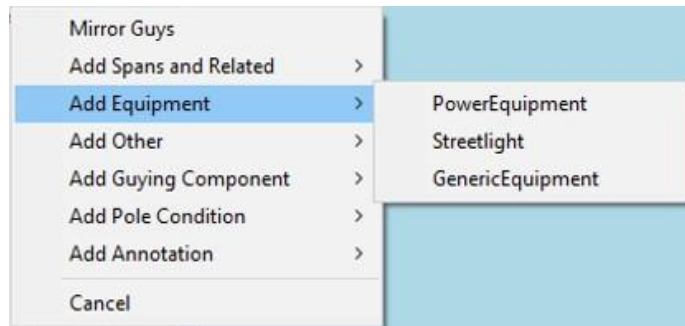
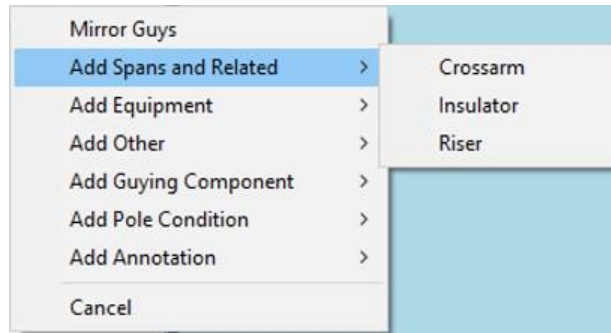
**Note:** The **Mirror Guys** option can also be accessed by right clicking on the pole, anchor, or guy wire in the Inventory Window. See menu options below for right clicking the pole or right clicking the anchor:

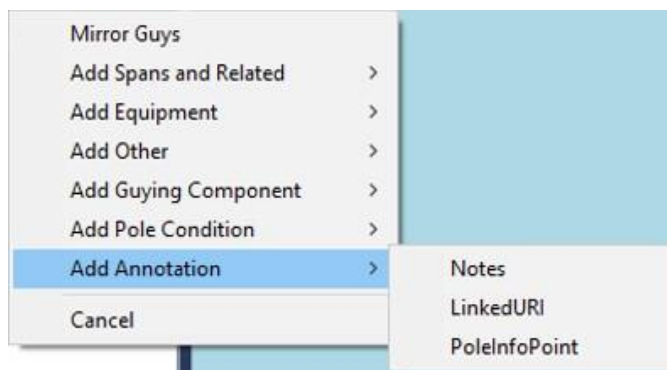
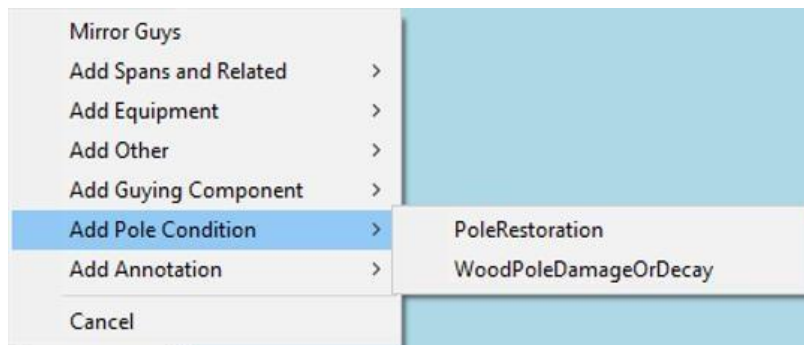
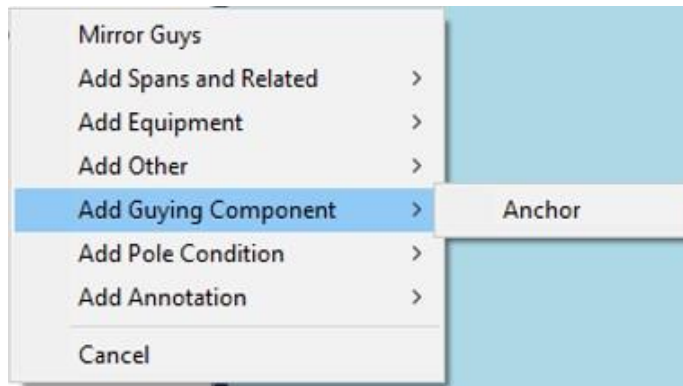


**Note:** If the **Divide Add Menu Items by Category** option is checked in **Misc Options**, the resulting menu items appear by category as shown below for **Add Spans and Related**.

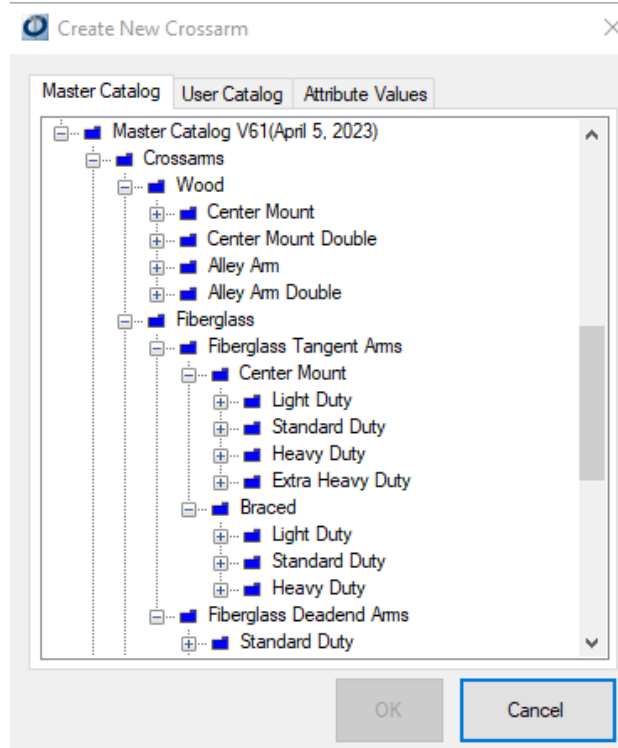


*Note: Only one piece of equipment can be added at a time.*





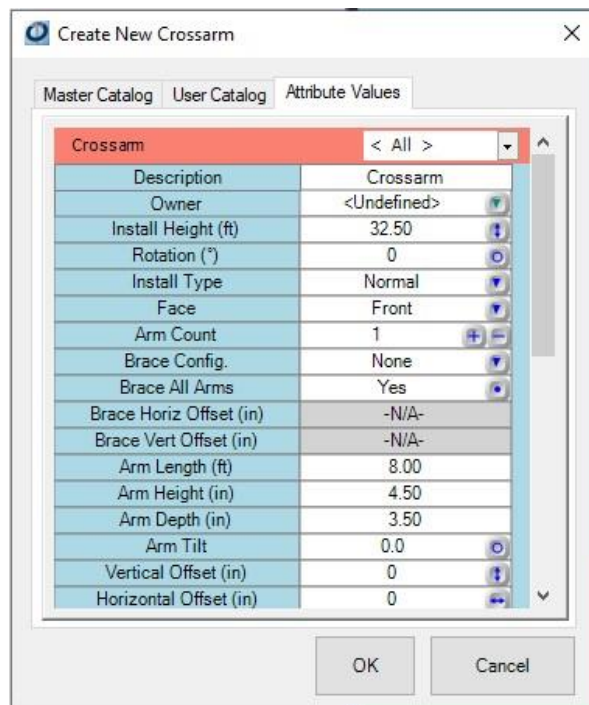
3. To add a **crossarm** from the Catalog tabs or the Inventory tab select the appropriate tab and select the crossarm you want to add.



*Note:* Available tabs are dependent on corresponding equipment displayed in your catalogs or Inventory Window.

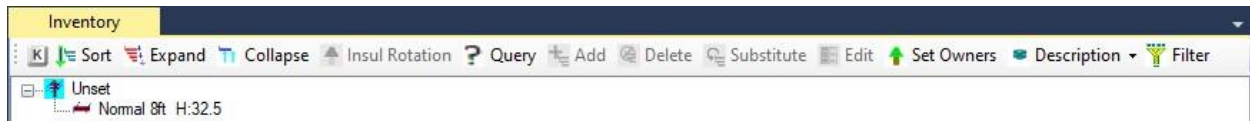
*Note:* For additional information on catalogs see [Working With the Catalog Window](#).

4. Select the **Attribute Values** tab to modify the crossarm’s attribute values.
5. Click **OK**.




*Note:* To undo additions, select **Edit > Undo**.





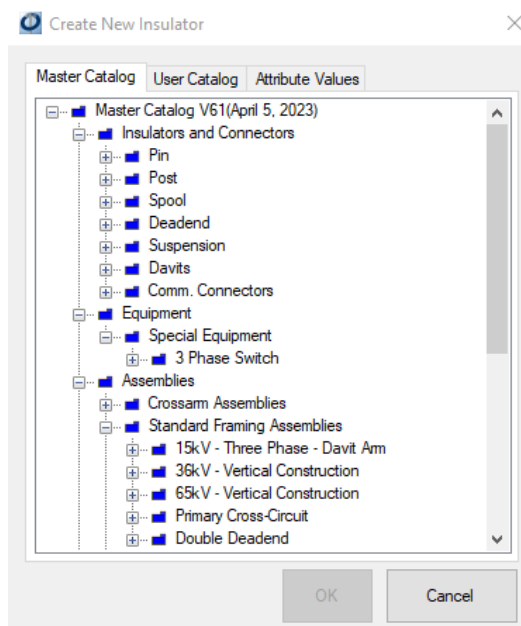
Different types of equipment can have additional attachments (Example: A crossarm can have insulators and spans attached to it). To add additional attachments to equipment, complete the following steps:

6. Select the **equipment** in the Inventory Window you want to add additional equipment to.
7. Select the **Add** button  and select the **equipment** to be added from the equipment list.

***Note:** The list of available equipment can also be accessed by right clicking on the equipment you would like to add additional equipment to.*



***Note:** If multiple pieces of equipment are displayed in the list only one piece of equipment can be selected at a time.*

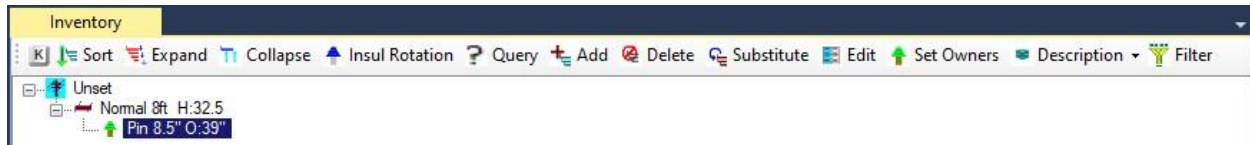


***Note:** Available tabs are dependent on corresponding equipment displayed in your catalogs or Inventory Window.*

- To add an **insulator** from one of the catalog tabs or the Inventory tab select the appropriate tab and select the insulator you want to add, select OK.

*Note: For additional information on catalogs see [Working With the Catalog Window](#).*

- Select the **Attribute Values tab** to modify the insulator's attribute values.
- Select **OK**.

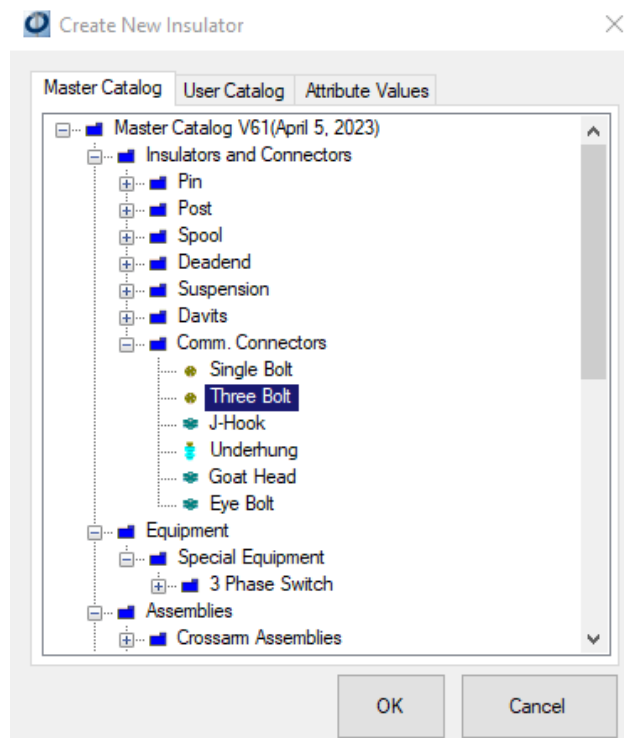



*Note: To add additional attachments repeat steps 6 – 10.*

### Adding a Span Bundle to a Pole

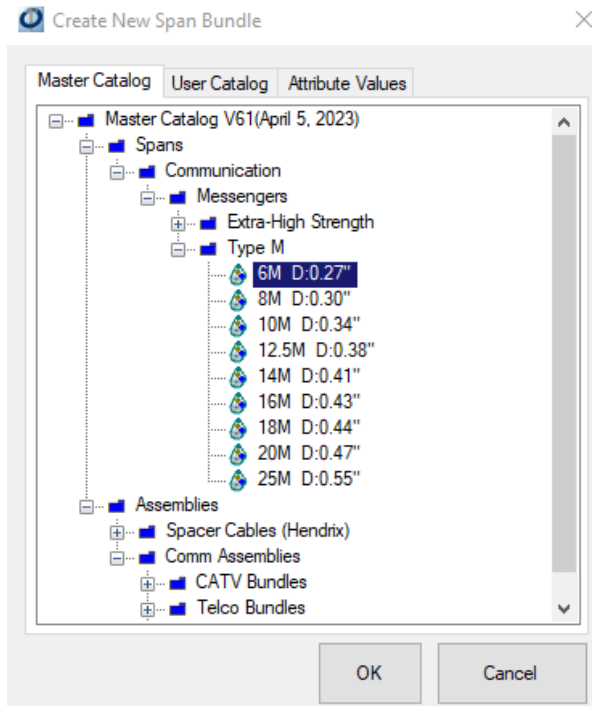
A span bundle is a composite span that typically includes a messenger strand with other spans lashed to it plus the cross-sectional configuration of the lashing. The **SpanBundle** object represents the messenger strand. To add a span bundle to an attached insulator you first need to create the span messenger wire. To create the span messenger wire, complete the following steps:

- Select the **Add** button  and select the **Insulator**, select **OK**.



- In the Data Entry window, enter the desired Install Height value for the Insulator.
- Select the **Add** button  and select the **Span**

- To add a **Messenger** from one of the Catalog tabs or the Inventory tab select the appropriate tab and select the messenger strand you want to add.



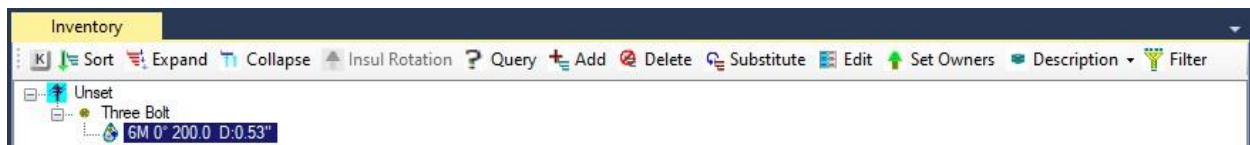
*Note:* For additional information on catalogs see [Working With the Catalog Window](#).

- Select the **Attribute Values** tab to modify the Span Bundle attributes.
- Select **OK**

*Note:* To undo additions, select **Edit>Undo**.

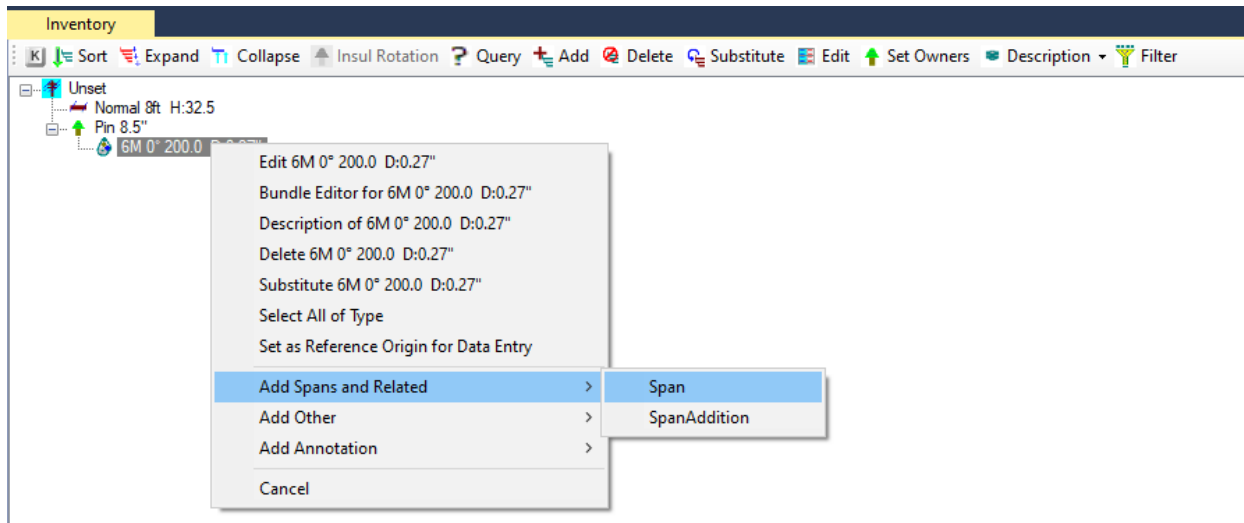
Once the messenger strand has been added you need to add the spans. Complete the following steps to add spans to the messenger wire:

- Select the **Messenger** strand in the Inventory Window.



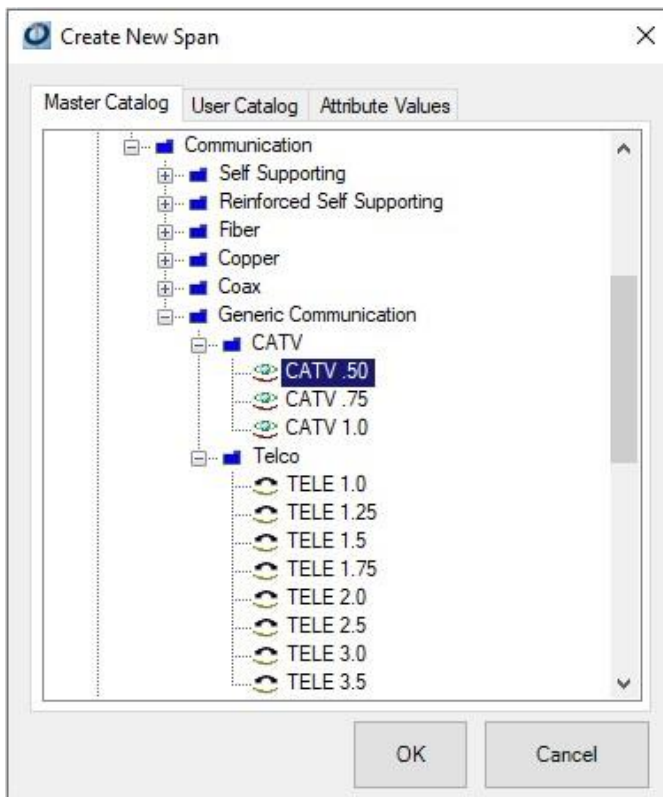
- Select the **Add** button  and select **Span**.

*Note:* The option to add spans can also be accessed by right clicking on the Span Bundle in the Inventory Window.



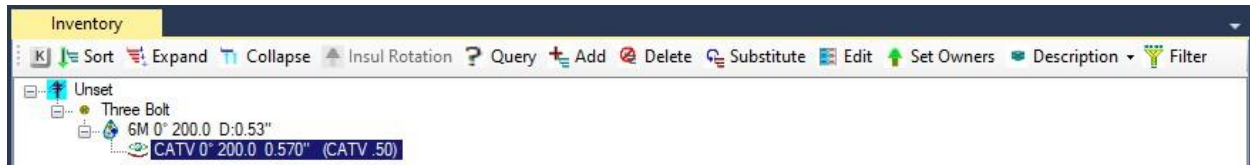
*Note: Only one Span can be added at a time.*

- To add a **Span** from the catalog tabs or the Inventory tab select the appropriate tab and select the span you want to add.



*Note: For additional information on the Catalog Window see [Working With the Catalog Window](#).*

- Select the **Attribute Values Tab** to modify the Span attributes.
- Select **OK**.



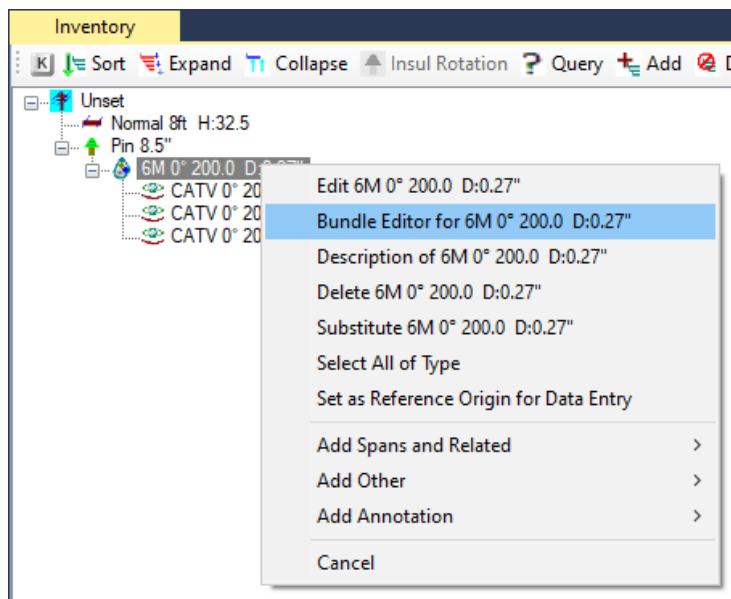
**Note:** To add additional spans to the span bundle complete steps 7 – 11.

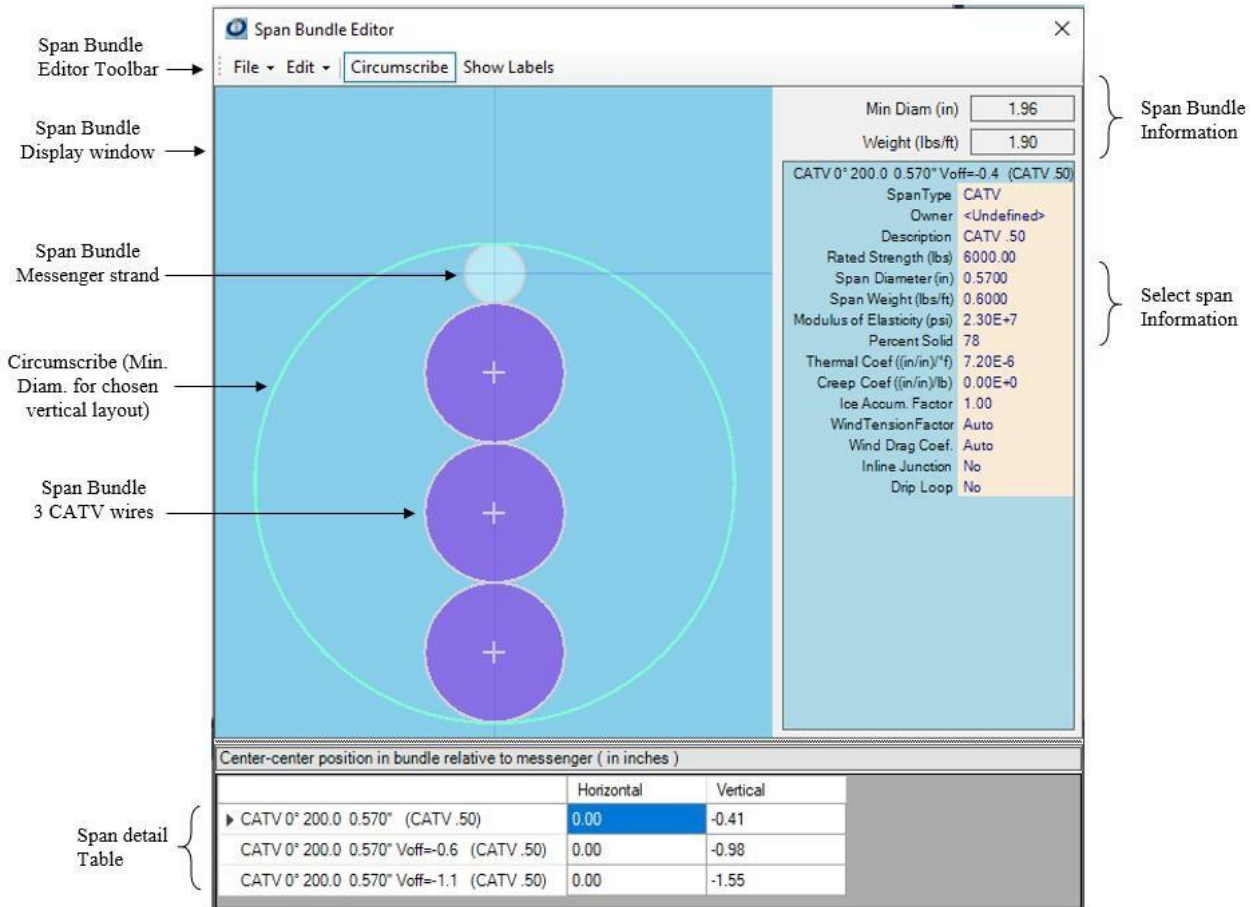
**Note:** To undo additions, select **Edit > Undo**.

## Working with the Span Bundle Editor

Use the Span Bundle Editor to quickly and efficiently edit the spans positions or add additional spans to a span bundle. The diameter value for a communication bundle is displayed in the description information of the messenger wire. To open the Span Bundle Editor, complete the following steps:

1. Right click on the **Span Messenger wire** you want to edit.
2. Select **Bundle Editor for (bundle display name)**.



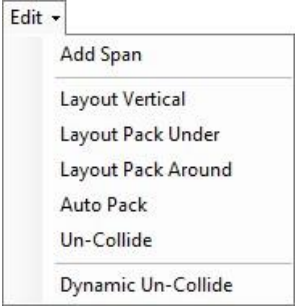


### Span Bundle Editor Toolbar Options

The Span Bundle Editor toolbar menu provides you with a variety of operations and options.



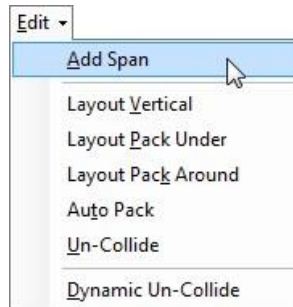
<p><b>File</b> ▾</p> <ul style="list-style-type: none"> <li>Reset View</li> <li>Save</li> <li>Exit</li> </ul>	<p><b>File.</b> The following options are available from the File menu:</p> <p><b>Reset View.</b> Select the Reset View option to set the Span Bundle editor back to the default view.</p> <p><b>Save.</b> Select the Save option to save any changes or additions.</p>
	<p><b>Exit.</b> Select the Exit option to close the Span Bundle Editor.</p>

	<p><b>Edit.</b> The following options are available from the Edit menu:</p> <p><b>Add Span.</b> Select the Add Span option to add a span to the span bundle.</p> <p><b>Layout Vertical.</b> Select the Layout Vertical option to automatically reposition all the spans vertically under the messenger wire.</p> <p><b>Layout Pack Under.</b> Select the Layout Pack Under option to automatically reposition all the spans under the messenger wire.</p> <p><b>Layout Pack Around.</b> Select the Layout Pack Around option to automatically reposition all the spans around the messenger wire.</p> <p><b>Auto Pack.</b> Select the Auto Pack option to have the spans packed as close as possible given their size and layout.</p> <p><b>Un-Collide.</b> Select the Un-Collide option to position the spans so they are not overlaid.</p> <p><b>Dynamic Un-Collide.</b> Select the Dynamic Un-Collide option to automatically un-collide the spans while you're dragging them into position.</p>
<p>Circumscribe</p>	<p><b>Circumscribe.</b> Selecting the Circumscribe option tells you what the minimum circle would be that all the spans and messenger wire could fit into.</p>
<p>Show Labels</p>	<p><b>Show Labels.</b> Select the Show Labels option to display the spans descriptions next to each span in the bundle.</p>

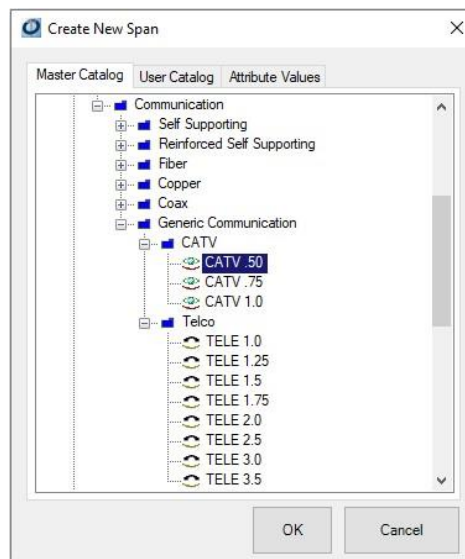
## Adding a Span Bundle to a Span Bundle

To add a span to the Span Bundle using the Span Bundle Editor, complete the following steps:

1. Select **Edit > Add Span**.



*Note: Only one span can be added at a time.*



*Note: Available tabs are dependent on corresponding spans displayed in your catalogs or Inventory Window.*

2. To add a **span** from the Master Catalog or the User Catalog select the appropriate tab and select the span you want to add.

*Note: For additional information on the Catalog Window see [Working With the Catalog Window](#).*

3. Select the **Attribute Values** tab to modify the Span attributes.
4. Select **OK**.

*Note: The span is automatically added to the span bundle and is displayed in the Span Bundle Editor.*

*Note: There is **no Undo** option available. Select File>Save to close the Span Bundle Editor and save any modifications that have been completed.*

5. Select **File > Save**.



## Repositioning Spans in the Span Bundle

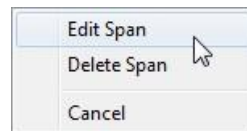
The Span Bundle Editor offers three ways you can reposition spans within the editor, which can affect overall diameter of the bundle. To reposition span(s) in the span bundle use one of the following options:

1. Select **Edit** and select a layout option from the Edit menu.
2. Left click a span in the Span Bundle Display window and **drag the span** to a new location.
3. Manually enter a **Horizontal** and/or **Vertical** value in the Span Detail Table.

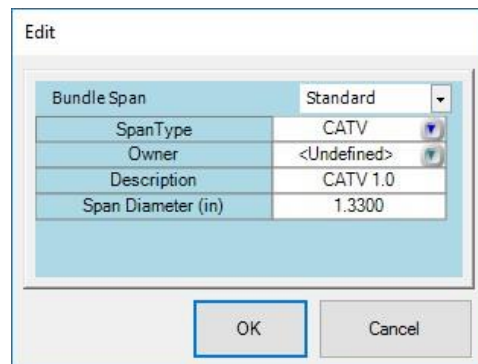
## Editing Spans in the Span Bundle

To edit span attributes from within the Span Bundle Editor, complete the following steps:

1. Right click on the span in the Span Bundle Display window.
2. Select **Edit Span** from the drop-down menu.



3. Complete any modification to the Span Bundle attributes.



4. Select **OK**.

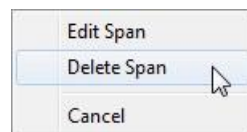
**Note:** There is **no Undo** option available. Select **File>Save** to close the Span Bundle Editor and save any modifications that have been completed.

5. Select **File > Save**.

## Deleting Spans in the Span Bundle

To delete a span within the Span Bundle Editor, complete the following steps:

1. Right click on the span in the Span Bundle Display window.
2. Select **Delete Span** from the drop-down menu.



3. Select **Yes** to the confirmation message: Do you really want to delete the span?

*Note: There is **no Undo** option available. Select File > Save to close the Span Bundle Editor and save any modifications that have been completed.*


4. Select **File > Save**.

## Adding Damage and Decay to Pole

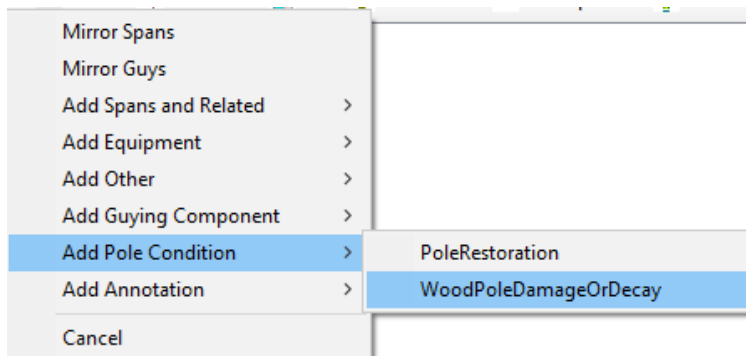
Poles that are not new may have damage or decay. The **WoodPoleDamageOrDecay** object is utilized to reduce the overall strength of the pole based on any damage or decay on the pole. To add damage or decay to a pole, complete the following steps:

1. Select the Pole you want to add damage or decay to.

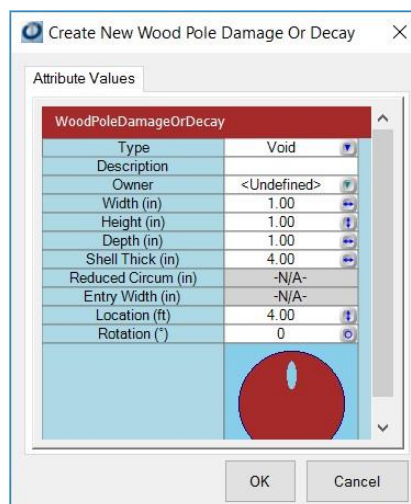


2. Select the **Add** button  and select **WoodPoleDamageOrDecay**.

*Note: The Wood Pole Damage or Decay option can also be accessed by right clicking on the pole in the Inventory Window.*



*Note: Only one piece of damage or decay can be added at a time.*



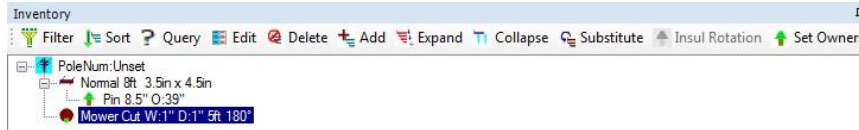
*Note: Available tabs are dependent on corresponding Wood Pole Damages or Decays displayed in your catalogs or Inventory Window.*

3. To add **damages or decay** from the Catalogs tabs or the Inventory tab select the appropriate tab and select the damages or decay you want to add.

*Note:* For additional information on catalogs see [Working With the Catalog Window](#).

4. Select the **Attribute Values tab** to modify the damage or decay’s attributes.
5. Select **OK**.

*Note:* To undo additions, select **Edit > Undo**.



### Adding a Damage and Decay Group Object

Damage or Decay objects can also be grouped together. Create a damage or decay object using the process documented above, and simply duplicate the damage or decay object, with the original decay object as the parent, and each subsequent damage or decay object as a child item. This will prevent a long list of damage and decay items in the Inventory List.

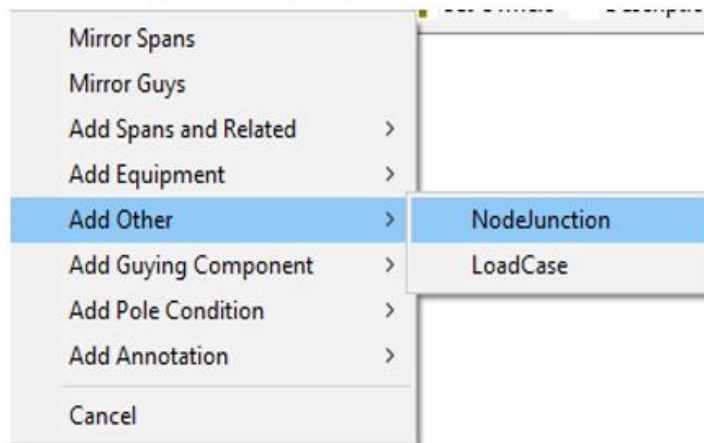
### Adding a Node Junction to Multi-Pole Structures

The Node Junction in an object that helps facilitates connecting Lattice Sections to either individual poles or crossarms. To add a Node Junction to a complete the following steps:

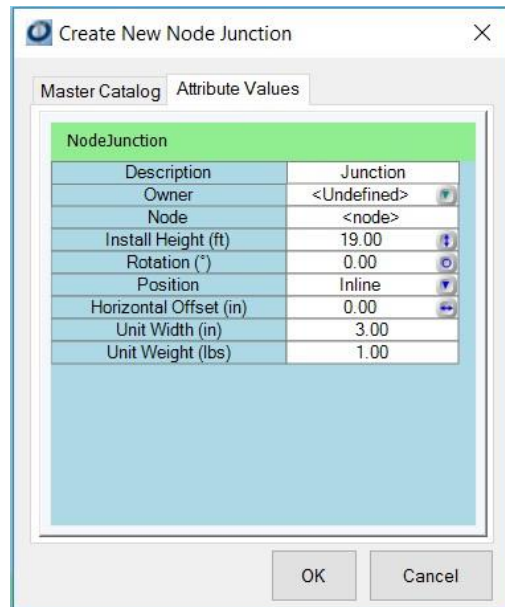
1. Select the **pole** you want to add a **Node Junction** to.



2. Select the **Add** button and **select Node Junction**.



*Note:* The Node Junction can also be accessed by right clicking on the pole in the Inventory Window.



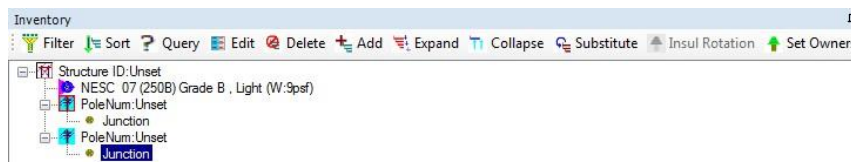
**Note:** Available tabs are dependent on corresponding node junction displayed in your catalogs or Inventory Window.

3. To add a **Node Junction** from one of the Catalogs, select the appropriate tab and select the Node Junction you want to add.

**Note:** For additional information on catalogs see [Working With the Catalog Window](#).

4. Select the **Attribute Values** tab to modify the Node Junction attribute values.
5. Select **OK**.

**Note:** To add additional Node Junctions complete steps 1 – 5.

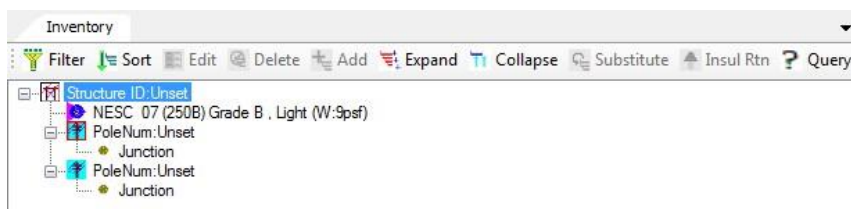



**Note:** To undo additions, select **Edit > Undo**.

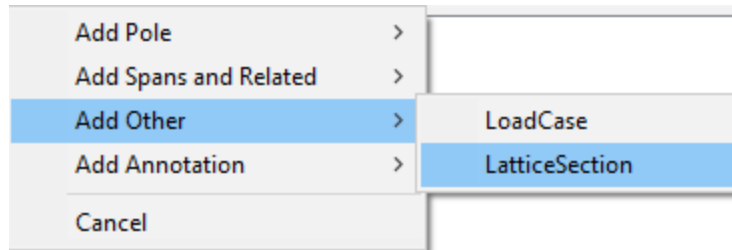
### Adding a Lattice Section to a Multi-Pole Structures

To add a lattice section to a multi-pole structure in the Inventory Window, complete the following steps:

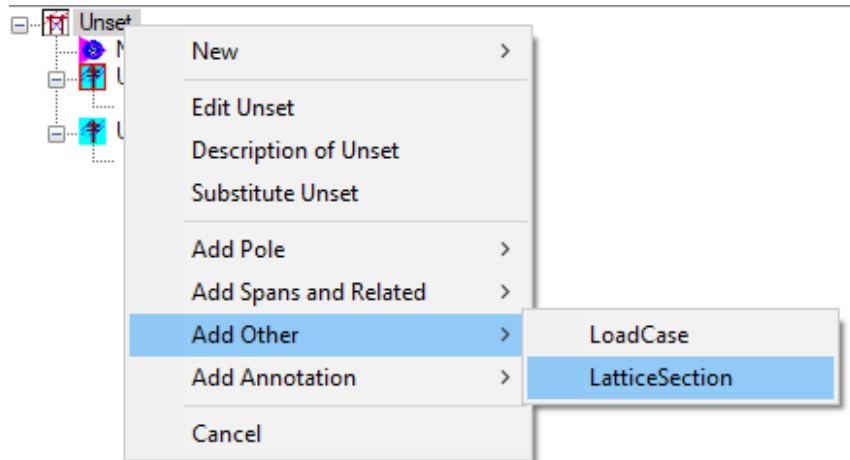
1. Select the **structure** you want to add a **Lattice Section** to.



2. Select the **Add** button  and select **Lattice Section**.

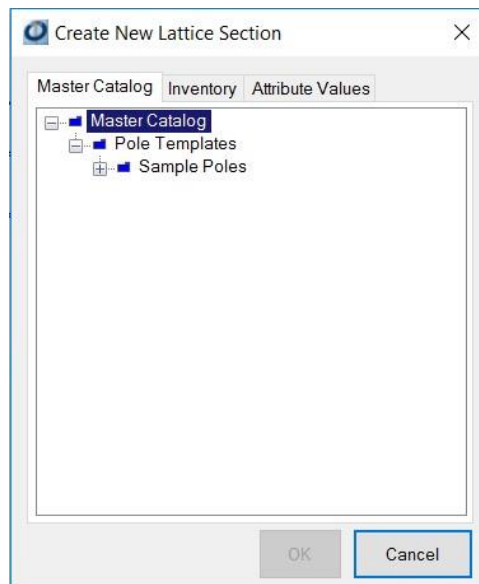


*Note:* The Lattice Section option can also be accessed by right clicking on the structure in the



*Inventory Window.*

*Note:* Available tabs are dependent on corresponding Lattice Section(s) displayed in your catalogs.

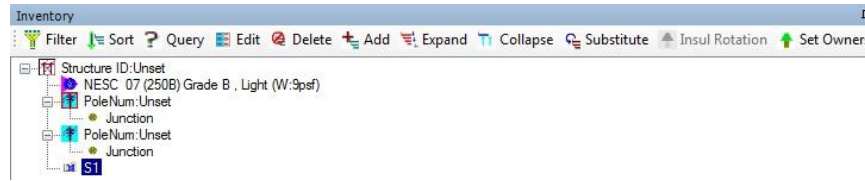


3. To add a **Lattice Section** from one of the Catalogs, select the appropriate tab and select the Lattice Section you want to add.

*Note:* For additional information on catalogs see [Working With the Catalog Window](#).


4. Select the **Attribute Values** tab to modify the Lattice Section attribute values.
5. Select **OK**.

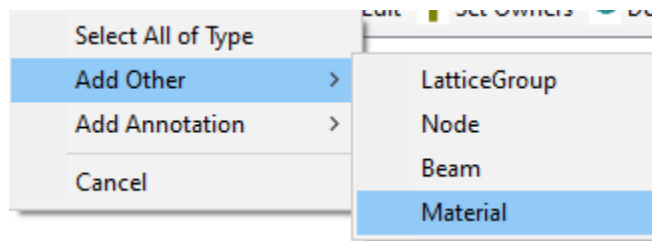
**Note:** To add additional Lattice Sections complete steps 1 – 5. **Note:** To undo additions, select **Edit > Undo**.



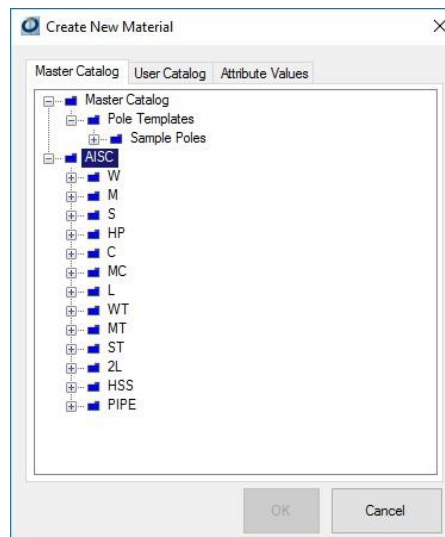
### Adding Material to a Lattice Section

To add material to a lattice section in the Inventory Window, complete the following steps:

1. Select the **lattice section** you want to add **material** to.
2. Select the **Add** button  and select **Material**.



**Note:** Materials can also be added by right clicking on a lattice section in the Inventory Window.



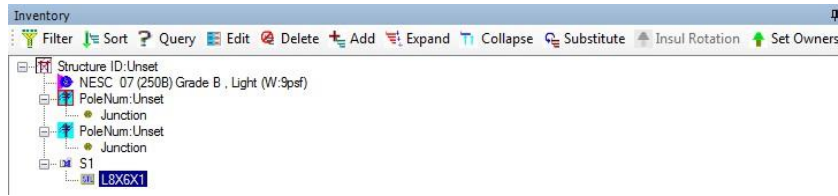
**Note:** Available tabs are dependent on corresponding materials displayed in your catalogs.

3. To add **Material** from one of the Catalogs, select the appropriate tab and select the Material you want to add.

**Note:** For additional information on catalogs see [Working With the Catalog Window](#).

4. Select the **Attribute Values** tab to modify the Material’s attribute values.
5. Select **OK**.

**Note:** To add additional beams complete steps 1 – 5.

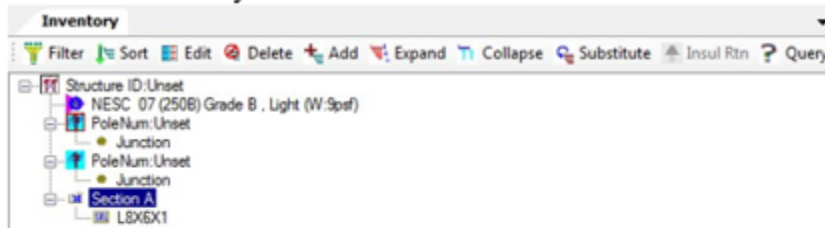



*Note:* To undo additions, select **Edit > Undo**.

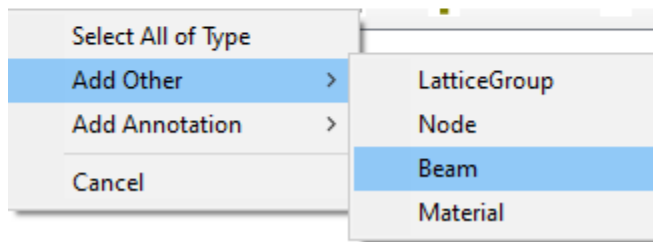
### Adding Beams to a Lattice Section

To add beams to a lattice section in the Inventory Window, complete the following steps:

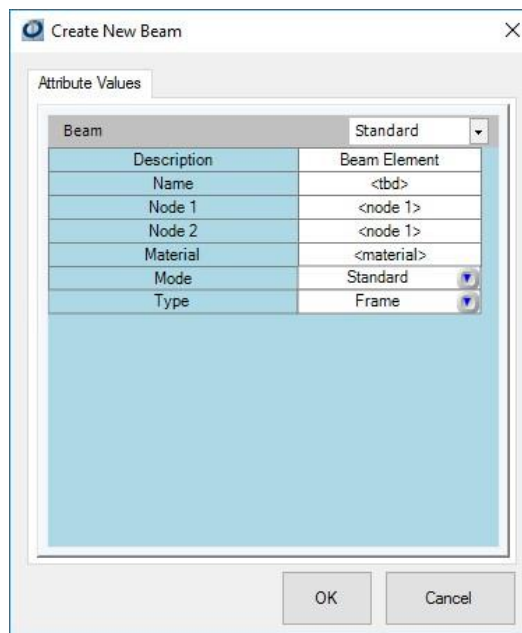
1. Select the **lattice section** you want to add a **beam** to.



2. Select the **Add** button  and select **Beam**.



*Note:* Beams can also be added by right clicking on a lattice section in the Inventory Window.



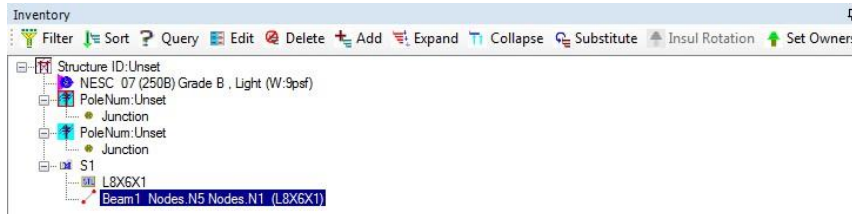
*Note:* Available tabs are dependent on corresponding beam displayed in your catalogs.

3. To add a **Beam** from one of the Catalogs, select the appropriate tab and select the Beam you want to add.

*Note:* For additional information on catalogs see [Working With the Catalog Window](#).

4. Select the **Attribute Values** tab to modify the Beam’s attribute values.
5. Select **OK**.

*Note:* To add additional beams complete steps 1 – 5.

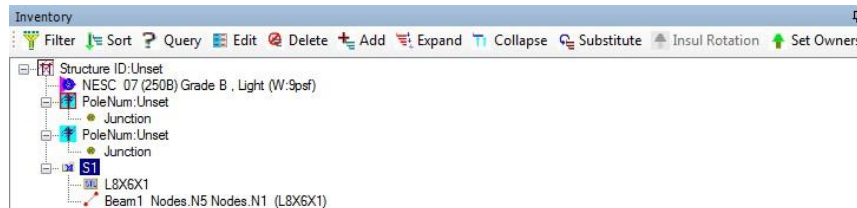



*Note:* To undo additions, select **Edit > Undo**.

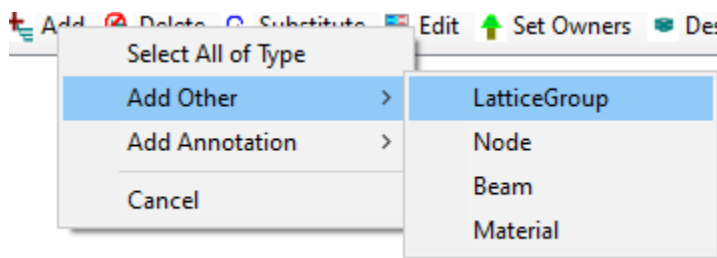
### Select Adding a Lattice Group to a Lattice Section

To add a lattice group to a lattice section in the Inventory Window, complete the following steps:

1. Select the **lattice section** you want to add a **lattice group** to.

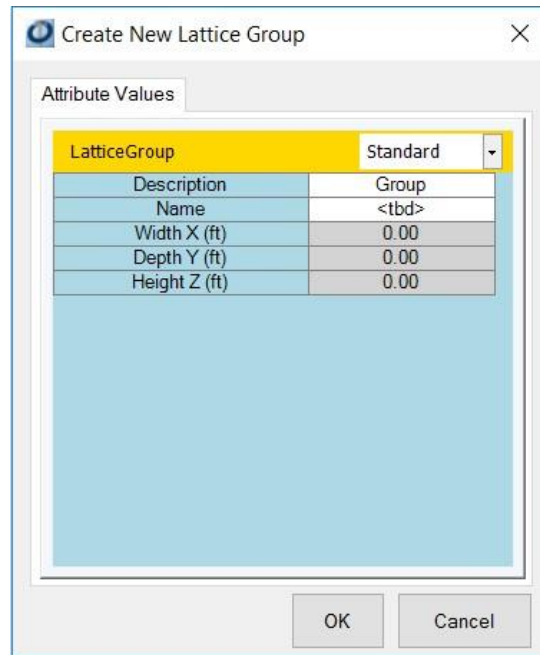


2. Select the **Add** button  and select **Lattice Group**.



*Note:* Lattice groups can also be added by right clicking on the lattice section in the Inventory Window.





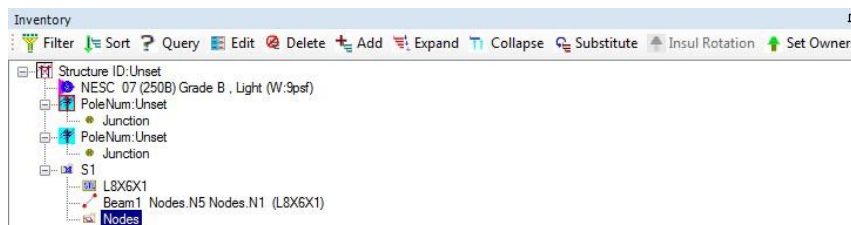
**Note:** Available tabs are dependent on corresponding lattice groups displayed in your catalogs.

3. To add a **Lattice Group** from one of the Catalogs, select the appropriate tab and select the Lattice Group you want to add.

**Note:** For additional information on catalogs see [Working With the Catalog Window](#).

4. Select the **Attribute Values** tab to modify the Lattice Group's attribute values.
5. Select **OK**.

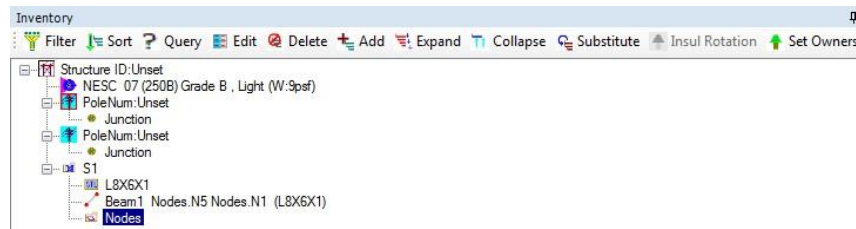
**Note:** To add additional lattice groups complete steps 1 – 5.



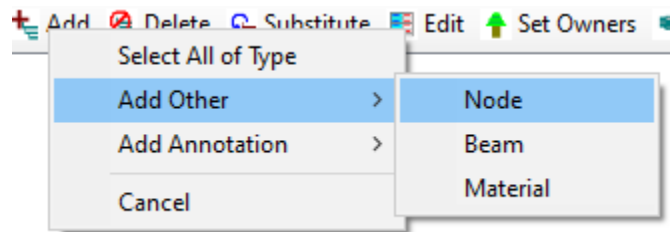
**Note:** To undo additions, select **Edit>Undo**.

### Adding Nodes to a Lattice Group

To add node(s) to a lattice group in the Inventory Window, complete the following steps: 1. Select the **Lattice Group** you want to add a **Node** to.



2. Select the **Add** button  and select **Node**.



**Note:** Nodes can also be added by right clicking on the lattice group in the Inventory Window.

Node	Standard
Description	Node
Name	<td>
X Coord (ft)	0.00
Y Coord (ft)	0.00
Z Coord (ft)	0.00

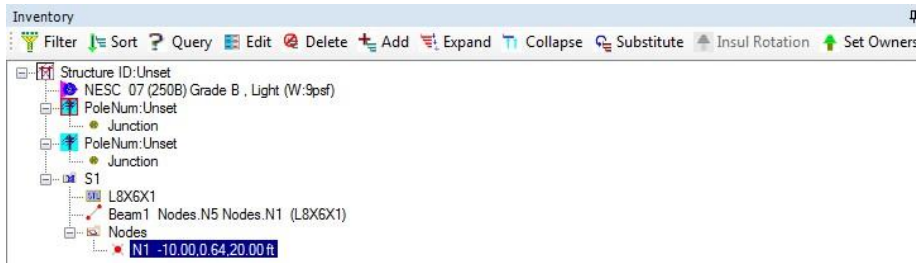
**Note:** Available tabs are dependent on corresponding nodes displayed in your catalogs.

3. To add a **Node** from one of the Catalogs, select the appropriate tab and select the Node you want to add.

**Note:** For additional information on catalogs see [Working With the Catalog Window](#).

4. Select the **Attribute Values** tab to modify the Node's attribute values.
5. Select **OK**.

**Note:** To add additional nodes complete steps 1 – 5. **Note:** To undo additions, select **Edit** > **Undo**.



## Editing Equipment Attributes

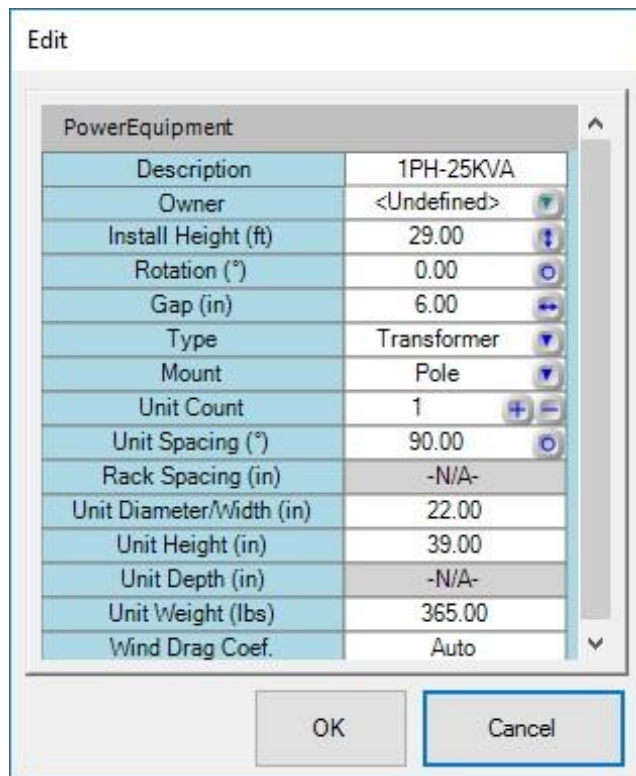
To edit equipment attribute(s), complete the following steps:

1. Select the **equipment** whose attribute you want to edit.









2. Select the **Edit** button  **Edit**.

**Note:** The Edit option can also be accessed by right clicking on the equipment whose attributes need to be edited and selecting **Edit (Pole or equipment display name)**.








### Edit Icons

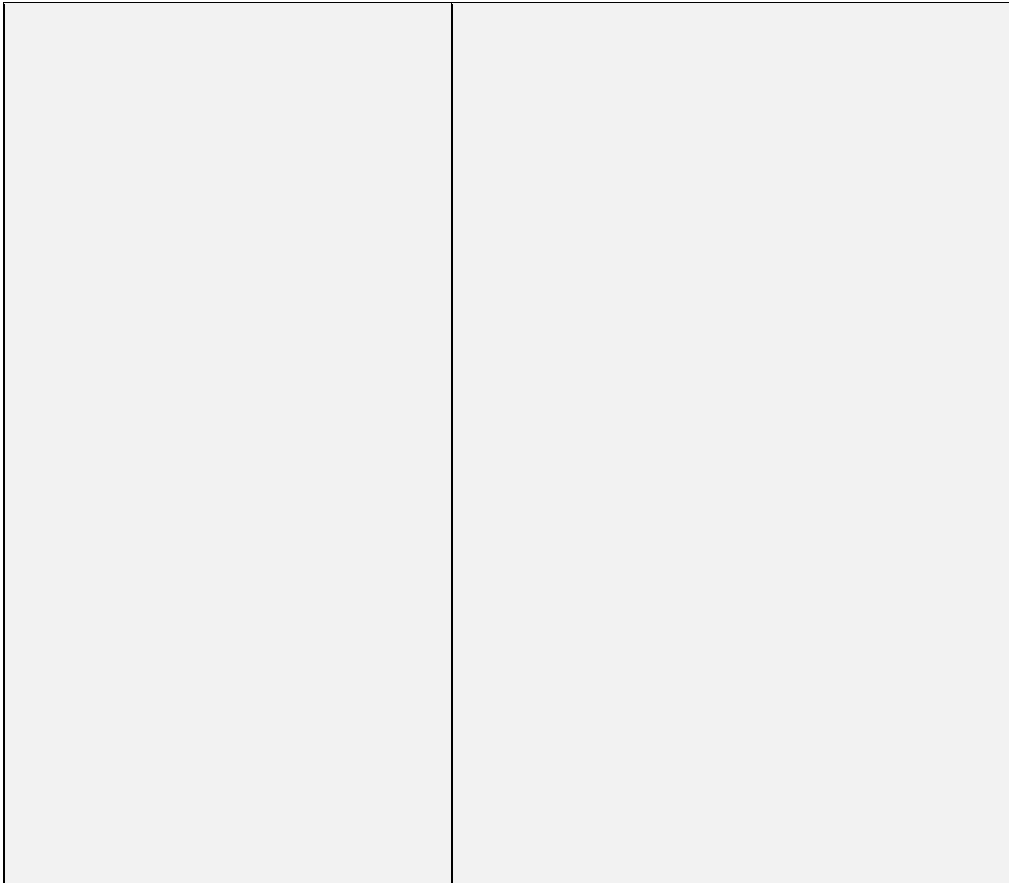
<i>Edit Icons</i>	<i>Description</i>
-------------------	--------------------

	Allows you to select a value or extend the default list.
	Allows you to change the vertical value based on mouse movement.
	Allows you to increase or decrease the rotation value based on mouse movement.
	Allows you to select a value from a predefined list.
	Allows you to increase or decrease the value.
	Allows you to toggle the value to Yes or No.

*Other Editable Icons that are available when different attachments are selected:*

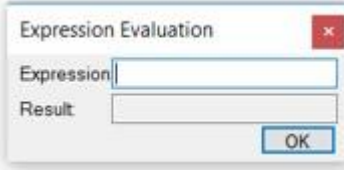

<i>Editable Icons</i>	<i>Description</i>
	Allows you to change the horizontal value based on mouse movement.
	Found within a Note attachment. When selected a calendar option is enabled, allowing you to select a specific date for a selected attribute.
	Found within a Note attachment. When selected the selected Note is displayed in edit mode.
	Allows you to select the color.
	Allows you to open a table and change values within the table.  (Example: When a pole’s Moment Cap attribute table icon is selected it provides a table allowing you to change the values of the Moment Capacity vs. Height)





<b>C@NNN</b>	<b>c@nnn</b> sets the 'height of attachment' or 'Install Height' value to correspond to the center point of an object.
<b>B@NNN</b>	<b>b@nnn</b> sets the 'height of attachment' or 'Install Height' value to correspond to the bottom of an object.

<p><b><u>ROTATIONS</u></b>  <b>ABS=NNN</b>  <b>AB=NNN</b></p> <p><b>ABS=~NNN</b>  <b>AB=~NNN</b></p> <p><b>IND=NNN</b></p> <p><b>REF=+NNN</b>  <b>REF=-NNN</b></p>	<p><u>Rotation Shortcuts:</u> abs=nnn sets absolute rotation (compass coordinates) to the entered value.                  (example: abs=90 or ab=90)</p> <p>abs=~nnn adds 180 degrees to the entered value.                  (Example: abs=~90 or ab=~90)</p> <p>ind=nnn independently rotates an object without effecting the rotation of any attached objects.</p> <p>ref=(+/-)nnn adjusts the ‘rotation’ of an object in reference to (relative to) another object by entering a rotation value.</p> <p><i>Note: You must enter either a (+/-) sign before the angle to rotate the object in a given direction from the reference origin angle.</i></p>
<p><b><u>WIRES</u></b>  <b>MOE=</b></p> <p><b>AWG=NNN</b></p>	<p><u>Wire Shortcuts:</u> moe= enables the Modulus of Elasticity Calculator. The MOE value can be adjusted in the calculator and populated into the Data Entry panel.                  Note: For additional information on working with the Modulus of Elasticity Calculator, see <a href="#">Working with the Modulus of Elasticity Calculator</a>.</p> <p>awg=nnn populates the standard diameter from the AWG Table.                  (Example: awg=10 will automatically populate the AWG Gauge 10 conductor diameter)</p>
<p><b><u>CIRCUMFERENCES</u></b>  <b>DIAM=NNN</b>  <b>D=NNN</b></p>	<p><u>Circumference Shortcuts:</u>                  diam=nn enters the diameter which is then automatically converted to a circumference value.</p>
<p><b>RADIUS=NNN</b>  <b>R=NNN</b></p>	<p>(Example: diam=12.5 or d=12.5 will automatically be converted to circumference value) radius=nnn enters the radius which is then automatically multiplied by two.                  (Example: radius=12.5 or r=12 )</p>

<p><b><u>EXPRESSIONS CTRL+E</u></b></p>	<p><b>Expressions Shortcut:</b> ctrl+e enables the Expression Evaluation which allows you to enter expression values and the results are automatically populated into the Data Entry panel.</p>  <p>Enter the Expression and select OK.</p>
<p><b><u>CALCULATOR CTRL+F</u></b></p>	<p><b>Calculator Shortcut:</b> ctrl+f enables the Calculator which allows you to enter calculations that are then automatically populated into the Data Entry panel.</p>  <p>Enter a calculation and select <b>OK</b>.</p>

3. Complete your edits to the equipment's attributes.

*Note: Certain attributes are only editable in Administrative User Mode.*

4. Select **OK**.

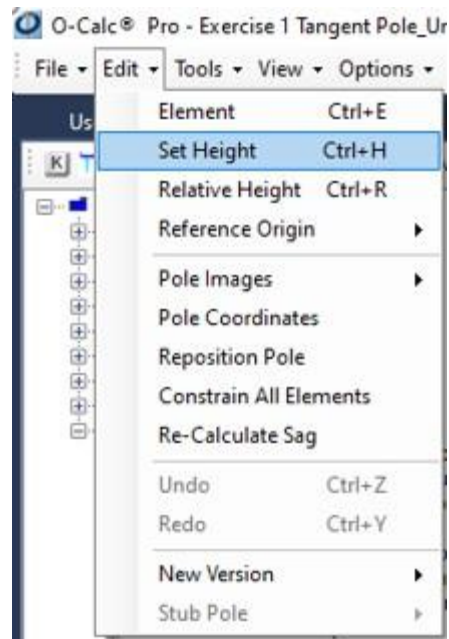
*Note: To undo edits, select **Edit > Undo**.*

## Setting the Height of Equipment

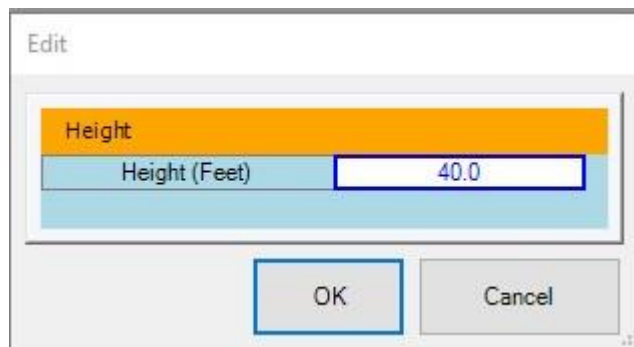
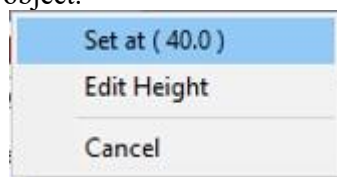
In the Edit tab are options to set the height of an object on the pole:

1. Select the object you want to set the height for.
2. Select **Edit > Set Height**.





3. Select the **Set at** default option or select the **Edit Height** option and enter a value for the selected object.

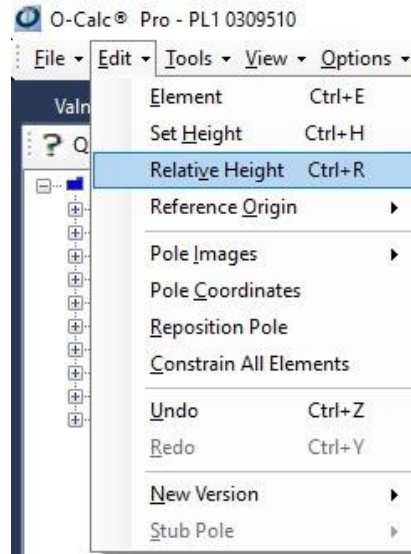


4. Click **OK**.

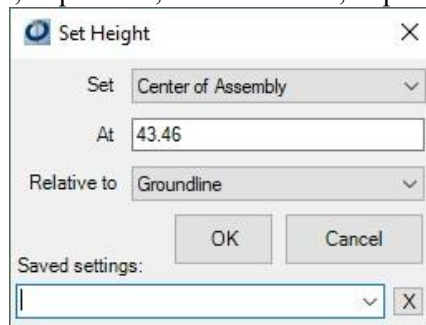
### Setting Relative Height

In the **Edit** tab are options to set the relative height of an object on the pole:

1. Select the object to set the relative height for on the pole.
2. Select **Edit > Relative Height**.



3. Set the parameters for the relative height;
  - a. Choose what part of the object to set at the relative height; the Center of the Object, Top of the object, or the Bottom of the object
  - b. Choose the value for the offset
  - c. Choose what the height or offset will be relative to; Groundline, Tip of Pole, Top Power, Bottom Power, Top Comm, Bottom Comm

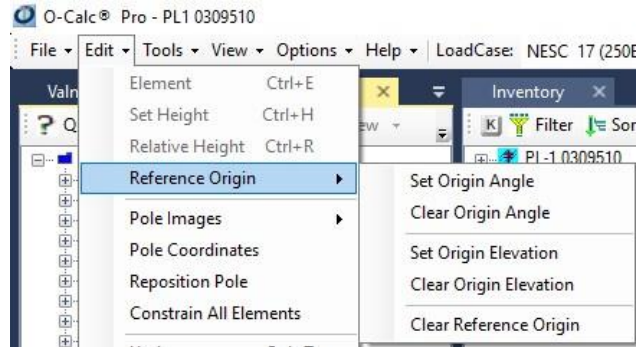


4. Click **OK**.

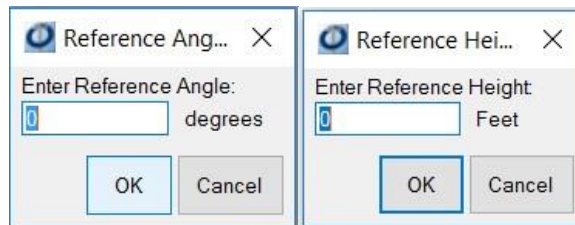
## Setting a Reference Origin

In the Edit tab are options to Set Origin Angle and Set Origin Elevation for an object on a pole:

1. Select the object you want to use as the reference point and select the desired option; **Set Origin Angle** or **Set Origin Elevation**.

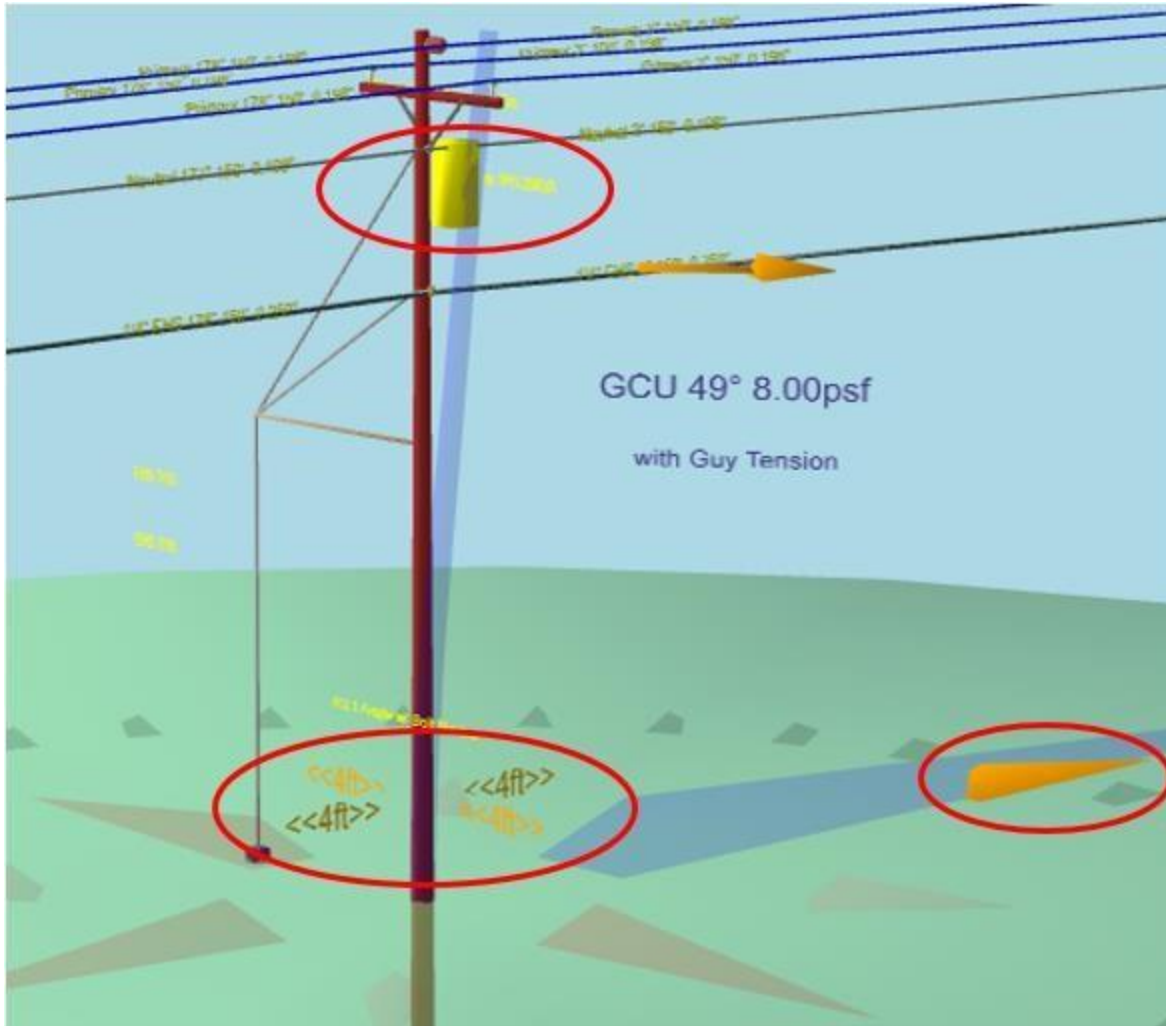


2. Once selected, enter the value for the Reference Angle or Reference Height option. When entering the Reference Height value, the specified value is displayed on the object in the 3-D screen.



3. Select **Clear Reference Origin** to clear the option and remove the value displayed on the object in the 3-D screen.

***Note:** When using the Reference Height option, the reference object is highlighted yellow. An orange marker is placed on the ground line compass in the 3-D view and the specified value is displayed on the screen for the corresponding Reference Angle.*



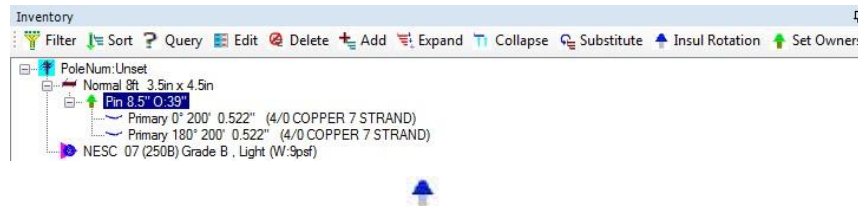
***Note:** When selecting the Reference Height, the value is also displayed in the Schematic window, as shown below.*



### Rotating Insulators to Match Span Angles

To rotate an insulator to be appropriate for attached span angles, complete the following steps:

1. Select the insulator you want to rotate.



2. Select the **Insulator Rotation** button

The selected insulator is automatically rotated to the span angle.

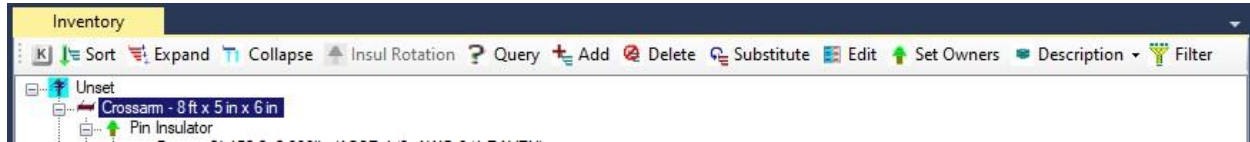
*Note: The Rotate to Span Angle option can also be accessed by right clicking on the insulator to be rotated and selecting **Rotate to Span Angle**.*

*Note: To undo the insulator rotation change, select **Edit > Undo**.*

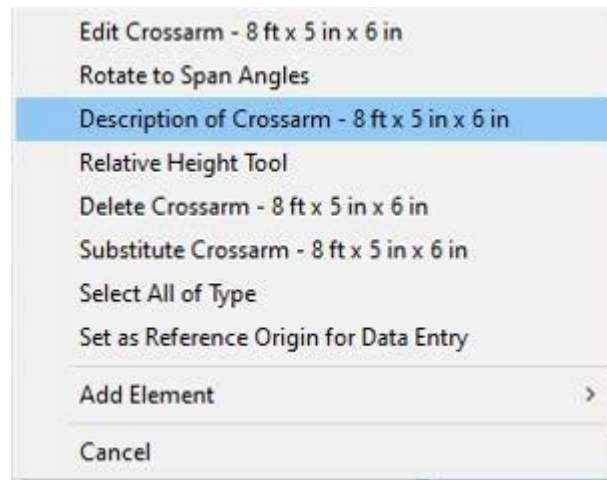
## Changing a Description

To change the description that displays next to a pole or attached equipment's icon in the Inventory Window, complete the following steps:

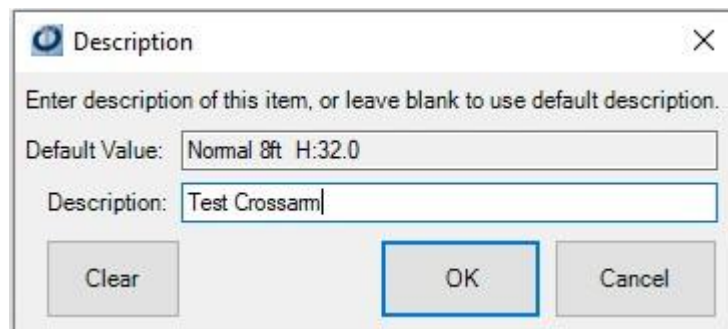
1. Right click on the **pole** or **attached equipment** you want to change the display description of.



2. Select **Description of (pole or equipment display name)**.

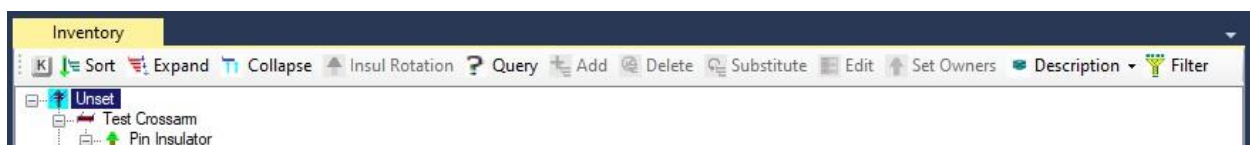


3. Enter the **Description** you would like to be displayed.



*Note:* Select **Clear** to clear the description field and use the default value.

4. Select **OK**.

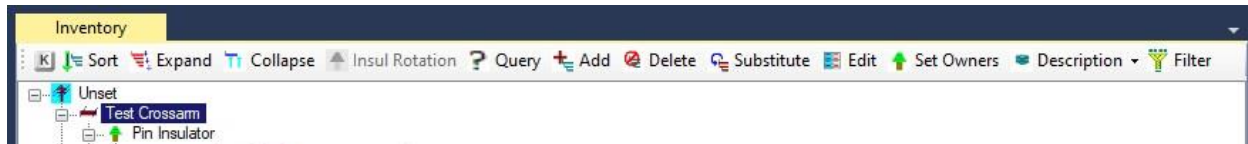


*Note:* To undo the display description change, select **Edit>Undo**.

## Deleting Attached Equipment

To delete equipment that is attached to a pole, complete the following steps:

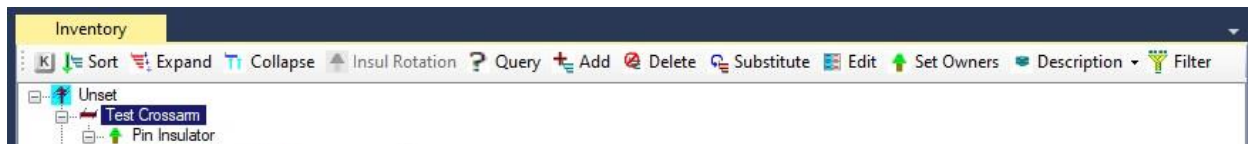
1. Select the equipment to be deleted.



2. Select the **Delete** button .

***Note:** Multiple pieces of equipment can be deleted concurrently if they are all the same type of equipment. Hold down the Ctrl key to select more than one piece of equipment at random within the Inventory list. Hold down the Shift key to select a 'range' of equipment objects within the Inventory list by clicking on a top and a bottom piece of equipment that are in sequence.*

***Note:** Individual equipment can also be deleted by right clicking on the equipment to be deleted and selecting **Delete (equipment)**. Or by clicking on the Delete key on your keyboard.*

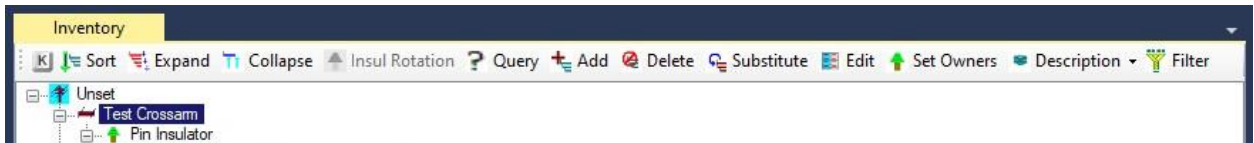


***Note:** To undo a deletion, select **Edit > Undo**.*

## Substituting Attached Equipment

To substitute attached equipment in the Inventory Window, complete the following steps:

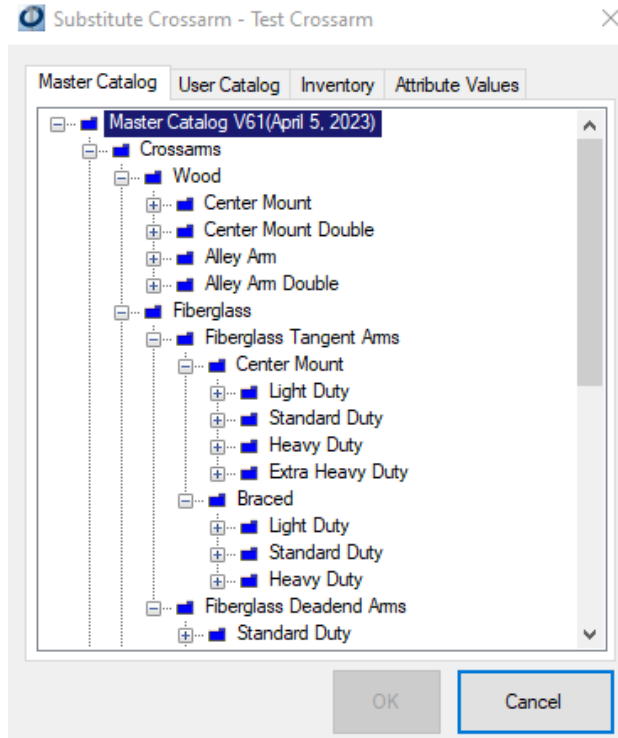
1. Select the **equipment** you would like to substitute.



***Note:** Multiple pieces of equipment can be substituted concurrently if they are all the same type of equipment. Hold down the Ctrl key to select more than one piece of equipment at random within the Inventory list. Hold down the Shift key to select a 'range' of equipment objects within the Inventory list by clicking on a top and bottom piece of equipment that are in sequence.*

2. Select the **Substitute** button .

***Note:** The Substitute option can also be accessed by right clicking on the equipment that needs to be substituted and selecting **Substitute (Equipment display name)**.*

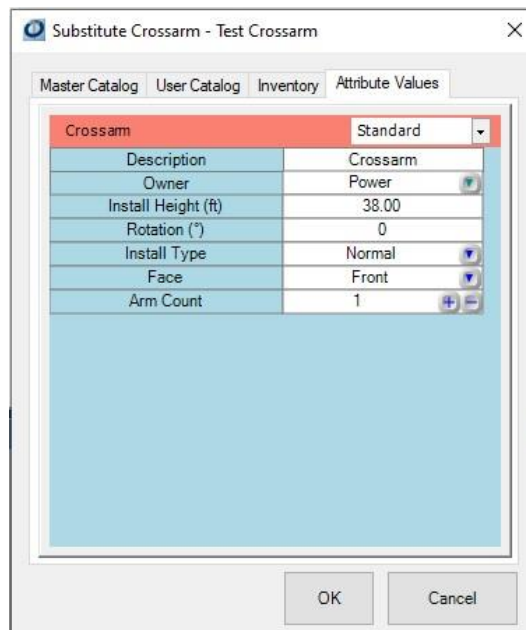


**Note:** Available tabs are dependent on corresponding equipment displayed in your catalogs or Inventory Window.

3. To **substitute** equipment from the Catalogs or the Inventory tab, select the appropriate tab and select the equipment you want to use as a substitution.

**Note:** For additional information on catalogs see [Working With the Catalog Window](#).

4. Select the **Attribute values tab** to modify the equipment’s attributes.



**Note:** To substitute equipment with equipment from the Catalog Window or in the Inventory Window select the appropriate tab and select the equipment you want to use as the substituted



equipment. For additional information on the Catalog Window see [Working With the Catalog Window](#).

5. Select **OK**.



**Note:** To undo the substitution change, select **Edit>Undo**.

### Substituting a Pole

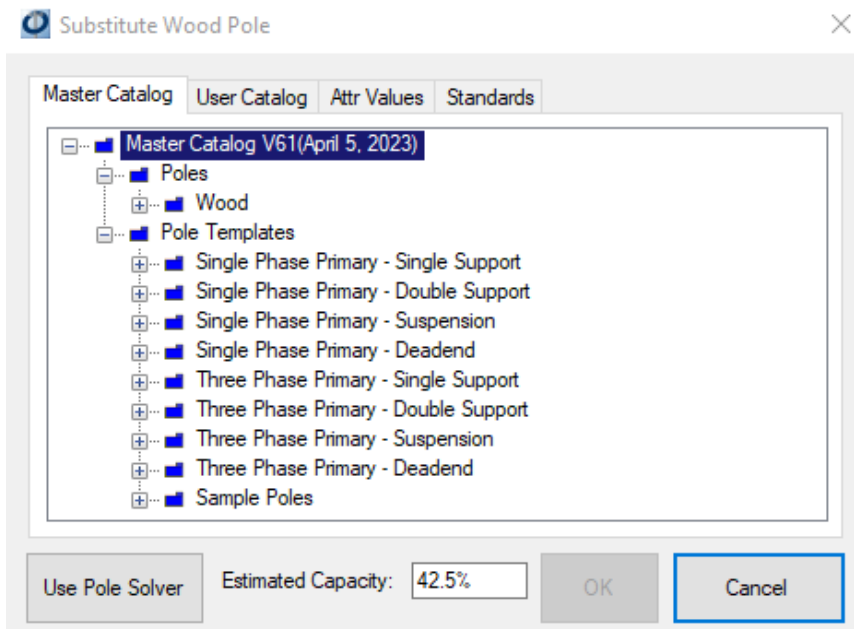
To substitute a pole in the Inventory Window O-Calc® Pro provides you with three options. You can either manually select the substitute pole, select the substitute pole from the Catalog Window or you can use the Pole Solver option to help you select the substitute pole. The pole solver option will display the minimum pole class and the estimated capacity that would be used based on the pole’s current load. To substitute the current pole, complete the following steps:

1. Select the **pole** you would like to substitute.



2. Select the **Substitute** button.

**Note:** The Substitute option can also be accessed by right clicking on the pole and selecting **Substitute (Pole’s display name)**.



**Note:** Available tabs are dependent on corresponding equipment displayed in your catalogs or Inventory Window.

**Note:** *Estimated Capacity will display Infinity% until a pole is selected.*

- Use one of the following methods to select the substitute pole you want:

**Note:** *The Estimated Capacity percentage will automatically be updated dependent on your attribute selections.*

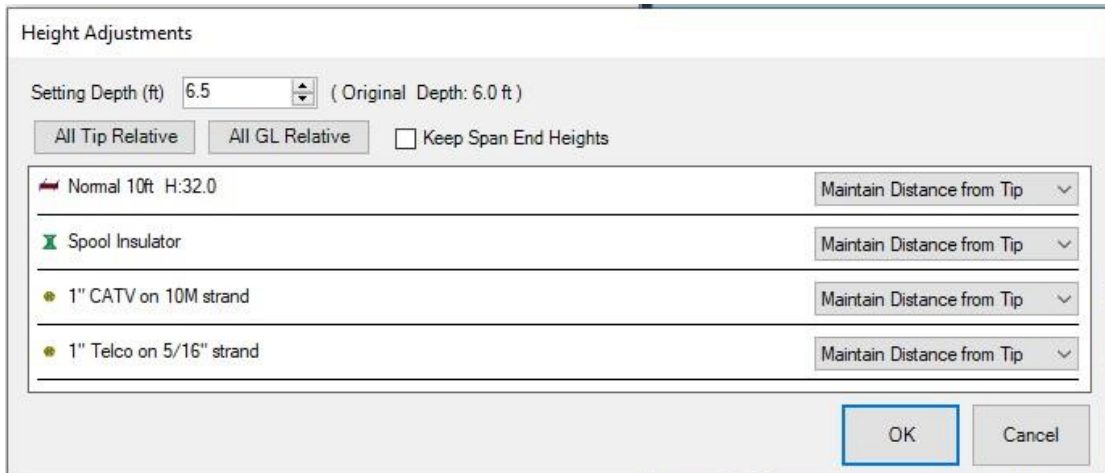
- Manually** select the substitute pole attributes from the Attribute Values or Standards tab.
- Select the substitute pole from a **Catalog** tab. The attributes can still be modified if needed in the Attribute Values tab.

**Note:** *For additional information on the Catalog Windows see [Working With the Catalog Window](#).*

- Select the **Use Pole Solver** button  to have O-Calc® Pro automatically select the minimum Pole Class estimated to provide you with a passing pole.

- Select **OK**.





If there are attachments already on the pole the **Height Adjustments** window will automatically be displayed. The Height Adjustment window allows you to adjust the substitute poles depth and the height of the attachments relative to groundline or distance from tip on the newly substituted pole.



Height Adjustments

Setting Depth (ft)  ( Original Depth: 6.0 ft )

All Tip Relative  All GL Relative  Keep Span End Heights

 Normal 10ft H:32.0	Maintain Distance from Tip ▾
 Spool Insulator	Maintain Distance from Tip ▾
 1" CATV on 10M strand	Maintain Distance from Tip ▾
 1" Telco on 5/16" strand	Maintain Distance from Tip ▾

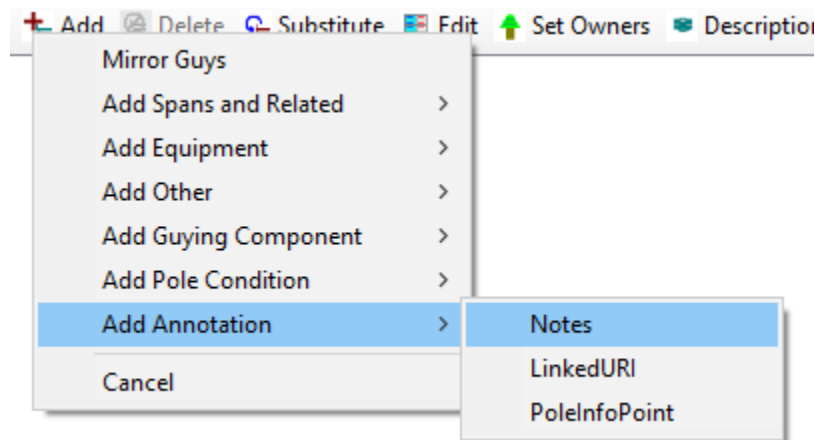
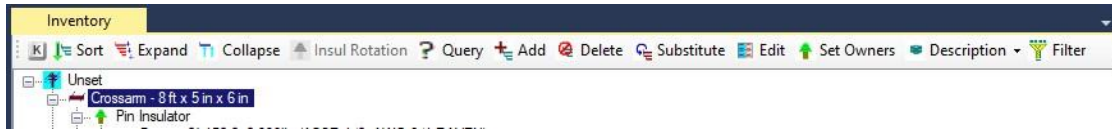
- Modify the **Pole Depth** if required.
- Verify and change each **attachment height** if required.
- Select **OK**.

**Note:** *To undo the substitution change, select **Edit > Undo**.*

## Adding a Note to a Pole or Equipment

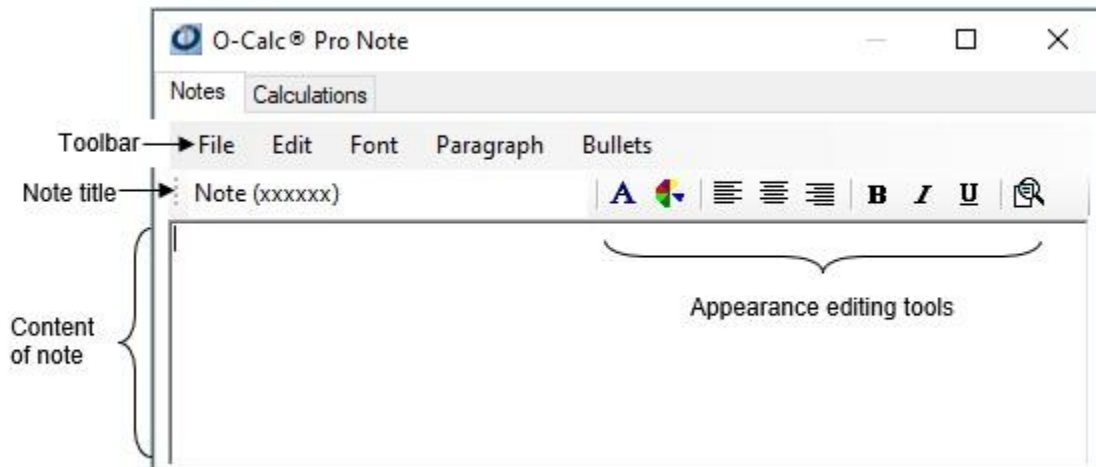
To add a note and/or calculations to a pole or attached equipment in the Inventory Window, complete the following steps:

1. Select the **Pole** or pole attachment such as the **Crossarm**.



*Note:* The **Notes** option can also be accessed by right clicking on any equipment to add a note.

3. Enter a note **Title**, and the note **Content**.



## Editing a Note

To edit a note or the calculations, complete the following steps:

1. Select the **note** you want to edit.




2. Select the **Edit** button 

**Note:** The edit option for a note can also be accessed by right clicking on a note and either selecting **Edit Note**, **Edit Note Contents** or **View/Print Note**.

Notes	
Description	Note (Inewcomb)
Note Type	Normal
Owner	<Undefined>
Author	Inewcomb
Date	12/14/2021
Contents	Press to View >>

**Note:** Basic changes to a Notes Description, Note Type, Owner, Author or Date can be made right from the Data Entry window. Content changes to a Note or Calculations need to be completed from within the Note window.

3. Select the **Contents Press to View >>** button .
4. Complete your edits to the note contents or the calculations.
5. Select **File > Save**.

**Note:** To undo the addition of the Note, select **Edit > Undo** from the main toolbar.

## Changing the Note Type

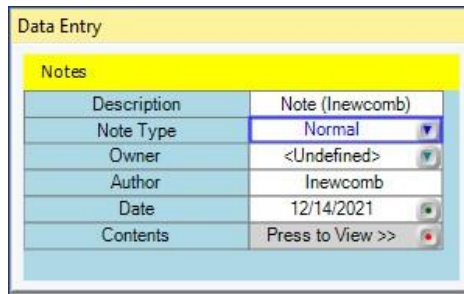
The note type field allows you to easily flag a structure as needing additional interaction. To change the note type, complete the following steps:


1. Select the **note** whose type you want to change.

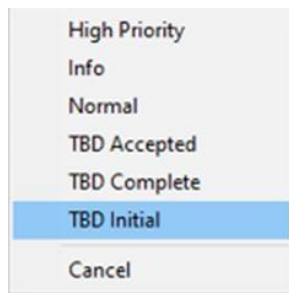


2. Select the **Edit** button .

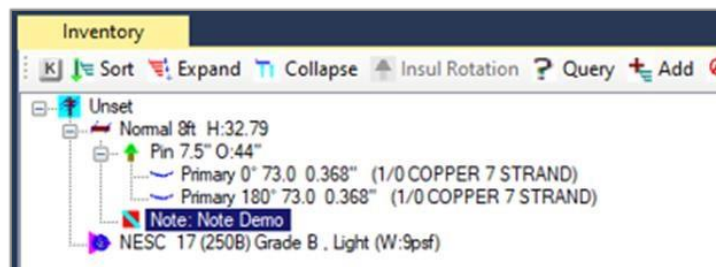
**Note:** You can also edit a note by right clicking on a note and selecting the **Edit Note** option.



3. Select the **Note Type** icon .
4. Select a **Note Type** from the predefined list.





Note Type is set to **TBD Initial** →






*Note:* To have TBD Notes highlighted in the Inventory Window, enable the option in **Options > Info tips and Data > Show TBD Item Status**.

### Understanding Note Type Icons

The Note icon in the Inventory Window will vary depending on what Note Type is selected.

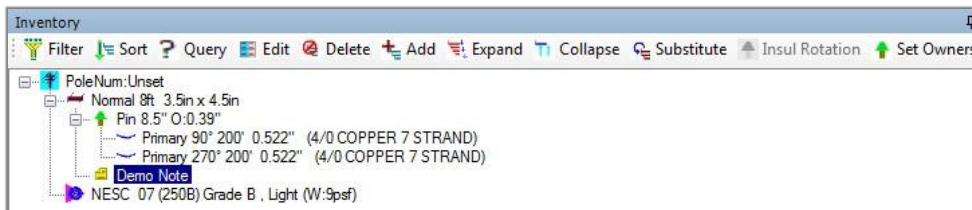
<i>Note Type Icons</i>	<i>Description</i>
	<b>Normal or Info</b>
	<b>High Priority</b>

	<p><b>TBD Initial</b></p> <p><i>Note: The note, the pole, and the object that the highlighted note is attached to will be red if Show TBD Item Status is enabled.</i></p>
	<p><b>TBD Complete</b></p> <p><i>Note: The note, the pole, and the object that the note is attached to will be highlighted yellow if Show TBD Item Status is enabled.</i></p>
	<p><b>TBD Accepted</b></p> <p><i>Note: The note, the pole, and the object that the highlighted note is attached to will be green if Show TBD Item Status is enabled.</i></p>

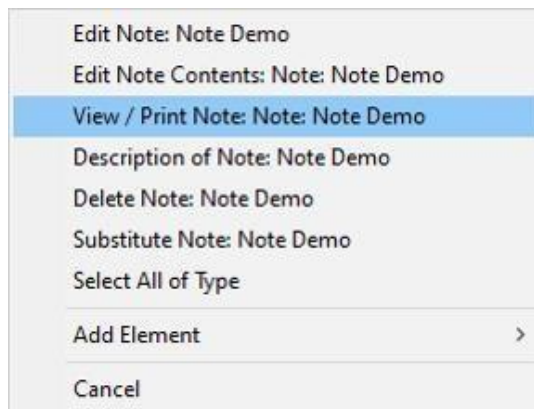
### View or Print a Note

To view or print a note, complete the following steps:

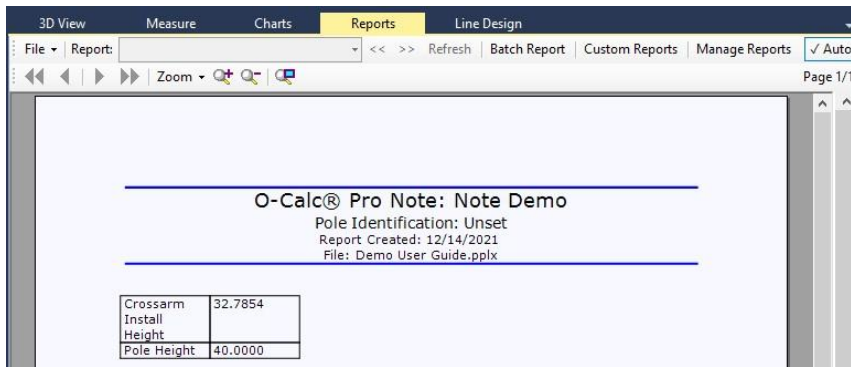
1. Right click on the **note** you view or print.



2. Select **View / Print Note (note display name)**.



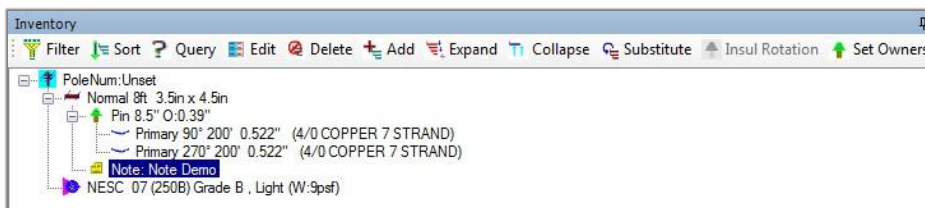
The selected note will automatically display in the **Reports** window.



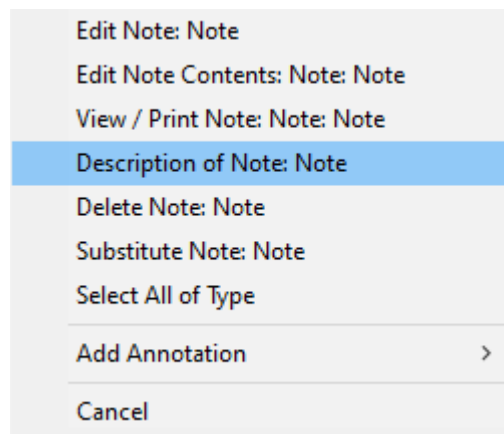
### Changing the Description of a Note

To change the description that displays next to a note icon in the Inventory Window, complete the following steps:

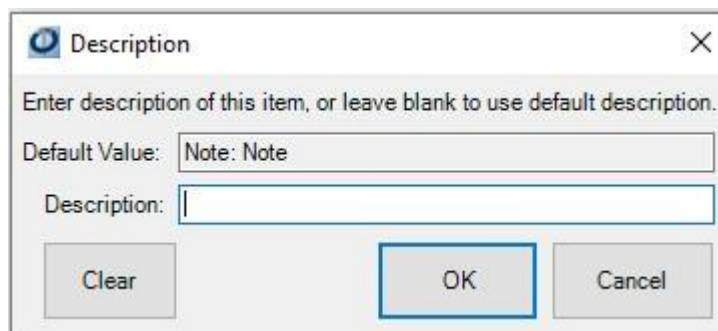
1. Right click on the **note** you want to change the display description of.



2. Select **Description of (note display name)**.

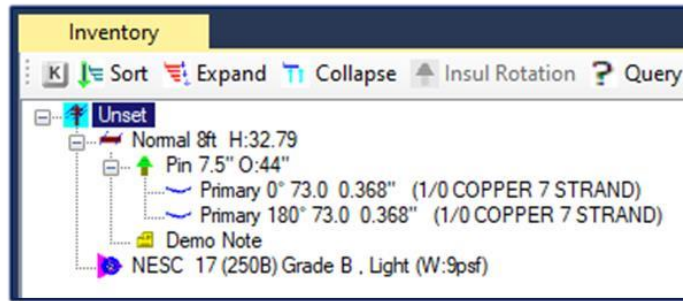


3. Enter the **Description** you would like to be displayed.



**Note:** Select **Clear** to clear the description field and use the default value.

4. Select **OK**.



*Note:* To undo the display description change, select **Edit > Undo**.

### Deleting a Note

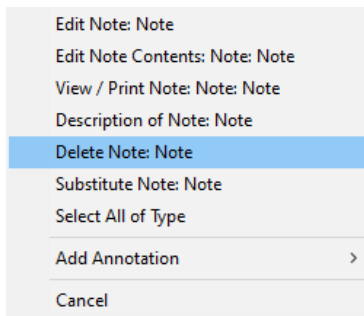
To delete a note, complete the following steps:

1. Select the **Note** to be deleted.



2. Select the **Delete** button  **Delete**.

*Note:* Notes can also be deleted by right clicking on the note to be deleted and selecting **Delete (note display name)**.



*Note:* To undo a deletion, select **Edit > Undo**.

### Substituting a Note

To substitute a note, complete the following steps:

1. Select the **note** you would like to substitute.

2. Select the **Substitute** button  **Substitute**.





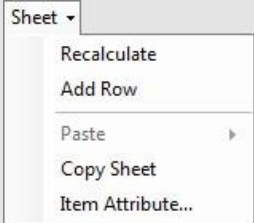

*Note: The Substitute option can also be accessed by right clicking on the note that needs to be substituted and selecting **Substitute (Note display name)**.*

## Adding a Calculation to a Pole or Equipment

From the Note Window, the Calculations tab provides a lightweight spreadsheet that allows you to enter values such as numeric and string variables, but it also allows you to enter basic calculations. Numeric values can also be obtained from the selected equipment’s attributes or the selected equipment’s parent objects. To add a Calculation to the Note, follow these steps:

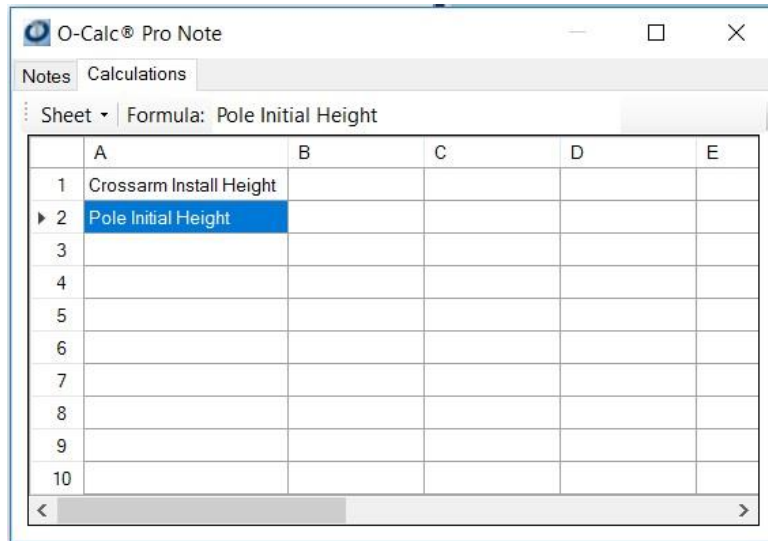
1. Select the **Add** button  and select the **Notes** option.
2. Select the **Calculations** tab.

*Note: When working with the Measure Window numeric values can also be obtained from taking actual image measurements. For additional information on this, see [Adding Measurements Information to a Note](#). In addition to the basic **Notes** menu options, the **Calculations** tab also provides the following menu options:*

	<p><b>Recalculate.</b> Select the Recalculate option to update any formula calculations in the spreadsheet.</p> <p><b>Add Row.</b> Select the Add Row option to add a row to the spreadsheet.</p> <p><b>Paste.</b> Select the Paste option to paste values only or complete text from the Office Clipboard directly into the spreadsheet.</p> <p><b>Copy Sheet.</b> Select the Copy Sheet option to place the sheet on the Office Clipboard for use in other applications.</p> <p><b>Item Attributes.</b> Select the Item Attribute option to incorporate other values into the spreadsheet from the select equipment or a parent’s attributes.</p>
	<p><b>Formula Bar.</b> Use the Formula Bar to make it easier to view and edit a long formula or large amount of text in a cell.</p>

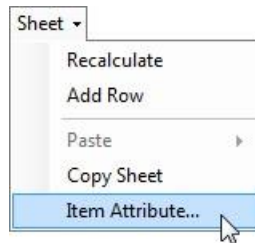
4. Enter **data or calculations** into the spreadsheet.

String values  
entered into the  
spreadsheet

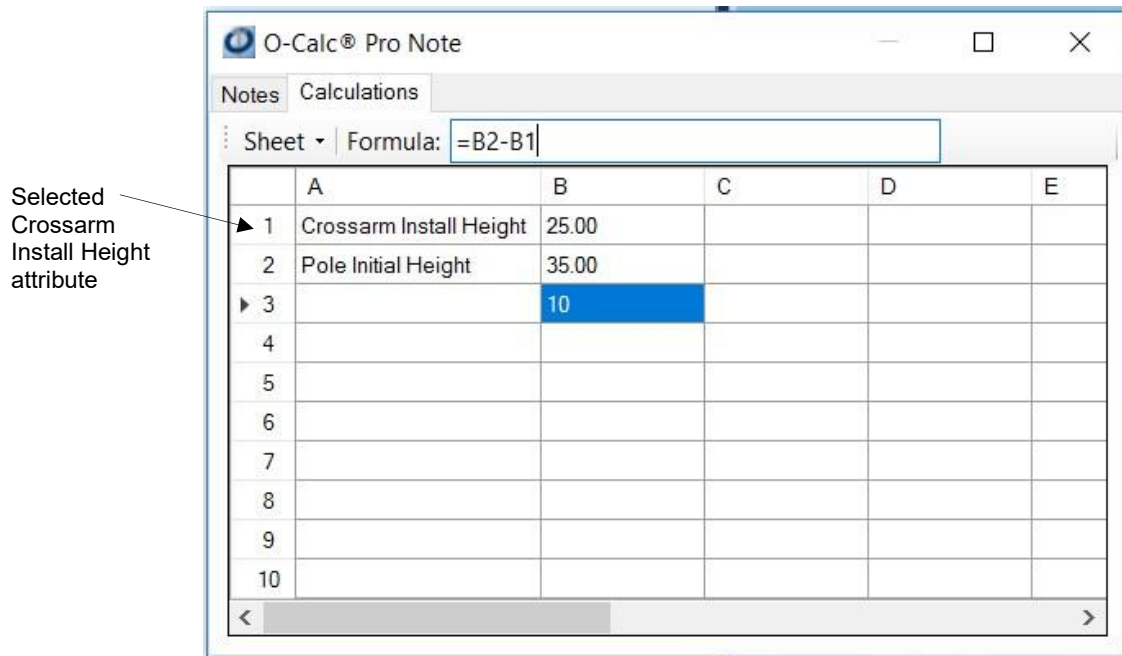
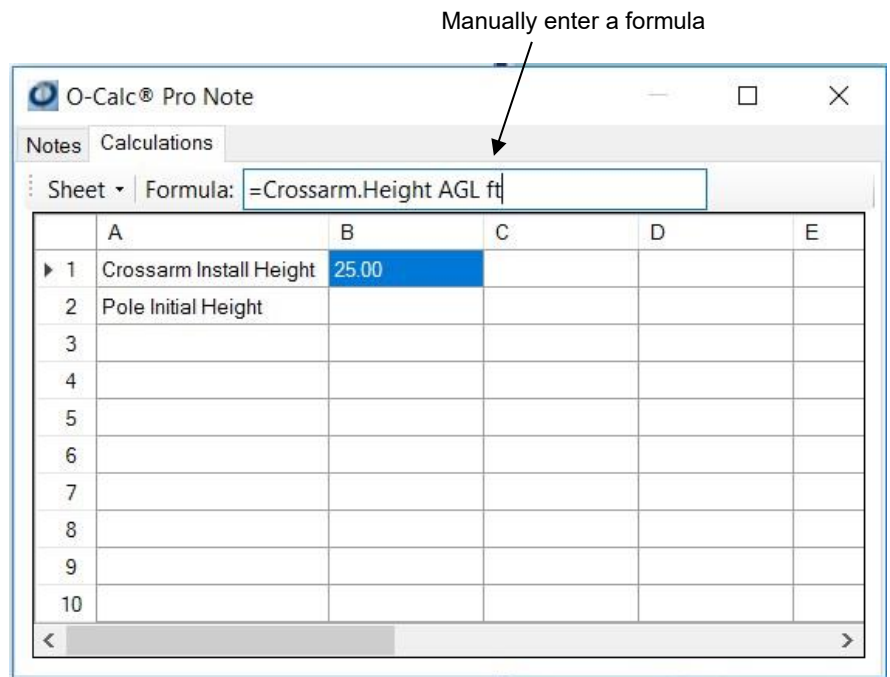


### Adding an Item Attribute to the Calculation

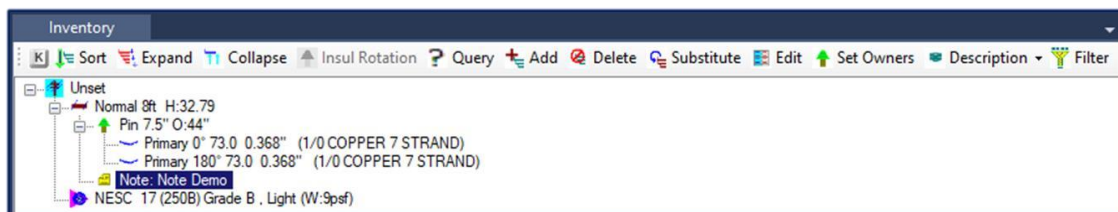
To incorporate attribute value from the equipment the note is attached to or from a parent item, perform the following steps. Select the field you want the value populated into. From the menu select **Sheet > Item Attribute** and choose the items whose attribute value you need displayed in the spreadsheet.



## Manually Entering a Formula



5. From the main menu select **File > Save**.

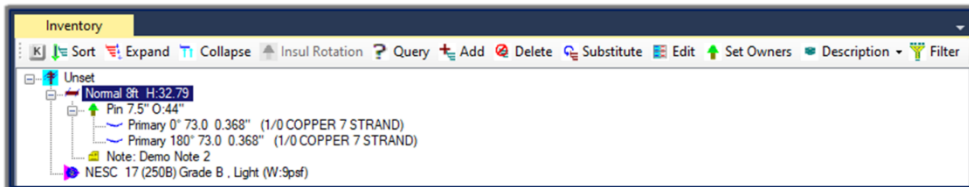



*Note:* To undo the addition of the Note, select **Edit > Undo** from the main toolbar.

## Adding a URI to a Pole or Equipment

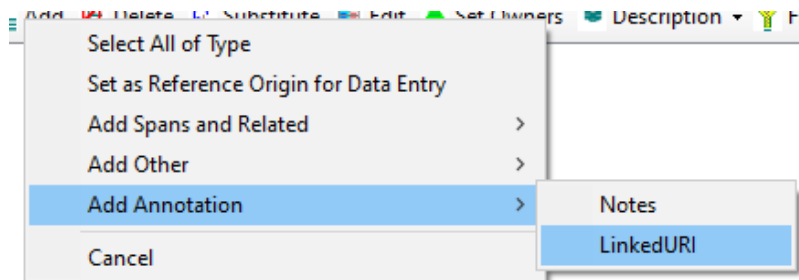
To add a Universal Resource Identifier (URI) to a pole or attached equipment in the Inventory Window, complete the following steps:

1. Select the **pole** or pole attachment.



2. Select the **Add** button  and select the **LinkedURI** option.

*Note:* The **Linked URI** option can also be accessed by right clicking on the equipment you need to add a linked URI to.

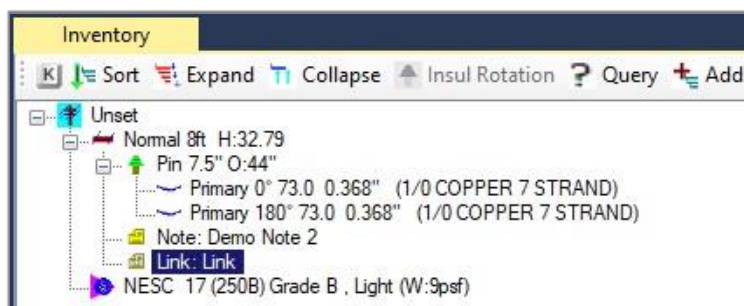


*Note:* To undo the addition of the URI, select **Edit > Undo** from the main toolbar.

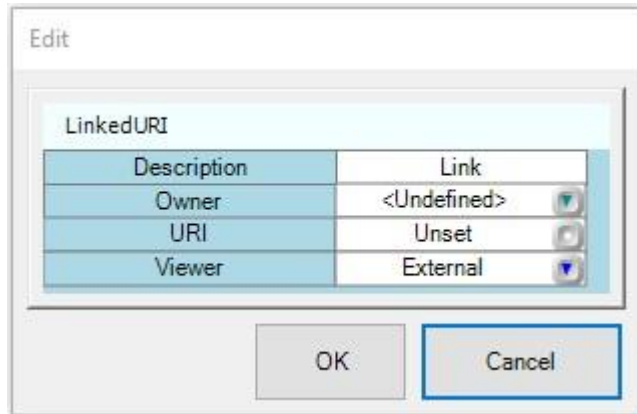
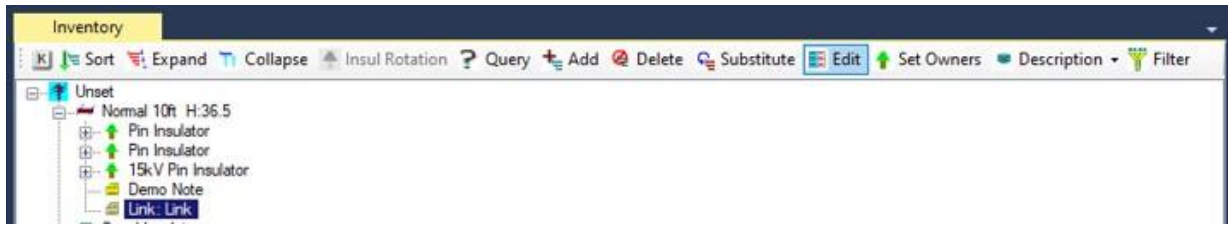
## Editing a URI

To edit a URI, complete the following steps:

1. Select the **URI** you want to edit.




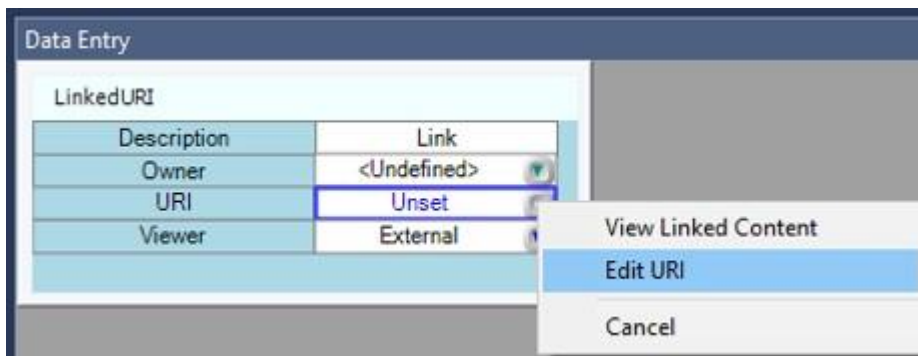
2. Select the **Edit** button .



**Note:** Basic changes to a URI Description, Owner or Viewer can be made right from the Edit Window. Content changes to a URI need to be completed from within the URI Window.

**Note:** The edit option for a URI can also be accessed by right clicking on a URI and either selecting **Edit Link**.

3. Select the **URI** button .
4. Select **Edit URI**.



5. Enter the URI you would like to use.



6. Select **Test** to verify the entered URI is correct.
7. Select **OK**.

*Note:* To cancel the current URI, select the **Cancel** option. The URI change can also be done by selecting **Edit > Undo** from the main toolbar.

### Setting the URI Viewer

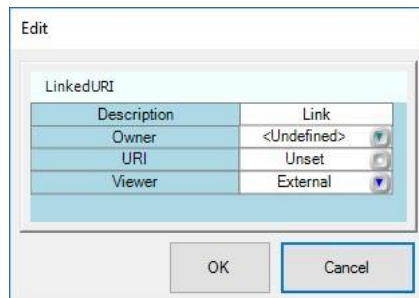
To set what viewer you want the URI opened in, complete the following steps:

1. Select the **URI** you want to select a viewer for.



2. Select the **Edit** button  **Edit**.

*Note:* The edit option for a URI can also be accessed by right clicking on a URI and selecting **Edit Link**.



3. Select the **Viewer** button

4. Select **Built in** to have the URI link open within the application as a separate tab. Select **External** to have the URI link open in a separate window outside of the application.

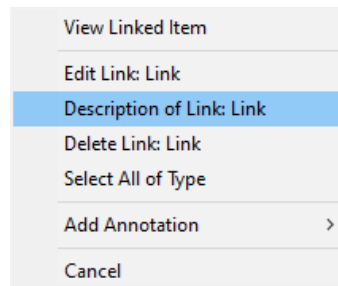
## Changing the Description of a URI

To change the description that displays next to the URI icon in the Inventory Window, complete the following steps:

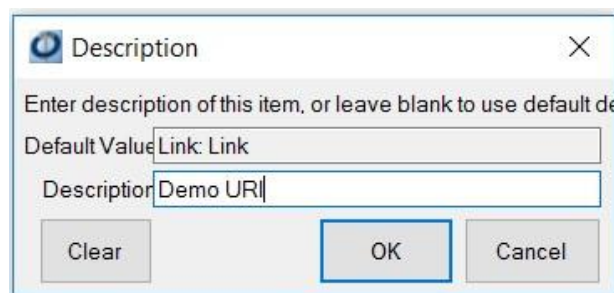
1. Right click on the URI you want to change the display description of.



2. Select **Description of (URI display name)**



3. Enter the **Description** you would like to be displayed.

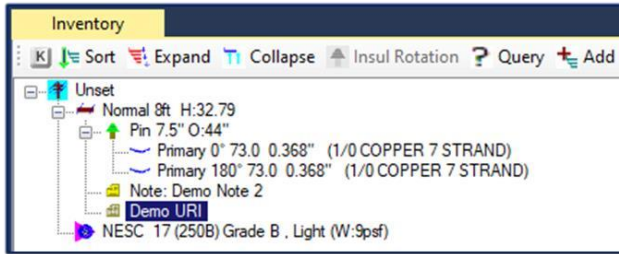


*Note: Select **Clear** to clear the description field and use the default value.*

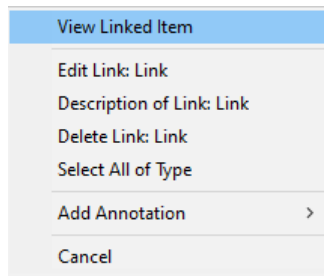
## Opening a URI Link

To open a URI Link, complete the following steps:

1. Right click on the URI you want to open.



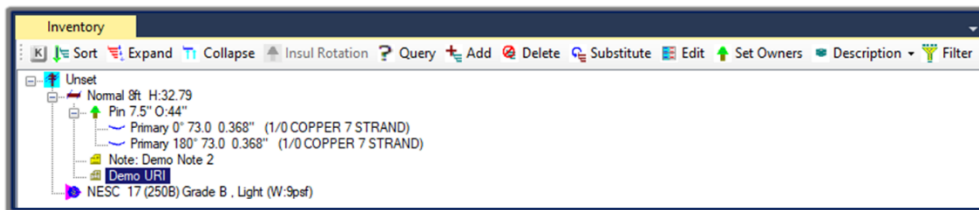
2. Select **View Linked Item**.



**Delete a URI**

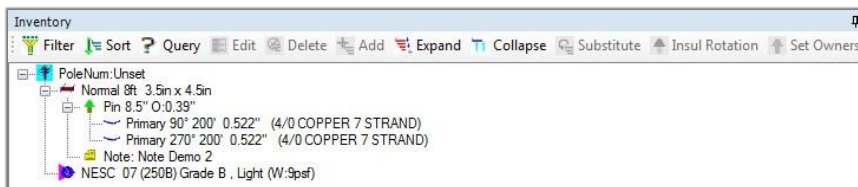
To delete a URI, complete the following steps:

1. Select the **URI** to be deleted.



2. Select the **Delete** button .

*Note: URIs can also be deleted by right clicking on the URI to be deleted and selecting **Delete (URI display name)**.*



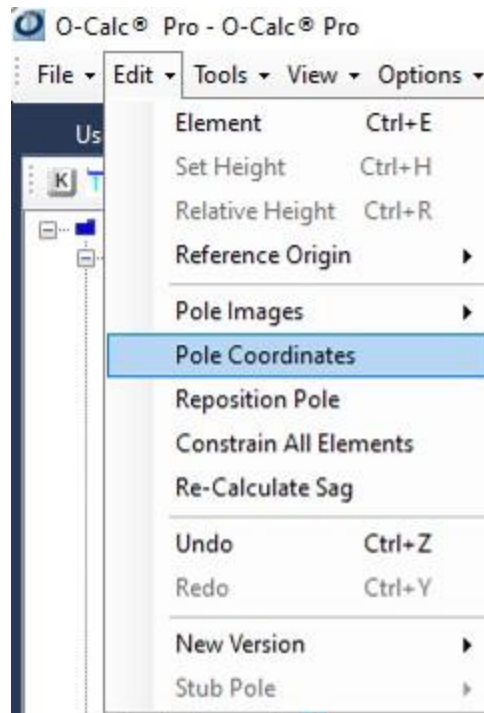
*Note: To undo a deletion, select **Edit > Undo**.*

**Adding Pole Coordinates**

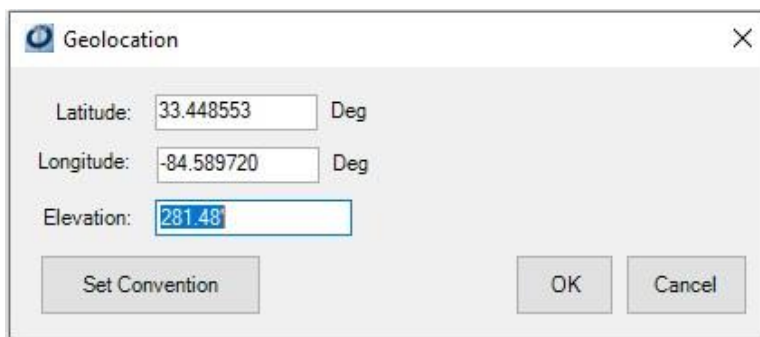
To manually enter longitude and latitude coordinates to the pole currently loaded in the Inventory Window, complete the following steps:

1. Select **Edit > Pole Coordinates**.





2. Enter the **Latitude**.
3. Enter the **Longitude**.
4. Enter the **Elevation**.
5. Select the **Set Convention** button to change any of the convention formats.



6. Select **OK**.

*Note:* Select the **Cancel** option to close the Geolocation window without saving the changes.

## Sorting Attached Equipment

To sort the equipment in the Inventory Window so that it displays in a top down view of the pole, complete the following steps:



1. Select the **Sort** button

*Note:* To undo the sort operation, select **Edit > Undo**.

## Filtering the Attached Equipment

To utilize the Filtering option in the Inventory Window, see [Filtering the 3D View](#).

## Expand or Collapse the Tree View

To expand or collapse the Inventory Window tree view, complete the following steps:

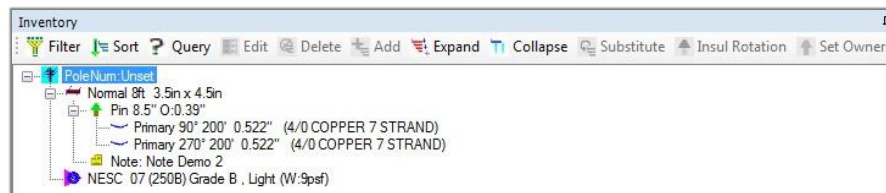
1. Select the **Expand** button  to expand the Inventory Window tree view.
2. Select the **Collapse** button  to collapse the Inventory Window tree view.

## Creating a New Version of an Existing Pole

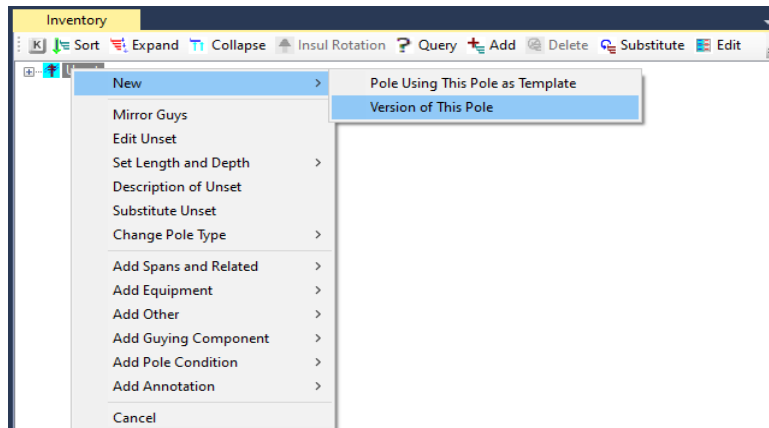
While working with a pole or structure in the Inventory Window it may be beneficial to compare multiple versions of the pole or structure simultaneously. O-Calc® Pro provides the ability to create multiple versions without losing any the functionality that O-Calc® Pro is known for.

To create a new version of the existing pole in the Inventory Window, complete the following steps:

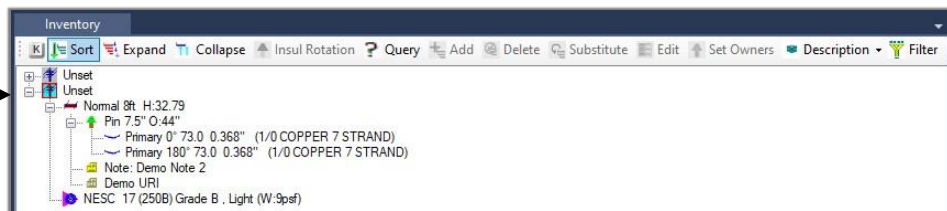
1. Right click on the **Pole** you would like to create another version of.



2. Select **New > Version of This Pole.**



New version of the pole →

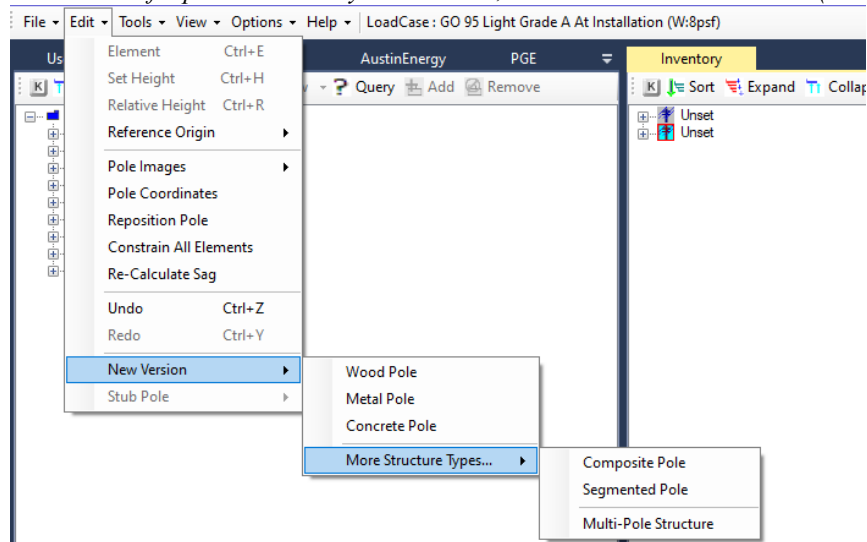


**Note:** To remove the new version, select **Edit > Undo**.

The ‘New’ version automatically becomes the active version in the Inventory Window. The active version is always displaying the pole icon outlined in red to easily identify which pole’s data is being displayed in the Capacity window. The Data Entry window always displays the currently *selected* pole information.

When saving a pole, all versions of the pole will be saved.

**Note:** To create a new version of a pole without any attachments, select **Edit > New Version > (Pole Type)**.

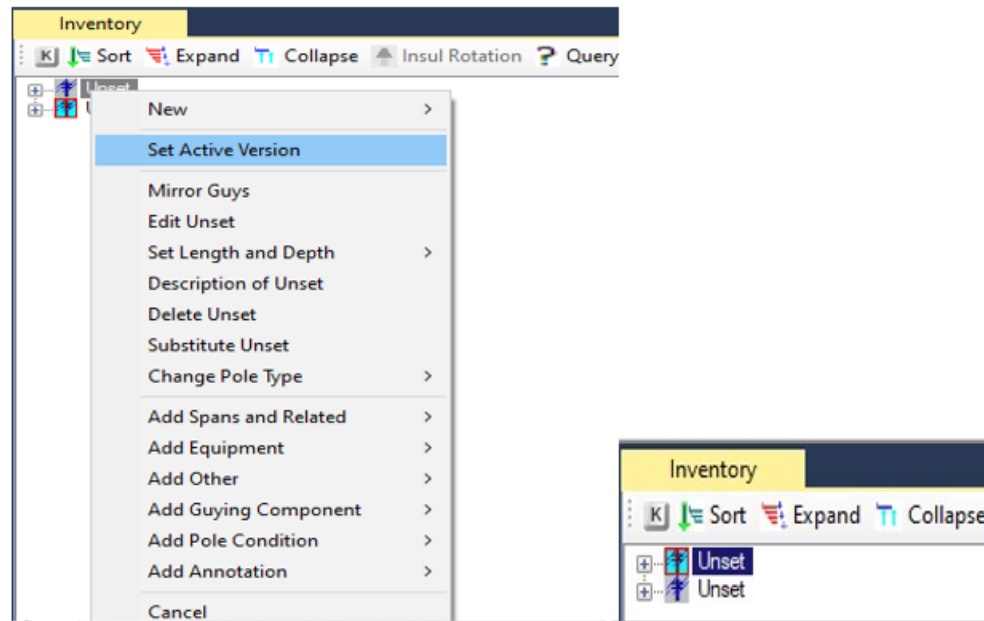



**Note:** When creating a new version of the existing pole any images that are associated with the existing pole will not be copied to the new version.

## Setting the Active Version

To set which pole is the active version in the Inventory Window, complete the following steps:

1. Right click on the **Pole** you would like to make the active version.
2. Select **Set Active Version**.



**Note:** The selected pole is now outlined in red  indicating it's the active version. All the windows in OCalc® Pro are automatically recalculated and updated to reflect the selected active version.

**Note:** The Data Entry Window will always display the currently selected pole.

## Working with Stub Poles

While working with a pole that has a span/head guy going to a stub pole attachment it is often the case that you may want to perform analysis on the stub pole as well. O-Calc® Pro provides a convenient method to perform stub pole analysis. You can either create the stub pole as a completely new pole analysis or you can create the new pole as a version within the same pole analysis.

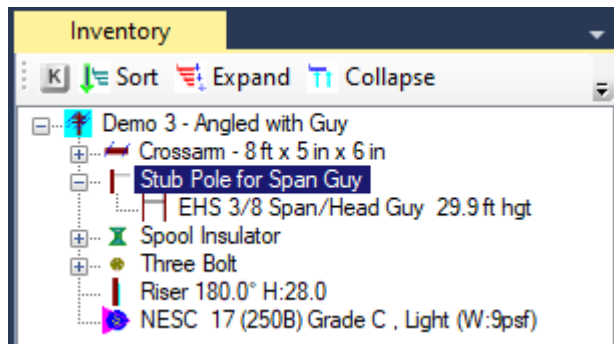
Keep in mind interchangeable terms commonly used for the Stub Pole object are Stub Pole for Span Guy; Span/Head Termination; Anchor. Terms commonly used for the Span/Head Guy object are Guy Brace; Span/Head; Guy Wire; Span Guy.

## Creating a New Pole using Stub Pole

To create the stub pole as a completely new pole within the Inventory Window, complete the following steps:

1. Using a pole model that already has a Stub Pole for Span Guy (see Catalog Assemblies > Guy and Anchor Assemblies folder) added to the pole. Left click on the **pole** you would like to use to create a new pole. The new pole

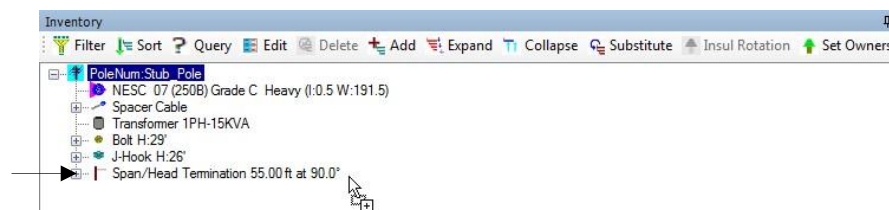
can either be the current pole in the Inventory Window or a pole from the Catalog.





2. Hold down the left mouse button and drag and drop the selected pole onto the **Stub Pole for Span Guy** object in the Inventory Window.
3. In the Data Entry the **Span/Head Term** object is displayed as Description - Anchor.

Span/Head Term	
Description	Anchor
Owner	<Undefined>
Lead Length (ft)	23.95
Lead Angle (°)	270
Delta Height (ft)	-N/A-
Offset Angle (°)	-N/A-
Merge Anchors	Yes
Soil Class	Class 4
Holding Strength (lbs)	20000

**Note:** A new stub pole can also be added by right clicking on the Span/Head Termination, selecting **Stub Pole as New Pole** then manually selecting the new pole.

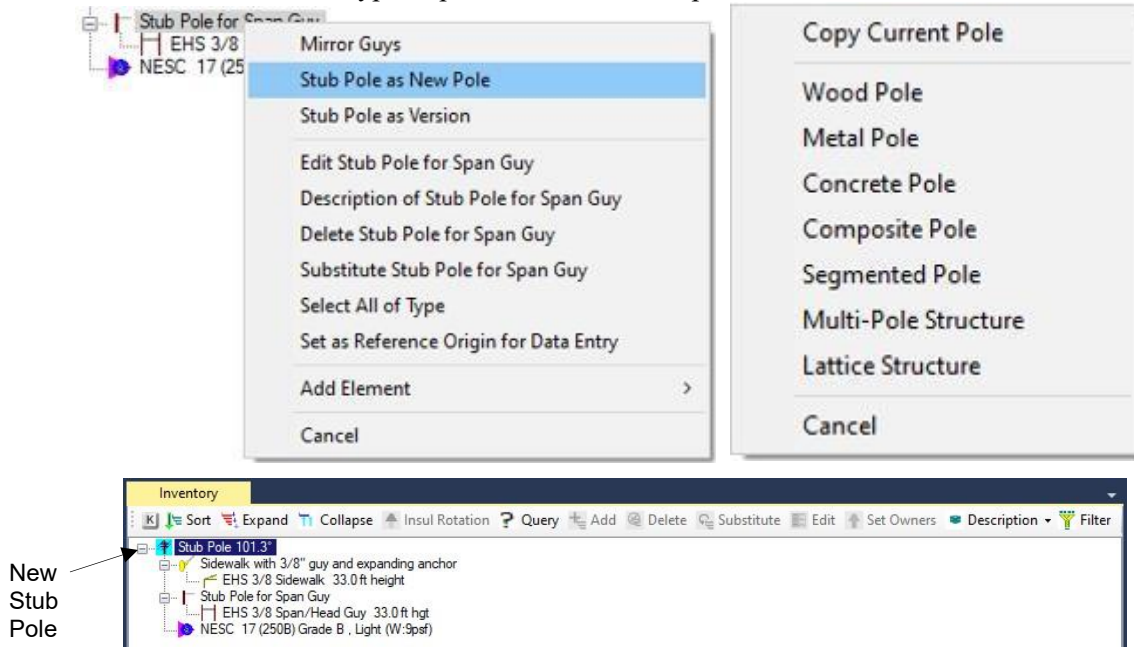


**Note:** While dragging the selected pole to the Inventory Window the cursor will change to an invalid cursor . As the equipment is placed over the Span/Head Termination object in the Inventory Window the cursor will change to indicate a valid move .

Ter  
min  
atio  
n  
Stu  
b

Pole

- Right click on the stub pole in the Inventory, select **Stub Pole as New Pole**. Then select the type of pole from the menu options.



**Note:** A stub pole is guyed automatically, if a default Auto-guy assembly has been set. To disable the automatic guying of the new stub pole, see [Enabling the Ability to Auto Guy a New Stub Pole](#).

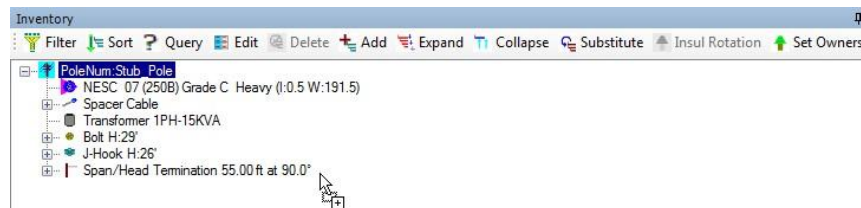
**Note:** Undo is not available for this operation.

### Creating a New Version of a Stub Pole


To create a new pole as a version within the same pole within the Inventory Window, complete the following steps:

- Left click on the **pole** you would like to use to create a new version. The new pole can either be the current pole in the Inventory Window or a pole from the Catalog.
- Hold down the mouse button and drag and drop the selected pole onto the **Span/Head Termination object** in the Inventory Window.

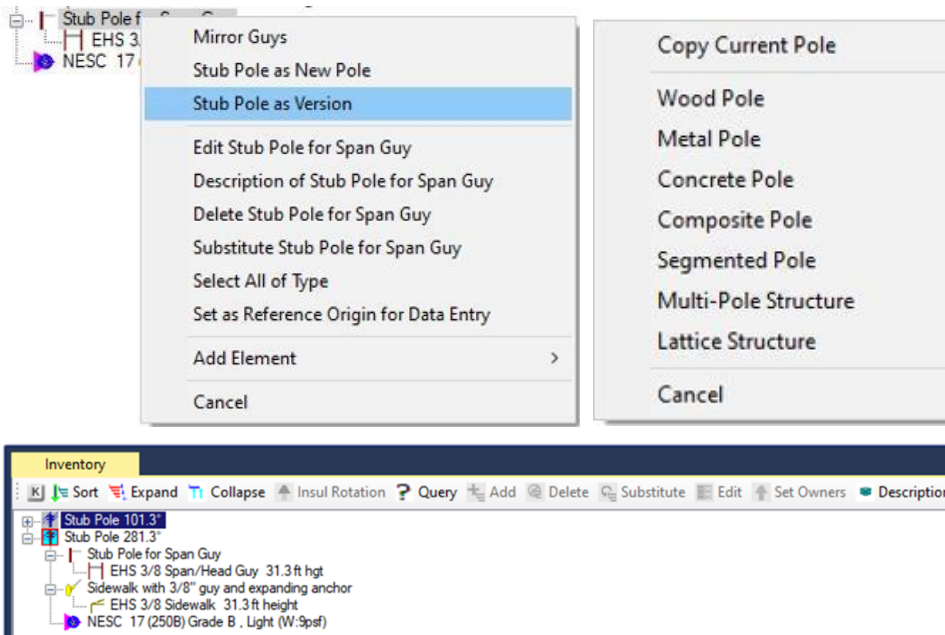
**Note:** A new pole version can also be added by right clicking on the Span/Head Termination and selecting **Stub Pole as Version**.



**Note:** While dragging the selected pole to the Inventory Window the cursor will change to an invalid cursor

⊘. As the equipment is placed over the Span/Head Termination object in the Inventory Window the cursor will change to indicate a valid move 

3. Right click on the stub pole in the Inventory, select **Stub Pole as Version**. Then select the type of pole from the menu options.



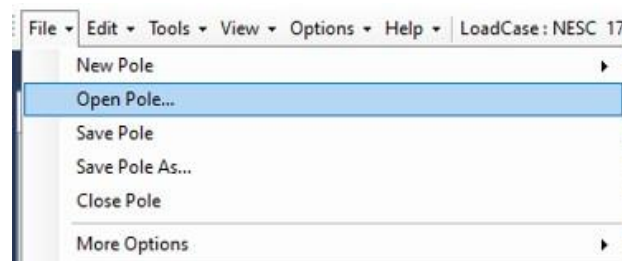
**Note:** To disable the automatic guying of the new stub pole, see [Enabling the Ability to Auto Guy a New Stub Pole](#).

**Note:** To remove the new version, select **Edit > Undo**.

## Opening an Existing Pole

To open an existing pole in the Inventory Window, complete the following steps:

1. Select **File > Open Pole...**

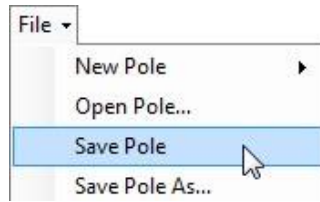


2. Browse to the location of the pole to open select the pplx file and click **Open**.

## Save a Pole

To save the pole in the Inventory Window, complete the following steps:

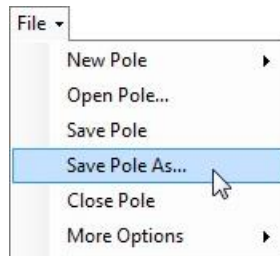
1. Select **File > Save Pole**.



2. Browse to the location where you will save the Pole and click **Save**.

### Save a Pole Using Save As

To save a pole as a different file name, format or location, complete the following steps: 1. Select **File > Save Pole As...**

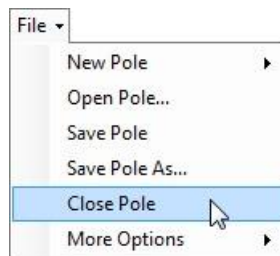


2. Browse to the location where you will save the pole and click **Save**.

### Close an Existing Pole

To close the current pole in the Inventory Window, complete the following steps:

1. Select **File > Close Pole**.



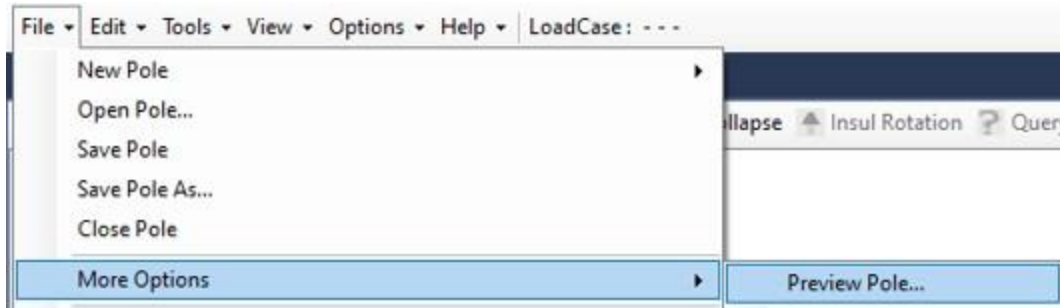
***Note:** If any changes have been made to the current pole you will be prompted to save your changes before closing the pole.*

### Previewing an Existing Pole


*To preview an existing pole(s) without having to load each one manually, complete the following steps.  
**WARNING:** Any changes to the pole you are previewing can NOT be saved.*

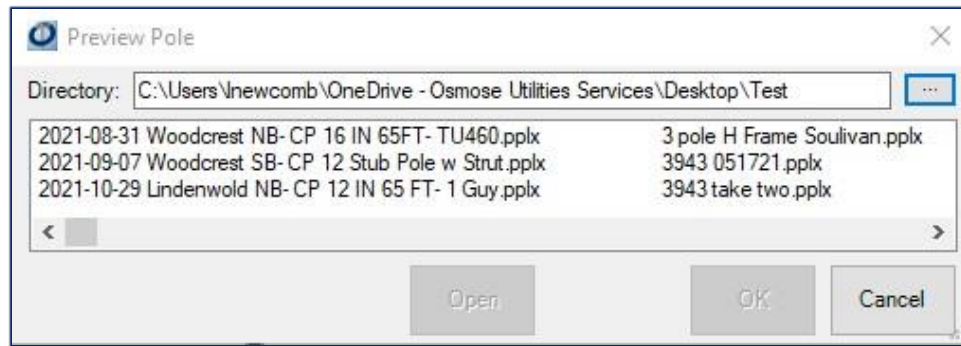
1. Select **File > More Options > Preview Pole**.





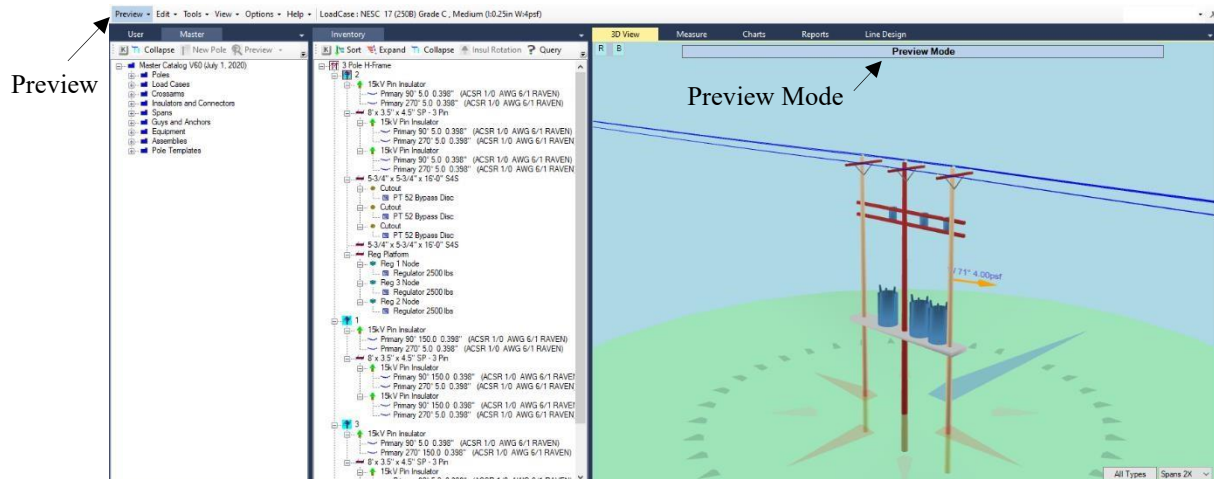
*Note: If you have an unsaved pole loaded in the Inventory Window you will be prompted to save your changes.*

2. Select the Browse button  and browse to the **Directory** that has the .pplx file(s) you would like to preview.
3. Select **OK**.



4. Select the **.pplx** file you would like to preview. Select **OK**.

*Note: Select **Open** to open the selected .pplx file in edit mode instead of Preview Mode. Select **Cancel** to close the Preview Pole window.*

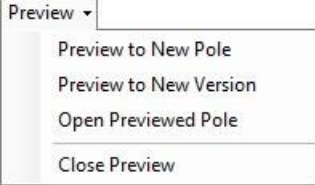


The pole is automatically displayed in Preview Mode within O-Calc Pro.

While previewing a pole in Preview Move several things are changed within O-Calc Pro to clarify that you are actually in Preview Mode. A Preview Mode banner is displayed at the top of the 3D View window. The File menu is automatically switched to Preview and offers several preview options.

## Preview Toolbar Menu Options

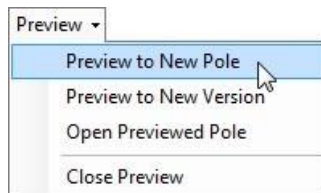
The Preview toolbar menu option provides you with a variety of options:

	<p><b>Preview to New Pole.</b> Select the Preview to New Pole option to convert the currently previewed pole to a new pole.</p> <p><b>Preview to New Version.</b> Select the Preview to New Version option to convert the currently previewed pole to a new version.</p> <p><b>Open Previewed Pole.</b> Select the Open Previewed Pole option to open the currently displayed preview pole and exit preview mode.</p>
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## Create a New Pole for a Preview Pole

To create a new pole from the pole you are currently previewing, complete the following steps:

1. Select **Preview > Preview to New Pole**.



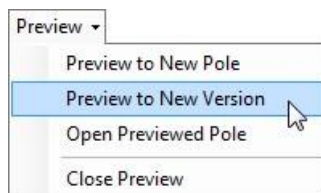
*Note: Once Preview to New Pole is selected the Preview Mode is automatically closed.*

2. Complete any modifications to the new pole.
3. Select **File > Save** to save the new pole.

## Create a New Version from a Preview Pole

To create a new version from the pole you are currently previewing, complete the following steps:

1. Select **Preview > Preview to New Version**.



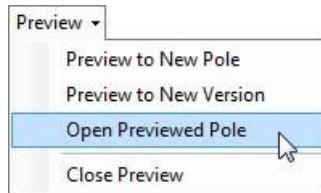
*Note: Once Preview to New Version is selected the Preview Mode is automatically closed*

2. Complete any modifications to the new version.
3. Select **File > Save** to save the new version.

### Open a Preview Pole

To open the pole you are currently previewing, complete the following steps:

1. Select **Preview > Open Previewed Pole**.



*Note: Once Open Previewed Pole is selected the Preview Mode is automatically closed.*

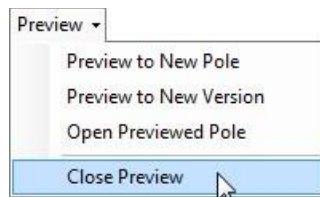
2. Complete any modifications to the pole.
3. Select **File > Save**.

### Close the Preview Mode

To close the pole, you are previewing and exit the Preview Mode, complete the following steps:

**WARNING:** Any changes to the pole you are previewing will NOT be saved.

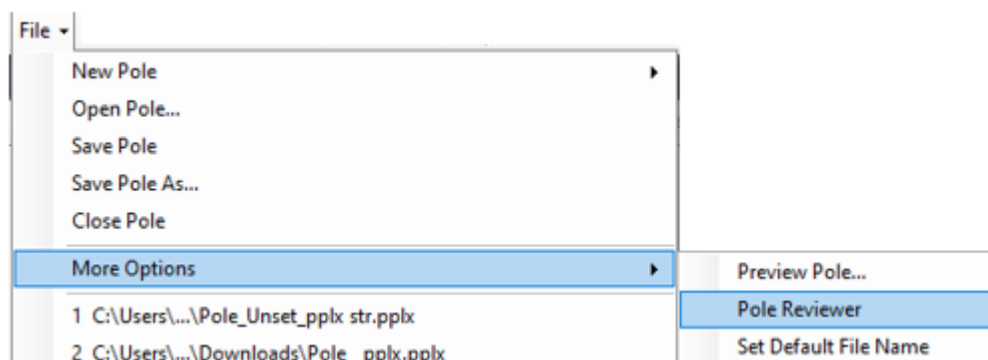
1. Select **Preview > Close Preview**.




### Working with the Pole Reviewer

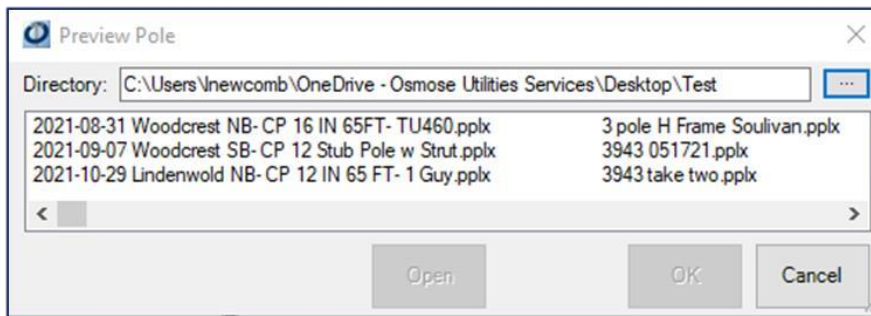
To quickly edit several poles sequentially or to locate .pplx files, complete the following steps.

1. Select **File > More Options > Pole Reviewer**.



*Note: If you have an unsaved pole loaded in the Inventory Window you will be prompted to save your changes.*

2. Select the **Browse** button  and browse to the **Directory** that has the .pplx files.
3. Select **OK**.



**Note:** The first pole in the Pole Reviewer list will automatically be displayed in the Inventory Window.

4. Complete any **modifications** to the currently loaded pole and select **Next** to load the next .pplx file in the Inventory Window.

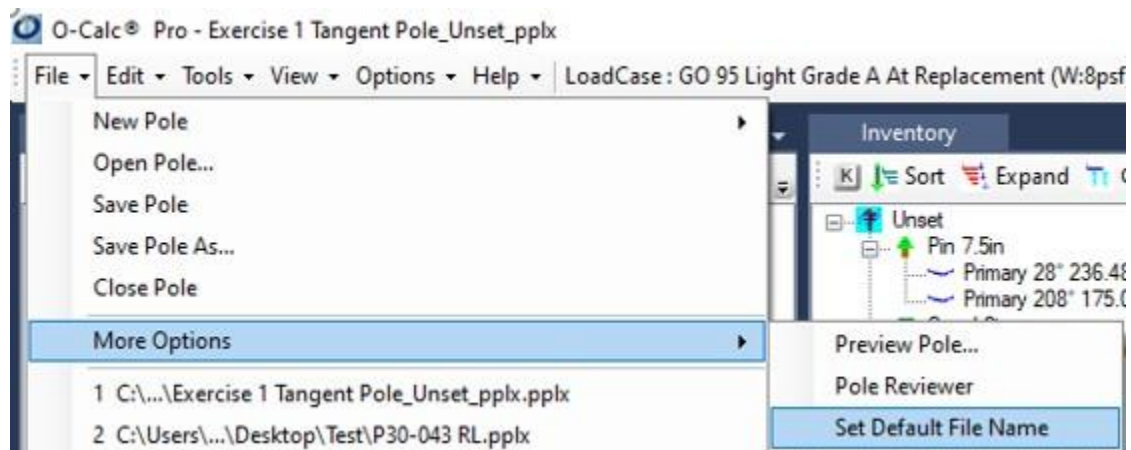
**Note:** If the **Auto Save** option is deselected you will be prompted to save the changes to each .pplx file you change.

5. Select the **X** in the upper right-hand corner to close the Pole Reviewer window.
- 6.

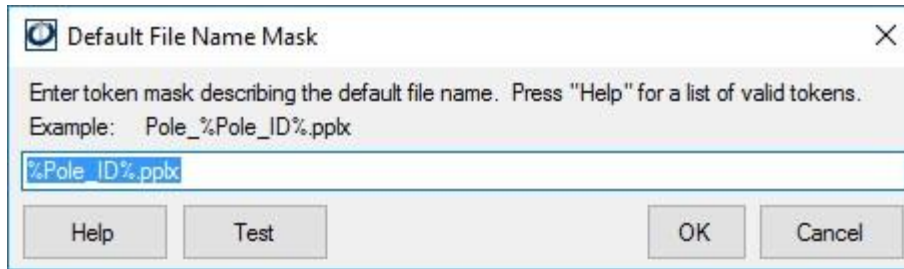
## Setting a Default File Name

The Default File Name option provides you with the ability to use a reporting token to create a default file name to match a specific naming convention. To set a default file name, complete the following steps:

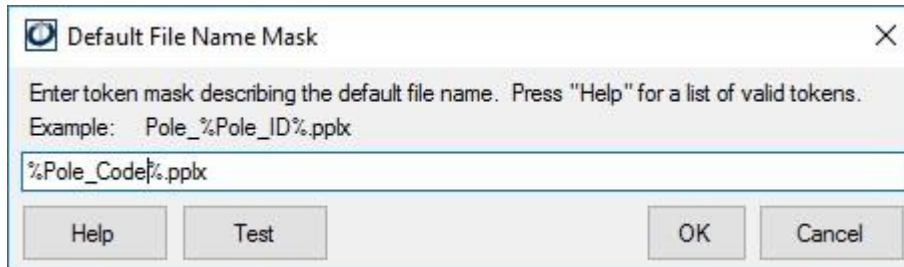
1. Select **File > More Options > Set Default File Name**.



**Note:** A pole does not need to be loaded in order to set a default file name.



2. Enter the file name token you would like to use.



**Note:** Select **Help** to view a list of valid tokens. A token can be copy and posted from the valid token list into the Default File Name field.

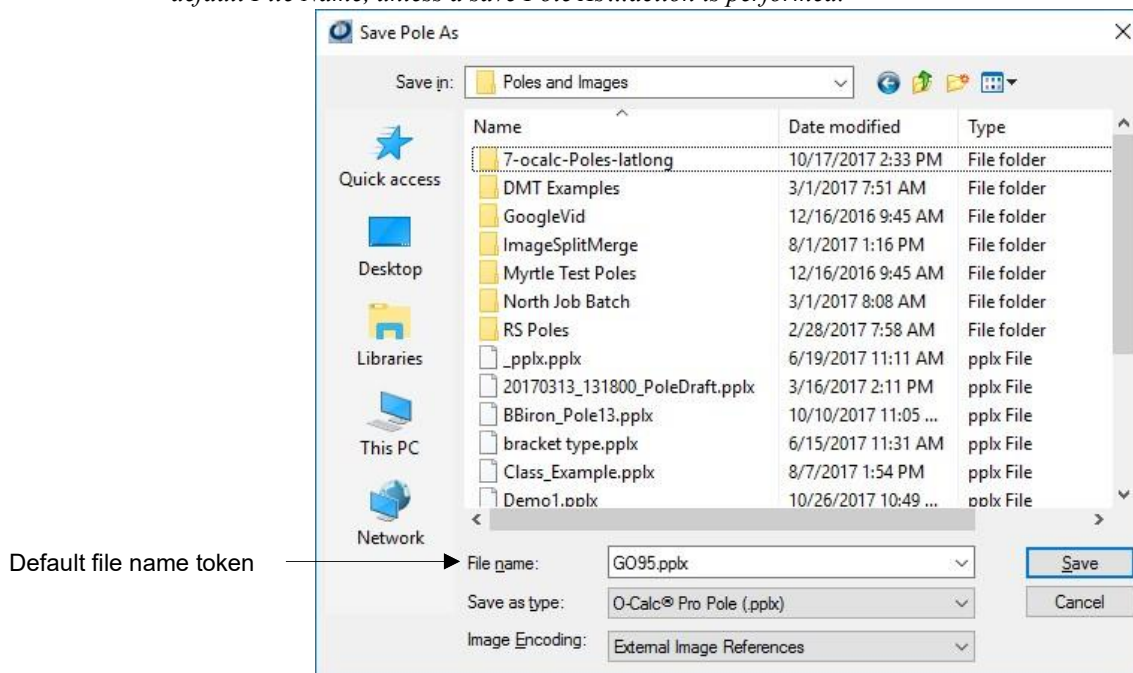
3. Select **Test** to preview what the default file name will display as.

4. Select **OK**.

**Note:** To cancel the current Default File Name, select the **Cancel** Option.

After you set the Default File Name, the first time you save a pole the default file name token will automatically be displayed in the file name.

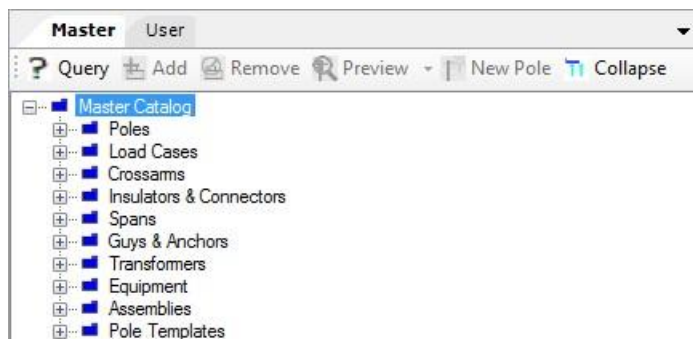
**Note:** Once the pole has been saved with a specified name, it will not update the file name default File Name, unless a save Pole As...action is performed.



## Working with the Catalog Window

### Catalog Window Overview

The Catalog Window provides you with the ability to efficiently assemble a pole and its common equipment in the Inventory Window. The Catalog Window consists of two main areas. The Master Catalog contains a compiled list of common poles, assemblies and equipment that are utilized in the field. It also contains a complete listing of all the available Load Cases which are used to add the applicable regulations to the pole to apply wind, ice, and safety factors. The User Catalog is a folder in which you can compile your own list of poles or equipment that you've created. You can then use the data in the User Catalog to build additional poles in the Inventory Window.



*Note: Changes and addition can only be done in the Master Catalog when you are in Administrative User Mode. Load Cases cannot be edited in the Master Catalog. The User Catalog is available to edit.*

### Catalog Window Toolbar Menu Options

The Catalog Window toolbar provides you with a variety of options.



Collapse	Select the Collapse option to collapse all the objects in the current Catalog window.
New Pole	Select the New Pole option to create a new pole in the Inventory Window from the selected catalog item.
Preview	Select the Preview option to preview a pole in the Inventory Window from the selected catalog pole.
Query	Select the Query option to search the data within the current catalog.
Add	Select the Add option to add a sub folder to a User Catalog folder.

Remove	Select the Remove option to remove a selected folder or object within the User Catalog.
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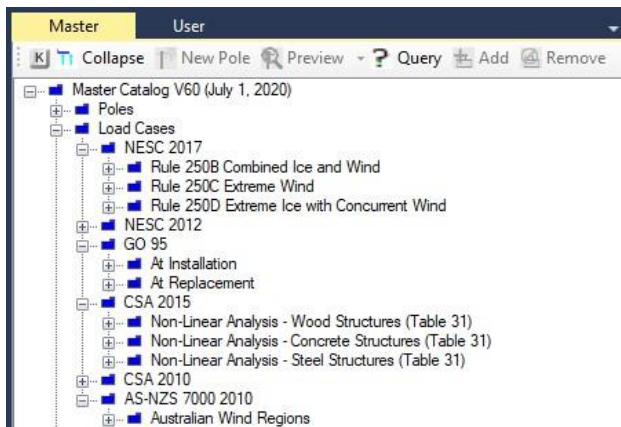
## Master Catalog Functions

### Set a Default Load Case

Load cases are used to group a series of loads, boundary and safety conditions into load environments. The Master Catalog provides a dynamic listing of load cases broken down into categories.

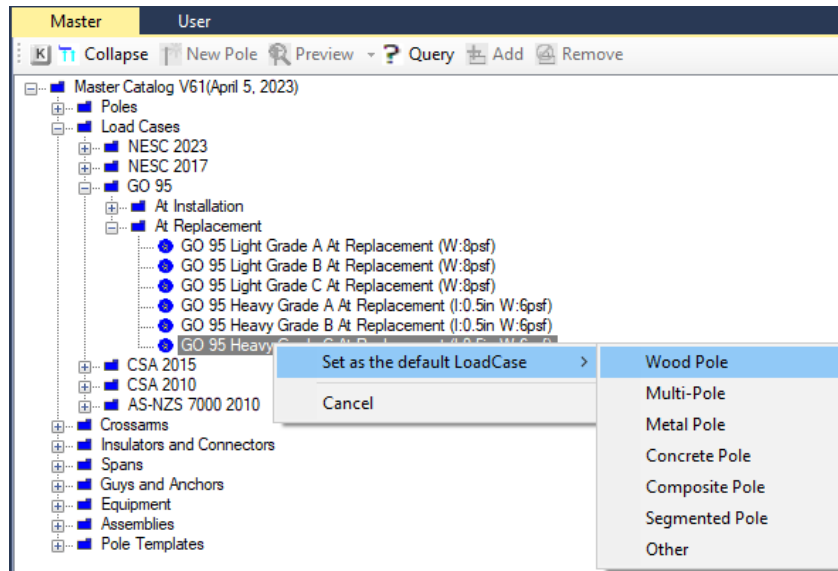
For each category, a default load case should be specified dependent on pole type. This ensures that the correct load case is used each time a pole of that category/type is created. Use the following steps to set a default load case for each category:

1. Expand the **Master Catalog** folder.
2. Expand the **Load Cases** folder until the catalog list you need is displayed.

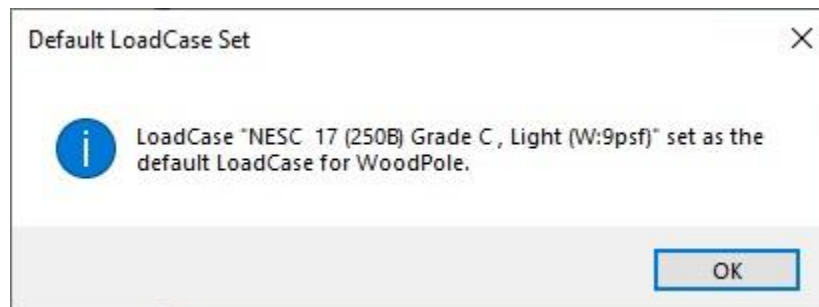


*Note:* A default Load Case can only be selected from the Master Catalog.

3. Right click on the **Load Case** you want to set as the default.
4. Select **Set as the default LoadCase** and select the pole type.



5. Select **OK** to the verification message.



**Note:** A default LoadCase can be set for each LoadCase category. In addition, one extra LoadCase is allowed to be set. This extra LoadCase is the “Other” LoadCase. Complete steps 1 – 5 to set the default LoadCases for each category. The default Load Case can be changed at any time.

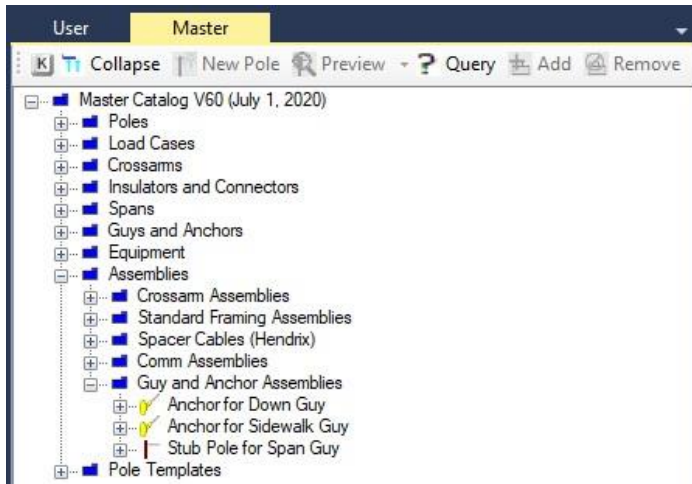
## Setting a Default Auto-Guy Assembly

An Auto-Guy Assembly is used in the 3D View to properly guy a structure using a limited number of steps. An Auto-Guy Assembly should consist of one guy and one anchor. The Master Catalog provides a common listing of Guy and Anchor Assemblies. A default Guy and Anchor Assembly should be specified so that the correct one is used each time the Auto-Guy option is used. Use the following steps to set a default Auto-Guy assembly:

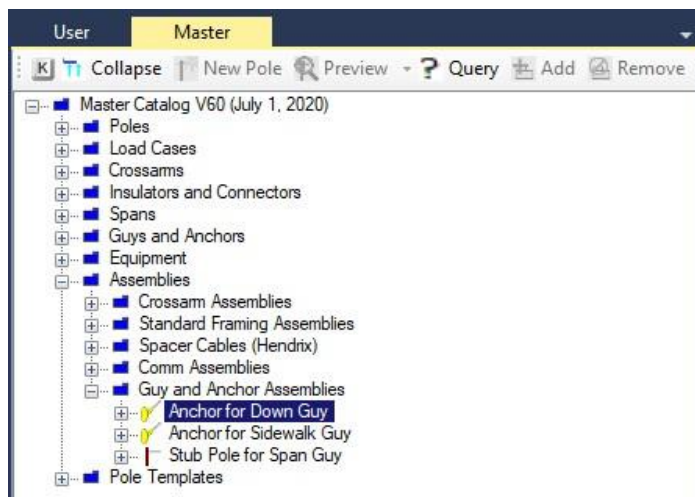
1. Expand the **Master Catalog** folder.
2. Expand the **Assemblies > Guy and Anchor Assemblies** folder.

**Note:** A default Auto-Guy Assembly can be selected from the Master Catalog or the User Catalog. To be considered an Auto-Guy Assembly the assembly must consist of only one anchor and one guy.

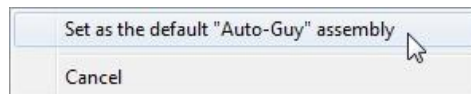




3. Right click on the **Anchor for Down Guy** assembly, or any assembly you want to set as the default.



4. Select **Set as the default “Auto-Guy” assembly**



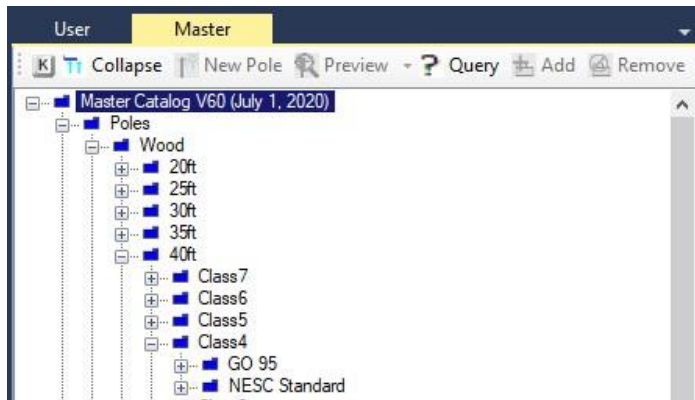
5. Select **OK** to the verification message.

*Note: The default Auto-Guy Assembly can be changed at any time.*

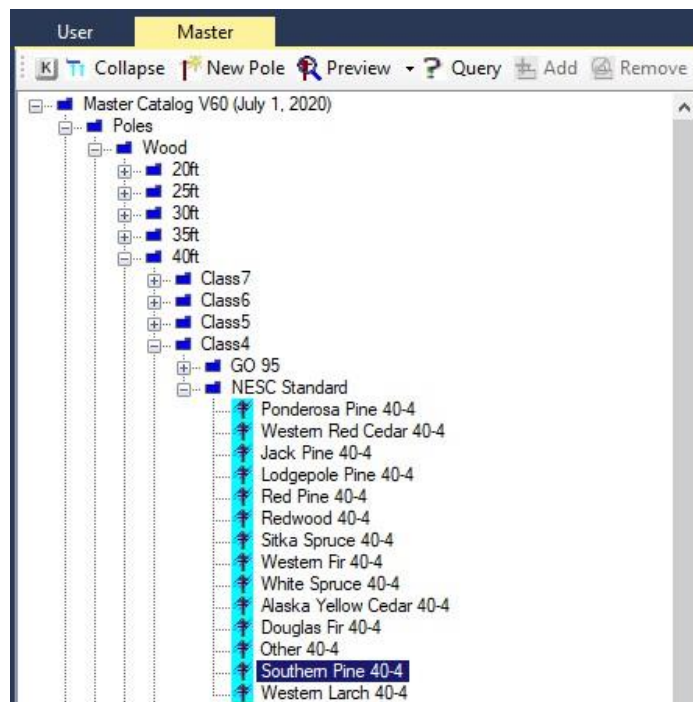
## Creating a New Pole

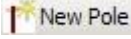
To create a new pole in the Inventory Window using a pole listed in a Catalog, complete the following steps:

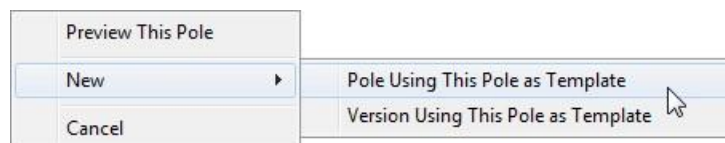
1. Poles can be added from any **Catalog** that has the pole you want.
2. Expand the **Poles folder** and its subfolders until the pole you need is displayed.



3. Select the **pole** to be added to the Inventory Window.



4. Select the **New Pole** button . Or drag and drop the pole to the Inventory.



5. The selected **pole** is automatically added to the Inventory Window.

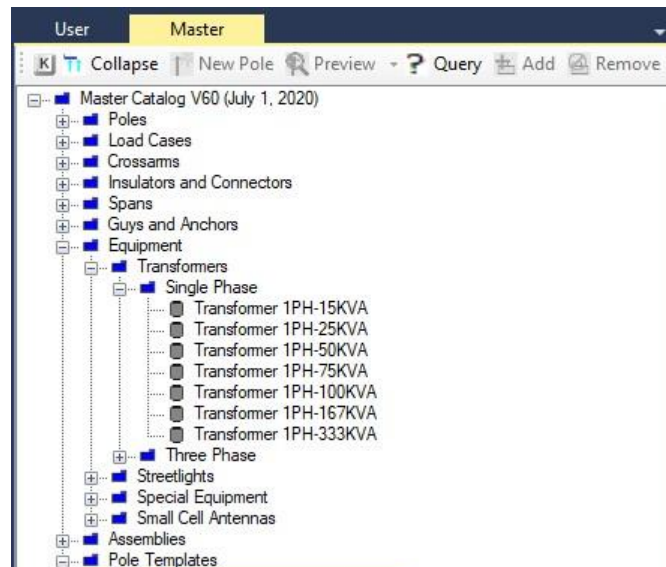
**Note:** The selected pole can also be added to the Inventory Window by right clicking on the selected pole and selecting **New > Pole Using This Pole as Template**.

**Note:** Undo is not available when adding a pole.



### Adding Equipment to the Pole

To add equipment to a pole in the Inventory Window using the equipment found in any Catalog, complete the following steps:

1. Expand the **Master Catalog** folders containing the equipment you want to add.
2. Expand subfolders until the equipment you need is displayed and select it.



3. Hold down the mouse button and drag and drop the selected equipment onto the pole in the Inventory Window.

**Note:** While dragging the selected equipment to the Inventory Window the cursor will change to an invalid cursor . As the equipment is placed over the pole in the Inventory Window the cursor will change to indicate a valid move .

**Note:** To undo the equipment you added, select **Edit > Undo**.

**Note:** To set a default percent of maximum span tension in Static Tension Mode to be applied to conductors when they are selected from the Master Catalog, see [Modifying Span's Default Rated Strength Percentage](#). Or go to **Options > Misc. Options > Percent of Span Rated Strength to Apply as Tension**.

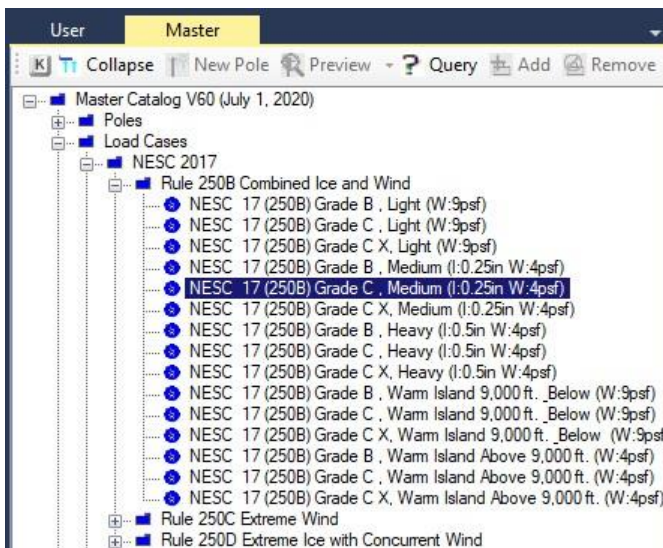
### Adding a Load Case to the Pole

To add Load Cases (pole loading regulations) to a pole in the Inventory Window using Load Cases listed a Catalog, complete the following steps:

1. Expand the Catalog folder that has the Load Case you want.
2. Expand the **Load Cases folder** until the catalog list you need is displayed.





3. Select the Load Case to be added to the pole in the Inventory Window.



4. Hold down the mouse button and drag and drop the selected Load Case onto the pole in the Inventory Window.

*Note:* To undo the Load Case you added, select Edit > Undo.

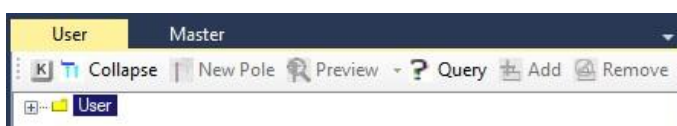
*Note:* When using the drag and drop method to add equipment to the Inventory window the cursor will change to an invalid  cursor icon when the equipment is dragged over the white space in the Inventory. Once the cursor is dragged over the pole in the Inventory window, the cursor will change to a plus sign indicating the ability to add the object . To the pole. O-Calc Pro always requires a connection point for all equipment added to the pole, these connection points then facilitate the calculation results.

## User Catalog Functions

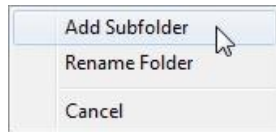
### Adding a Subfolder

To add a subfolder to the User Catalog, complete the following steps:

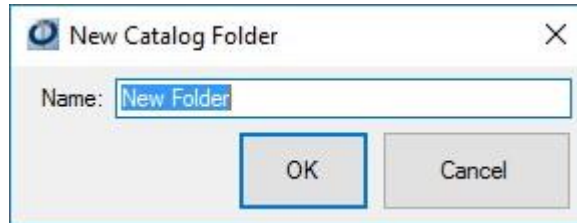
1. Right click on the **User Catalog folder** you want to create a subfolder for.



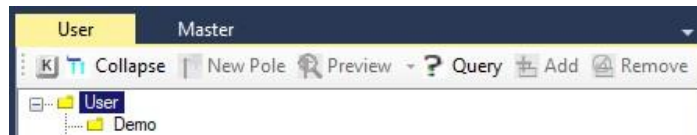
2. Select **Add Subfolder**.



3. Enter a catalog subfolder **Name**.



4. Select **OK**.



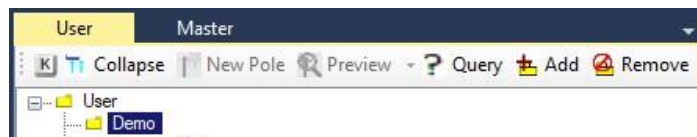
*Note: Undo is not available.*

*Note: Once a subfolder has been added to the User Catalog additional folders can be added to that subfolder by selecting the Add button  Add or by right clicking on the subfolder and selecting Add Subfolder.*

## Removing a Subfolder

To remove a User Catalog subfolder, complete the following steps:

1. Select the **User Catalog folder** to be removed.



2. Select the **Remove** button  Remove.

*Note: The selected User Catalog folder can also be removed by right clicking on the folder and selecting **Remove (name of the folder)**.*

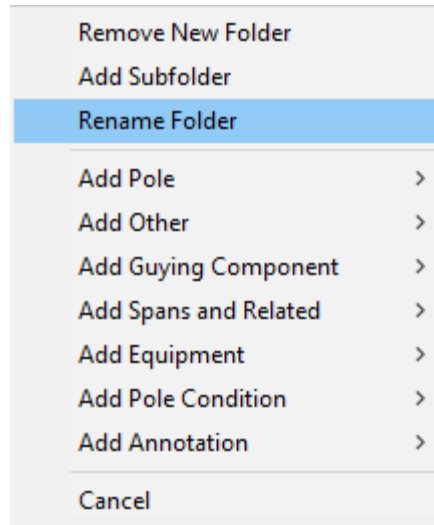
3. Select **Yes** to permanently remove the selected folder.

*Note: There is no undo for this operation.*

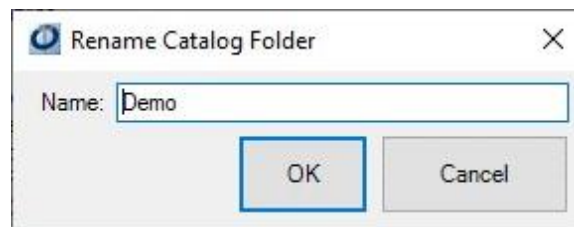
## Renaming a Subfolder

To rename a User Catalog subfolder, complete the following steps:

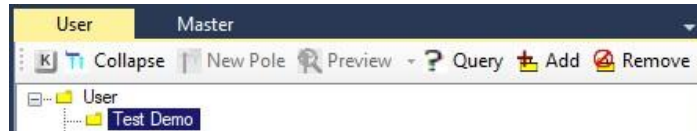
1. Right click on the **User Catalog folder** to be renamed.
2. Select **Rename Folder**.



3. **Name** the selected folder.



4. Select **OK**.

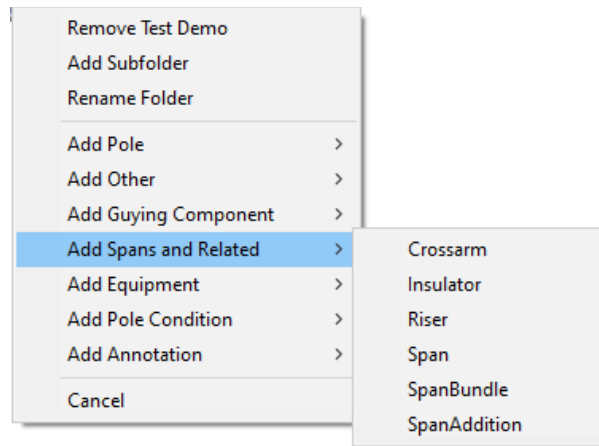


*Note: There is no undo for this operation.*

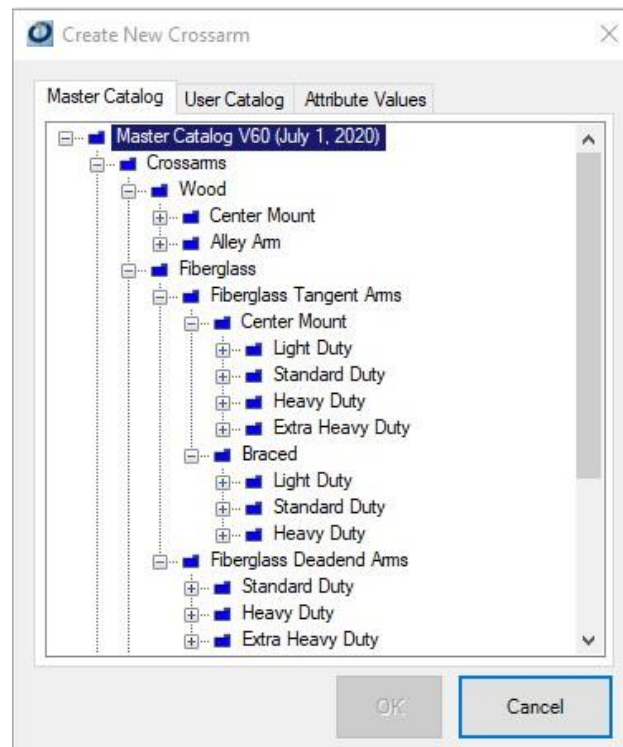
### Adding Equipment to a Subfolder

To add equipment to a User Catalog subfolder, complete the following steps:

1. Right click on the **User Catalog subfolder** that equipment will be added to.
2. Then select the equipment to be added from the equipment list.



**Note:** Only one piece of equipment can be selected at a time.

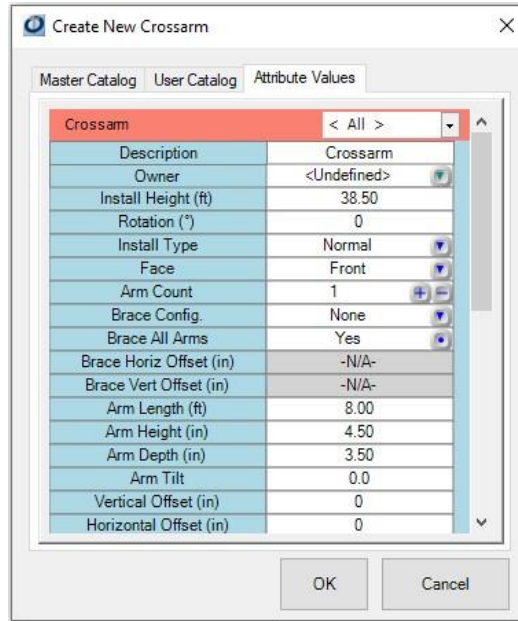


**Note:** Available tabs are dependent on corresponding equipment displayed in your catalogs or Inventory Window.

3. To add **equipment** from one of the Catalog tabs or the Inventory tab select the appropriate tab and select the equipment you want to add.

**Note:** For additional information on catalogs or the Inventory Window see [Working With the Catalog Window](#) or [Working With the Inventory Window](#).

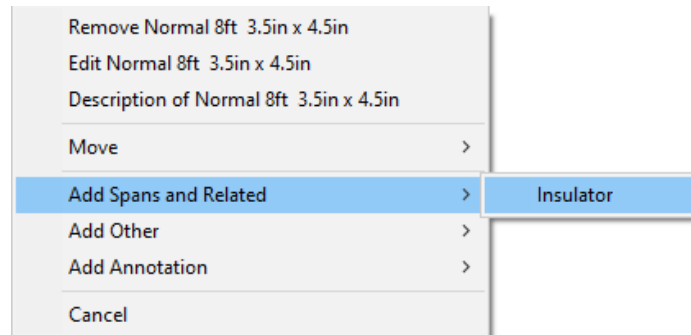
4. Select the **Attribute Values** tab to modify any attribute values. Click **OK**.



**Note:** There is no undo for this operation. To delete equipment from a User Catalog folder; see [Deleting Equipment in a Subfolder](#).

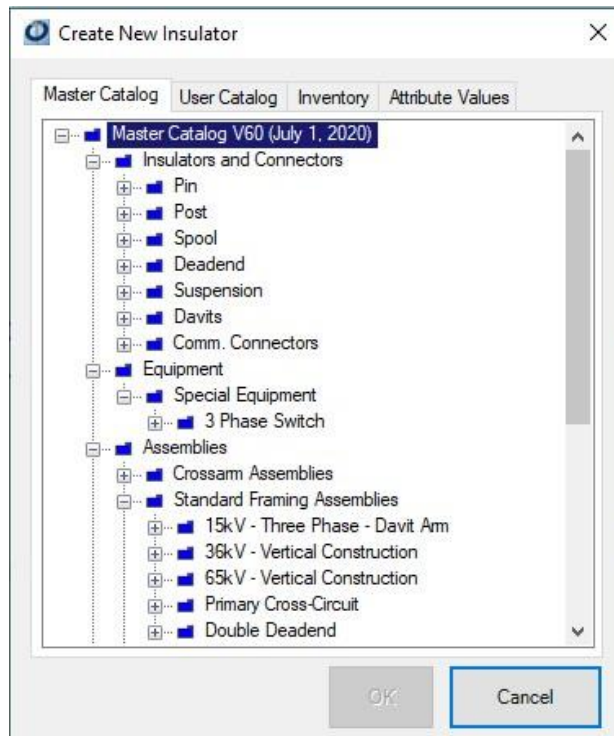
Equipment can have several attachments (Example: A crossarm can have insulators and spans attached to it). To add additional attachments to equipment, complete the following steps:

5. Right click on the **equipment** you want to add additional equipment to.
6. Select **Add Element** and select the equipment to be added from the equipment list.



**Note:** If multiple pieces of equipment are displayed in the list only one piece of equipment can be selected at a time.





**Note:** Available tabs are dependent on corresponding equipment displayed in your catalogs or Inventory Window.

7. To add **additional equipment** from one of the Catalog tabs or the Inventory tab select the appropriate tab and select the equipment you want to add.

**Note:** For additional information on catalogs or the Inventory Window see [Working With the Catalog Window](#) or [Working With the Inventory Window](#).

8. Select the **Attribute Values** tab to modify the equipment’s attribute values.
9. Select **OK**.



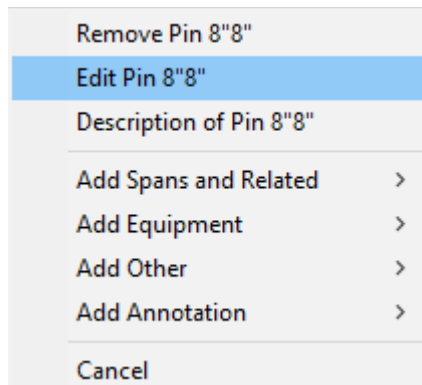
**Note:** To add additional attachments to equipment complete steps 6 –10.

**Note:** There is no undo for this operation. To delete equipment from a User Catalog folder, see [Deleting Equipment in a Subfolder](#).

### Edit Equipment Attributes in a Subfolder

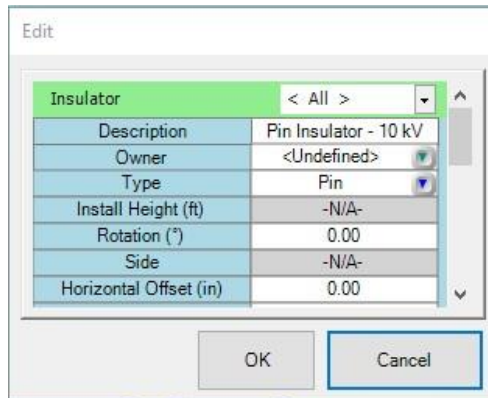
To edit equipment attribute(s) in a User Catalog subfolder, complete the following steps:

1. Right click on the **equipment** whose attribute(s) you want to edit.
2. Select **Edit** (*equipment display name*).



**Note:** For a complete list of the editable icon’s descriptions see [Editing Equipment Attributes](#).

3. Complete your edits to the equipment attributes. Click **OK**.

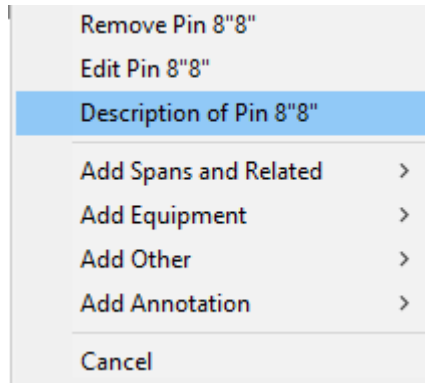


**Note:** Certain attributes are only editable in Administrative User Mode. There is no undo for this operation.

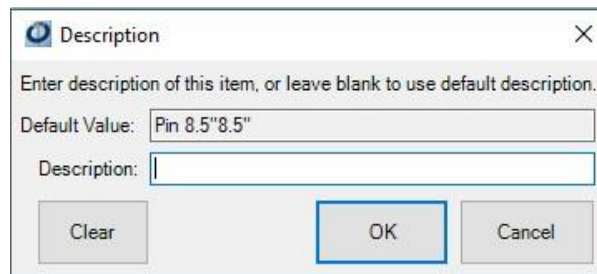
### Changing the Display Descriptions

To change the description that displays next to equipment icon in a User Catalog subfolder, complete the following steps:

1. Right click on the **equipment** you want to change the display description of.
2. Select **Description of (equipment display name)**.



3. Enter the **Description** you would like to be displayed.



*Note:* Select **Clear** to clear the Description field and reset it to the default value.

4. Select **OK**.



*Note:* There is no undo for this operation.

### Deleting Equipment in a Subfolder

To delete equipment in a User Catalog subfolder, complete the following steps:

1. Select the **equipment** to be deleted.



2. Select the **Remove** button  **Remove**.

**Note:** The selected equipment can also be removed from the subfolder by right clicking on the subfolder and selecting **Remove (equipment display name)**. Or by using the Delete key on your keyboard.

**Note:** There is no undo for this operation.

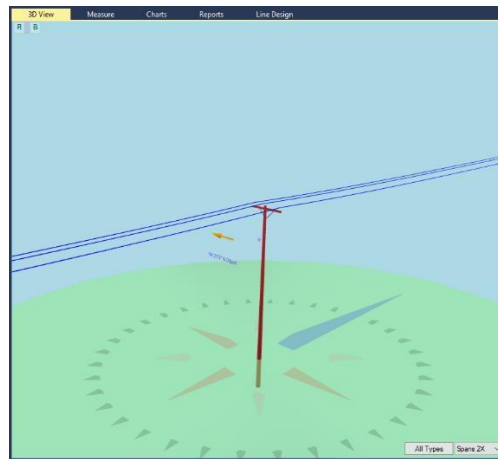
## Working in the 3D View

### About 3D View

The 3D View is a three-dimensional interactive image of the Inventory Window. As equipment is added to the pole in the Inventory the 3D View is automatically updated with those changes.

Structures can also be created or edited in the 3D View and automatically added in the Inventory.

**Note:** Any object selected in the Inventory Window is rendered in the 3D View in the color yellow.



### Interacting with the 3D View Display

The 3D View provides several ways to reposition the 3D View to better analyze the pole and the objects attached to the pole. You can use the mouse wheel to interact with the 3D View.

Mouse Wheel	To zoom in or out scroll the mouse wheel forward or backward.
Right Mouse Click	Click and hold down the right mouse button to pan the 3D View to the left, right, up or down, and orbit around the camera look point.
Left Mouse Click	Click and hold down the left mouse button to either rotate the 3D View or move the 3D View vertically up and down. Left mouse button click and moving mouse left-right will rotate the image. Left mouse button click and moving mouse up or down will vertically move the viewing perspective of the 3D View down or up.

**Invert Mouse Wheel** Inverting the mouse wheel changes the zoom in/out movement of the mouse wheel.

To invert the mouse wheel, go to Options > Misc. Options > User Interface Conventions > Invert Mouse Wheel.

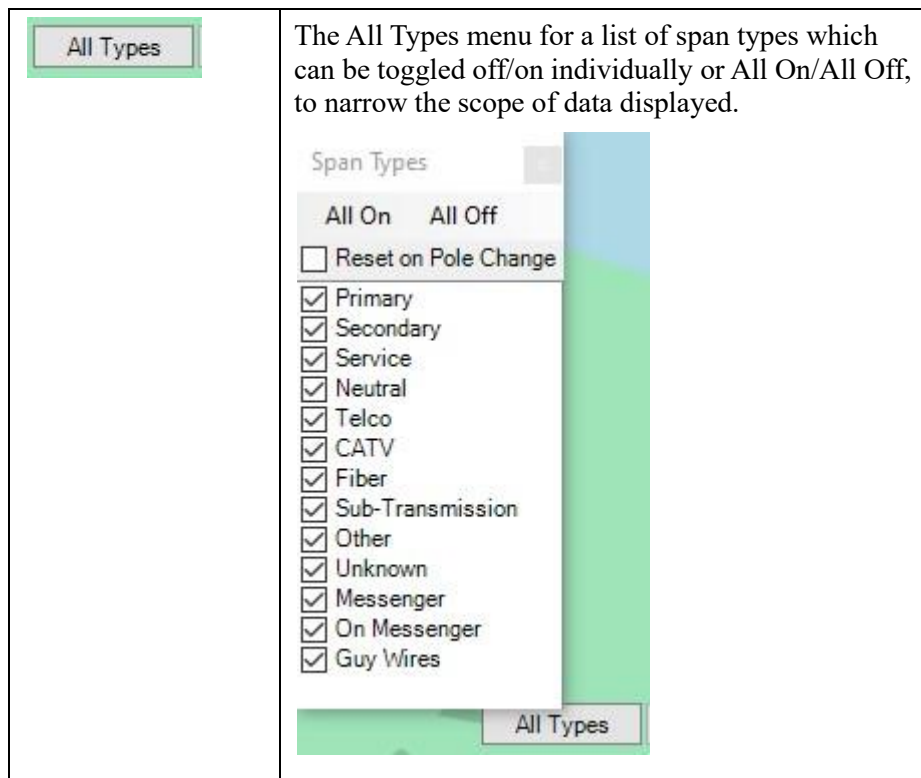
**Invert Left Mouse in 3D X or 3D Y** To invert these movements, go to Options > Misc. Options > User Interface Conventions.

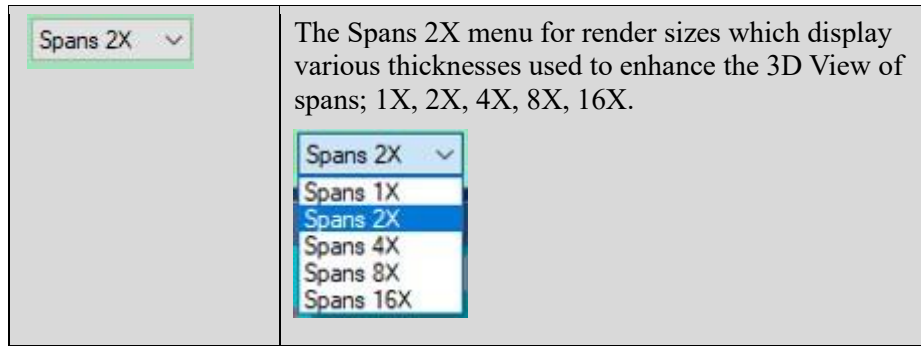
**Invert Right Mouse > Misc. in 3D X or 3D Y** To invert these movements, go to Options > Misc. Options > User Interface Conventions.

The “R” button Resets the isometric view of the structure in the 3D View.

The “B” button displays a Birdseye view of the structure in the 3D View.

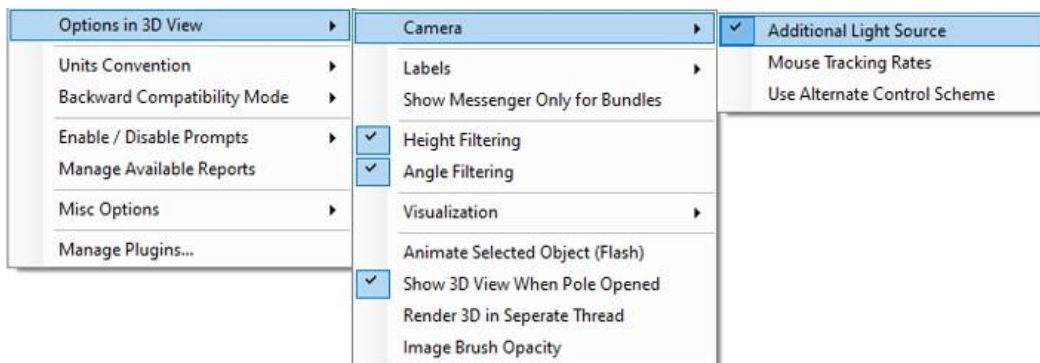
The grey button between the R and B buttons provides save, copy, print options of the 3D View.





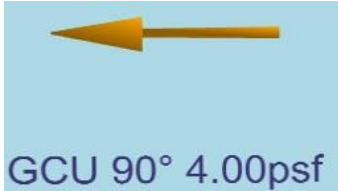
### 3D View Display Options

The 3D View offers tools to review and interact with the 3D image. Options can be enabled or disabled by clicking on them (toggle on/off). Options displaying a check mark icon are enabled.





### Camera Options in 3D View

<b>Camera</b>	<p><b>Additional Light Source.</b> The Additional Light Source is used to brighten the 3D View display. Select to toggle on.</p> <p><input checked="" type="checkbox"/> Additional Light Source</p> <p><b>Mouse Tracking Rates.</b> The Mouse Tracking Rates allows for greater control of mouse movement. Mouse response rates can differ, use these controls to slow down or increase the mouse tracking rates.</p> <div style="border: 1px solid gray; padding: 5px; margin: 10px 0;"> <p style="text-align: center; margin: 0;">Camera</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr style="background-color: #FFD700;"> <th colspan="2" style="text-align: left; padding: 2px;">Camera</th> </tr> </thead> <tbody> <tr> <td style="padding: 2px;">OrbitRateA</td> <td style="text-align: center; padding: 2px;">300</td> </tr> <tr> <td style="padding: 2px;">OrbitRateY</td> <td style="text-align: center; padding: 2px;">3</td> </tr> <tr> <td style="padding: 2px;">PanRateA</td> <td style="text-align: center; padding: 2px;">325</td> </tr> <tr> <td style="padding: 2px;">PanRateY</td> <td style="text-align: center; padding: 2px;">3</td> </tr> <tr> <td style="padding: 2px;">ZoomRate</td> <td style="text-align: center; padding: 2px;">20</td> </tr> </tbody> </table> <p style="text-align: center; margin: 5px 0;"> <input type="button" value="OK"/> <input type="button" value="Cancel"/> </p> </div> <p><b>Use Alternate Control Scheme.</b> The Alternate Control Scheme is enhanced to make navigating from pole to pole easier in the 3D View, using Line Design mode. This differs from the default cylindrical orbit controls used in the 3D View for single pole navigating.</p> <p><i>Note: For details regarding the Alternate Control Scheme reference</i></p>	Camera		OrbitRateA	300	OrbitRateY	3	PanRateA	325	PanRateY	3	ZoomRate	20
Camera													
OrbitRateA	300												
OrbitRateY	3												
PanRateA	325												
PanRateY	3												
ZoomRate	20												

<p>Labels</p>	<p><b>Label Elements in 3D View.</b> The Label Elements in 3D View option displays equipment names for each object added to the pole.</p> <p><b>Measure Cursor.</b> The Measure Cursor option displays the height for all the elements as you move the mouse along the pole in 3D View.</p> <p><b>Show Damage and Decay Markers.</b> The Show Damage and Decay Markers option displays damage and decay markers in the 3D View.</p> <p><b>Show Sub-Damage and Decay Markers.</b> The Show Sub-Damage and Decay Markers option displays sub-damage and decay markers in the 3D View.</p> <p><b>Display Wind Direction Arrow.</b> The Wind Direction Arrow displays the worst possible wind angle.</p>  <p><i>Note: You can override what displays for the Wind Direction by selecting the Load Case that is attached to the pole and enabling Override Wind.</i></p> <p><b>Display Wind Pressure.</b> The Display Wind Pressure option displays the wind pressure on the wind direction arrow.</p> <p><b>Display Heights/ Ruler.</b> The Display Heights/ Ruler option displays a ruler in the 3D View displaying 5-foot increments beginning at ground level to the top of the pole.</p> <p><b>Show Pole Label.</b> The Show Pole Label option shows the Pole Number at the top of the pole in the 3D View.</p>
<p>Show Messenger Only for Bundles</p>	<p>The Show Messenger Only for Bundles option allows only the messenger to display in the 3D View for communication bundles.</p>
<p>Height Filtering</p>	<p>The Height Filtering option filters the objects that display in the 3D view according to height.</p>
<p>Angle Filtering</p>	<p>The Angle Filtering option filters the objects that display in the 3D view according to an angle.</p>



<p>Visualization Path</p> <p>Bars:</p>  <p>Ghost Pole:</p> 	<p><b>Render Deflection Path Bars.</b> The Deflection Path Bars displays the amount the pole is deflecting (bending).</p> <p><i>Note: If Render Deflection Path Bars is enabled then Render Deflection Ghost Pole cannot be enabled. Only one of these options can be enabled at a time.</i></p> <p><i>Note: If Auto Capacity Summary is disabled you will need to manually update the Capacity Summary in order to update the Render Deflection Path Bars calculation. For additional information on the Capacity Summary see <a href="#">Working With the Capacity Window</a> .</i></p> <p><b>Render Deflection Ghost Pole.</b> The Render Deflection Ghost Pole shows the amount the pole is deflecting (bending) as a ghost of the existing pole.</p> <p><b>Exaggerate Ghost Radius.</b> The Exaggerated Ghost Radius exaggerates the Deflection Ghost Pole view.</p> <p><i>Note: The Exaggerated Ghost Radius only works with the Render Deflection Ghost Pole option.</i></p> <p><b>Show Cap Util on Ghost.</b> Displays the ghost pole with a color coded heat map of the capacity utilization.</p> <p><b>Render Sweep Visualization.</b> The Render Sweep Visualization displays a 2-dimension, color coded heat map of the capacity utilization of the pole along the length of the pole as well as wind direction.</p> <p><b>Sweep Visualization 3D Surface.</b> The Sweep Visualization displays a 3-dimension, color coded heat map of the capacity utilization of the pole along the length of the pole as well as wind direction.</p>
<p>Animate Selected Object (Flash)</p>	<p><b>Animate Selected Object (Flash).</b> The Animate Selected Object option helps identify, in the 3D View, what object has been selected in the Inventory Panel. The selected object in the Inventory Panel will change color and flash in the 3D View.</p>

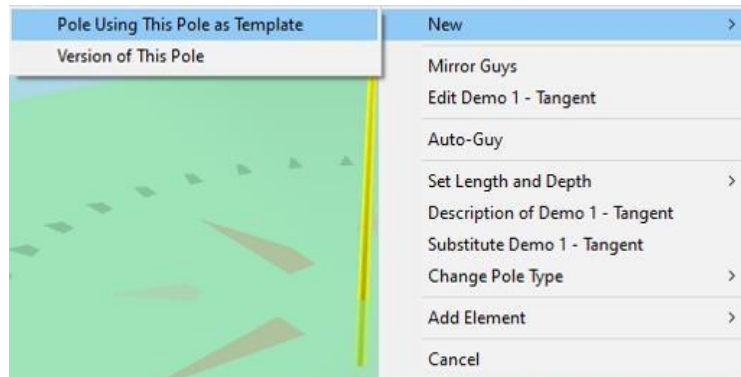
Show 3D View When Pole Opened	<b>Show 3D View When Pole Opened.</b> The Show 3D View When Pole Opened option automatically displays the 3D View when a pole is opened or created.
Render 3D in Separate Thread	<b>Render 3D in Separate Thread.</b>
Image Brush Opacity	<b>Image Brush Opacity.</b> The Image Brush Opacity allows a user to manually modify the opacity value.

*Note: All options can be enabled/disabled by simply clicking on them (toggle on/off) again. Any enabled option displays the check mark symbol indicating it is on.*

### Creating a New Pole Using This Pole as Template

To create a new pole as template in the Inventory Window using the current pole in the 3D View, complete the following steps:

1. Right click the **pole** in the 3D View and select **New > Pole Using This Pole as Template**.



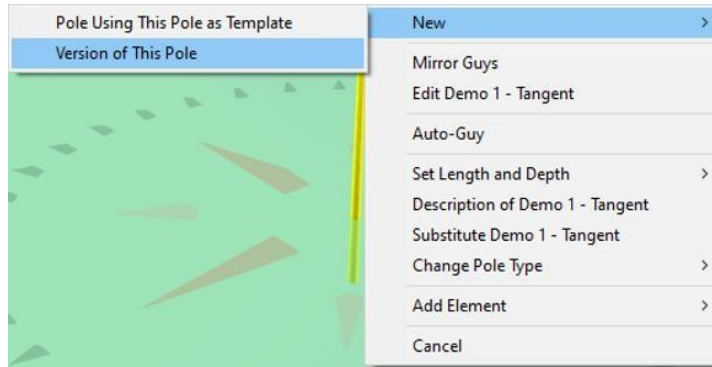
*Note: The pole is automatically highlighted in yellow once selected. Undo is not available when adding a pole using this pole as template feature.*

### Creating a New Pole Version of This Pole

As mentioned above there are two ways to create an additional version of the pole model within an existing pplx file. To create a new version of the pole in the Inventory Window using the current pole in the 3D View, complete the following steps:

2. Right click the **pole** in the 3D View and select **New > Version of This Pole**.

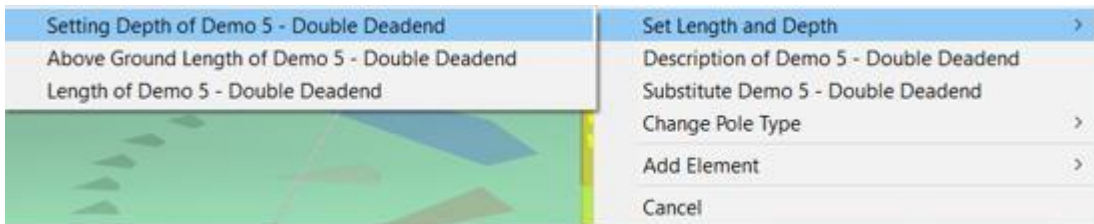
*Note: The pole is automatically highlighted in yellow once selected. Undo is not available.*



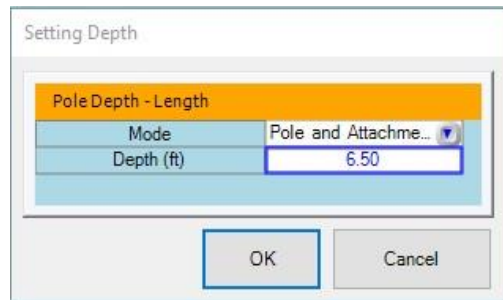
### Setting the Depth of a Pole

To set the depth of a pole, complete the following steps:

1. Right click the **pole** in the 3D View.
2. Select the **Setting Depth of (Pole display name)**.



3. Select the **Mode** from the drop-down list and enter the **Depth in feet**. Click **OK**.



*Note: The Depth in Feet field will automatically display the default pole depth when initially opened.*

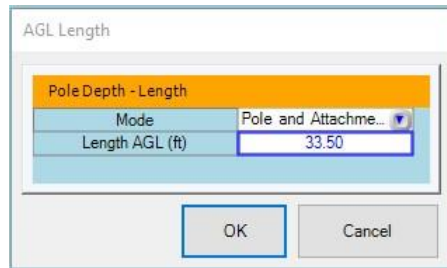
### Setting the Above Ground Length in Feet of a Pole

To set the length of a pole, complete the following steps:

1. Right click on the **Pole** you want to set the length for.
2. Select the **Set Length and Depth** option.
3. Select **Above Ground Length of (Pole display name)**.



4. Select the **Mode** from the drop-down list and enter the **AGL in Feet**.



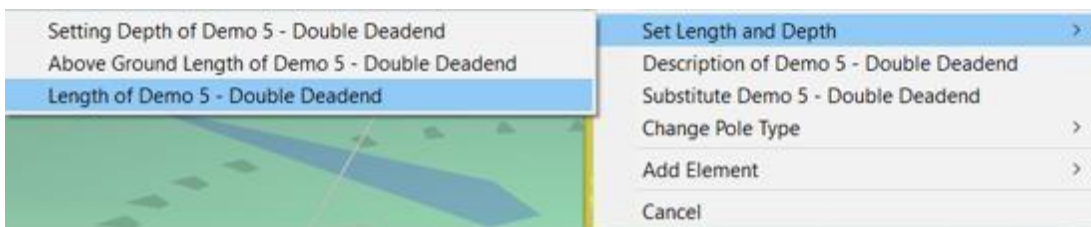
5. Select **OK**.

*Note: To undo the AGL Length change, select **Edit > Undo**.*

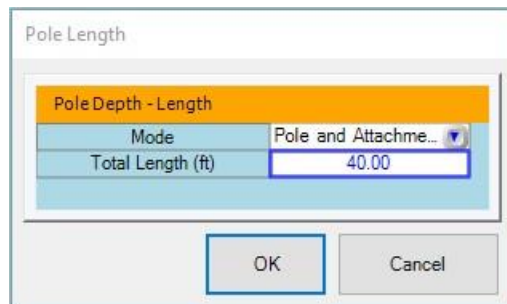
### Setting the Length in Feet of a Pole

To set the length of a pole, complete the following steps:

1. Right click on the **Pole** you want to set the length for.
2. Select the **Set Length and Depth** option.
3. Select **Length of (Pole display name)**.



4. Select the **Mode** from the drop-down list and enter the **Length in Feet**.



5. Select **OK**.

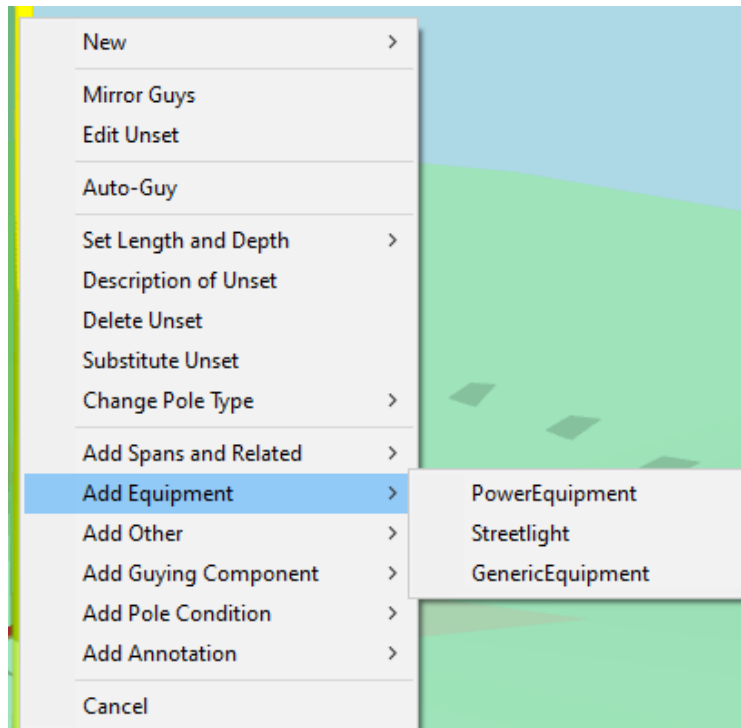
*Note: To undo the Length change, select **Edit>Undo**.*

### Adding Equipment to a Pole

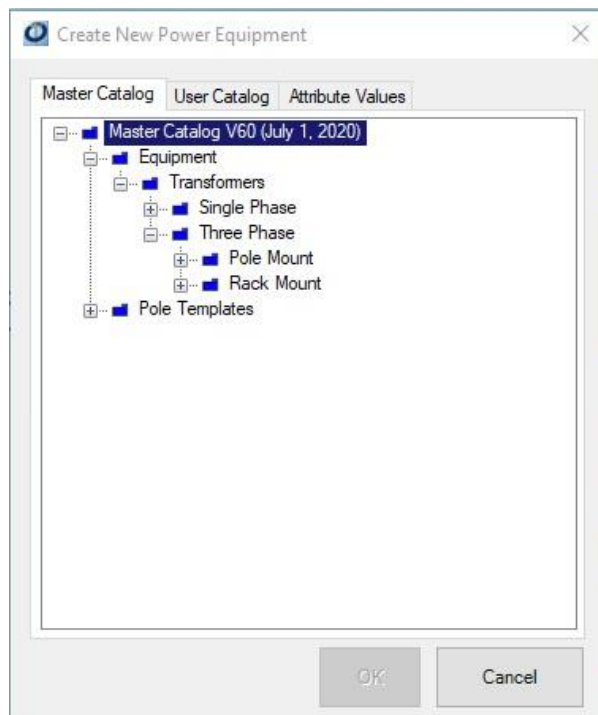
To add equipment to a pole in the 3D View, complete the following steps:

1. Right click the **pole** in the 3D View.
2. Select the **Add Element** option.
3. Select one piece of equipment from the list of available choices.

*Note: Only equipment which can be added to a pole appear in list of choices.*



*Note: Only one piece of equipment can be added at a time.*



*Note: Available tabs are dependent on corresponding equipment displayed in your catalogs or Inventory Window.*

4. To add a **crossarm** from the Catalog tabs or the Inventory tab select the appropriate tab and select the crossarm you want to add.

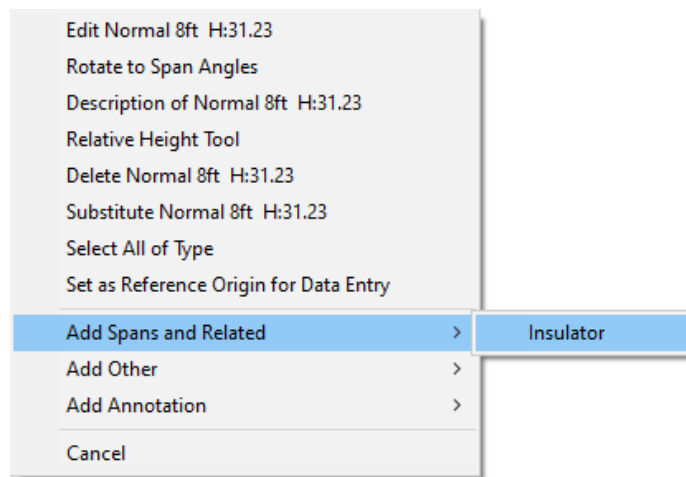
*Note:* For additional information on catalogs see [Working With the Catalog Window](#).

5. Select the **Attribute Values** tab to modify the crossarm’s attribute values.
6. Click **OK**.

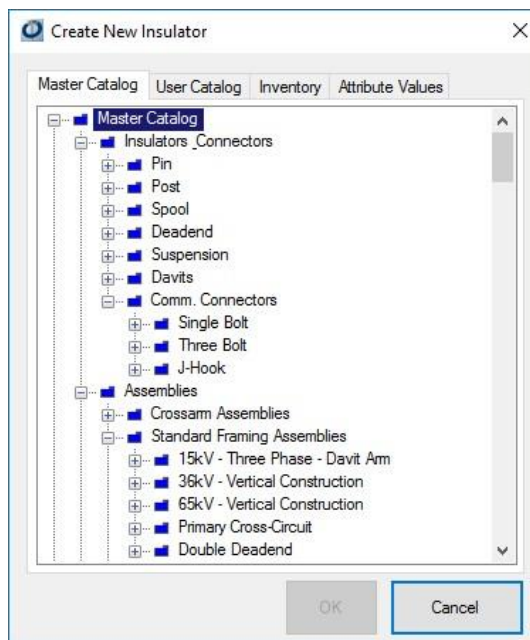
*Note:* To remove the added equipment, select **Edit > Undo**.

Equipment can have several attachments (Example: A crossarm can have insulators and spans attached to it). To add additional attachments to equipment, complete the following steps:

7. Right click on the **equipment** in the 3D View that you want to add additional equipment to.
8. Select **Add Element** and select the equipment to be added from the equipment list.



*Note:* Only one piece of equipment can be selected at a time.



*Note:* Available tabs are dependent on corresponding equipment displayed in your catalogs or Inventory Window.

9. To add an **insulator** from one of the catalog tabs or the Inventory tab select the appropriate tab and select the insulator you want to add.

10. Select the **Attribute Values tab** to modify the insulator’s attribute values.

*Note:* For additional information on catalogs see [Working With the Catalog Window](#).

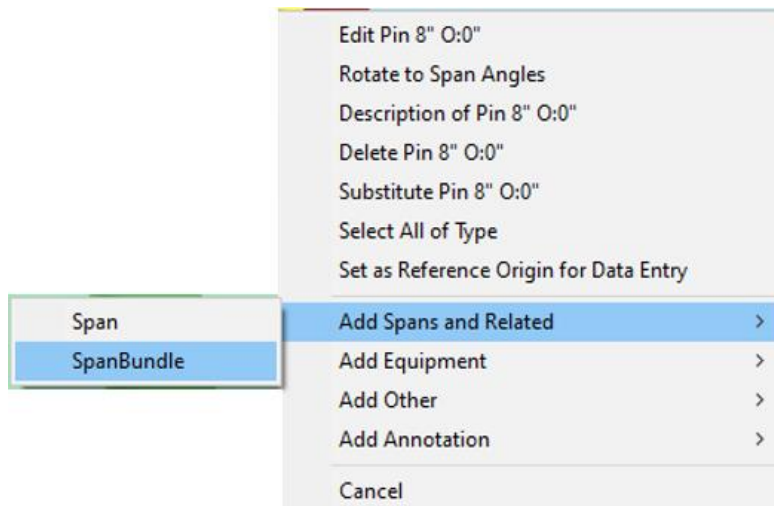
11. Select **OK**.

*Note:* To add additional equipment complete steps 1 – 9.

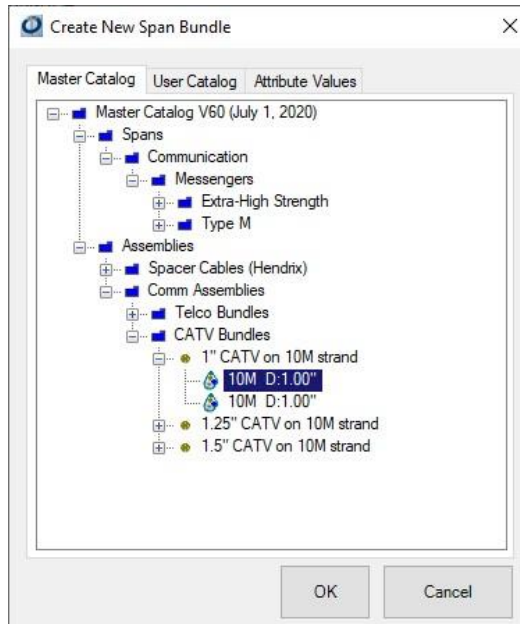
### Adding a Span Bundle to a Pole

To add a span bundle to an attached insulator in the 3D View you first need to create the span messenger wire. To create the span messenger wire, complete the following steps:

1. Right click on the **insulator** in the 3D View that you want to add a span bundle to and select **Add Element > SpanBundle**.



*Note:* Only one Span Bundle can be added at a time.



*Note: Available tabs are dependent on corresponding Span Bundles displayed in your catalogs or Inventory Window.*

2. To add a **Span Bundle** from one of the Catalog tab or the Inventory tab select the appropriate tab and select the Span Bundle you want to add.

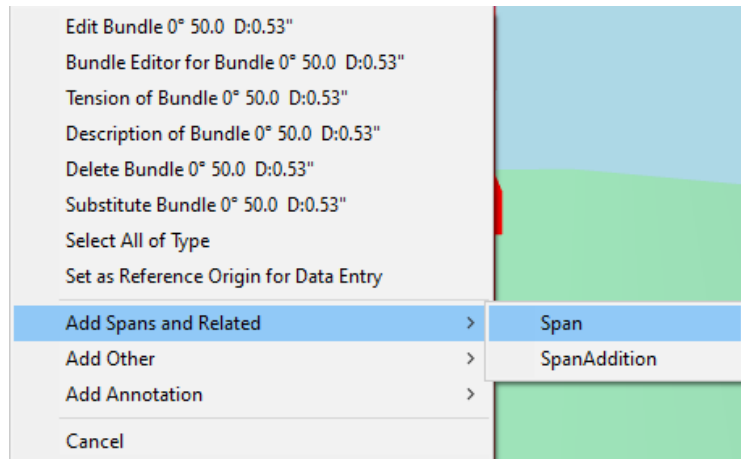
*Note: For additional information on catalogs see [Working With the Catalog Window](#).*

3. Select the **Attribute Values tab** to modify the Span Bundle attributes.
4. Select **OK**.

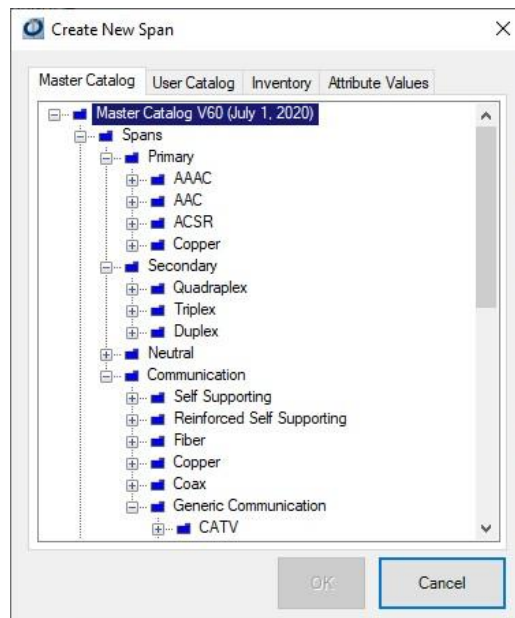
*Note: To undo additions, select **Edit>Undo**.*

Once the span bundle messenger wire has been created you need to actually add the spans. Complete the following steps to add spans to the messenger wire:

5. Right click on the **Span Bundle** in the 3D View.
6. Select **Add>Span**.



*Note: Only one Span can be added at a time.*





*Note:* Available tabs are dependent on corresponding spans displayed in your catalogs and Inventory window.

- To add an **insulator** from one of the catalog tabs or the Inventory tab select the appropriate tab and select the insulator you want to add.

*Note:* For additional information on the Catalog Window see [Working With the Catalog Window](#).

- Select the **Attribute Values Tab** to modify the Span attributes.
- Select **OK**.

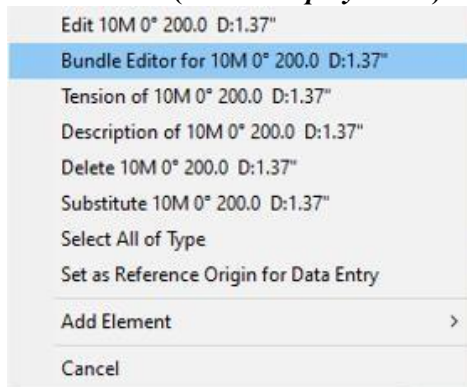
*Note:* To add additional spans to the span bundle complete steps 5 – 9.

*Note:* To undo additions, select **Edit>Undo**.

### Working with the Span Bundle Editor

To quickly and efficiently edit the spans positions or add additional spans to a span bundle use the Span Bundle Editor. To open the Span Bundle Editor, complete the following steps:

- Right click on the **Span Messenger** wire you want to edit.
- Select **Bundle Editor for (bundle display name)**.



Span bundle information

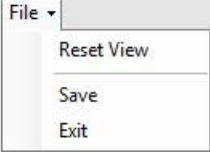
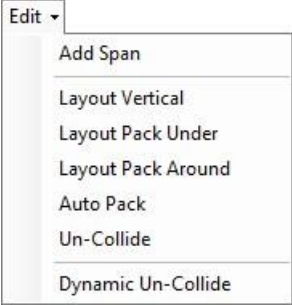
Selected spans information

Span Detail Table

Center-center position in bundle relative to messenger (in inches)		
	Horizontal	Vertical
▶ Telco 180° 200' 1.000° Hoff=-0.3 Voff=-0.4 (TELE 1.0)	0.03	-0.70

### Span Bundle Editor Menu

The Span Bundle Editor toolbar menu provides you with a variety of operations and options.

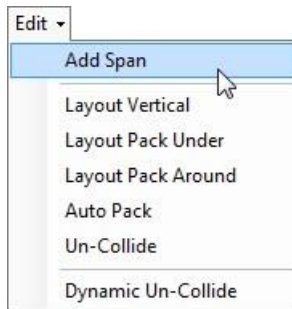
	<p><b>File.</b> The following options are available from the File menu:</p> <p><b>Reset View.</b> Select the Reset View option to set the Span Bundle Editor back to the default view.</p> <p><b>Save.</b> Select the Save option to save any changes or additions.</p> <p><b>Exit.</b> Select the Exit option to close the Span Bundle Editor.</p>
	<p><b>Edit.</b> The following options are available from the Edit menu:</p> <p><b>Add Span.</b> Select the Add Span option to add a span to the span bundle.</p> <p><b>Layout Vertical.</b> Select the Layout Vertical option to automatically reposition all the spans vertically under the messenger wire.</p> <p><b>Layout Pack Under.</b> Select the Layout Pack Under option to automatically reposition all the spans under the messenger wire.</p> <p><b>Layout Pack Around.</b> Select the Layout Pack Around option to automatically reposition all the spans around the messenger wire.</p> <p><b>Auto Pack.</b> Select the Auto Pack option to have the spans as close as possible given their size.</p> <p><b>Un-Collide.</b> Select the Un-Collide option to position the spans so they are not overlaid.</p> <p><b>Dynamic Un-Collide.</b> Select the Dynamic Un-Collide option to automatically un-collide the spans while you're dragging them into position.</p>

<p><b>Circumscribe</b></p>	<p><b>Circumscribe.</b> Selecting the Circumscribe option tells you what the minimum circle would be that all the spans and messenger wire could fit into.</p>
<p><b>Show Labels</b></p>	<p><b>Show Labels.</b> Select the Show Labels option to display the spans descriptions next to each span in the bundle.</p>

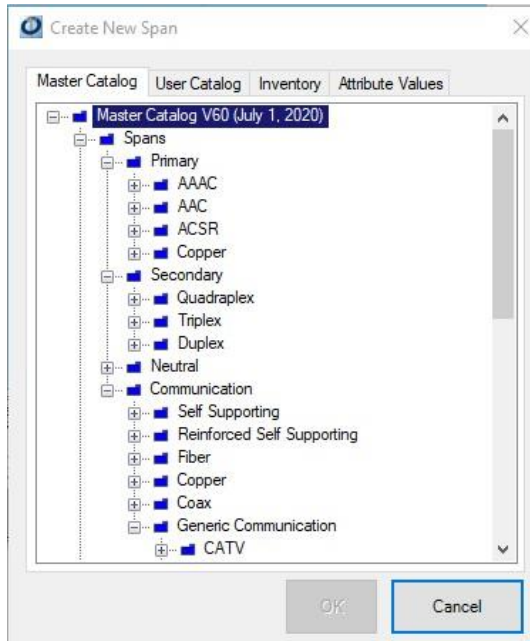
**Adding a Span to a Span Bundle**

To add a span to the span bundle using the Span Bundle Editor, complete the following steps:

1. Select **Edit > Add Span**.



*Note: Only one span can be added at a time.*



*Note: Available tabs are dependent on corresponding spans displayed in your catalogs or Inventory Window.*

2. To add a **span** from the catalog tabs or the Inventory tab select the appropriate tab and select the span you want to add.

*Note:* For additional information on the Catalog Window see [Working With the Catalog Window](#).

3. Select the **Attribute Values tab** to modify the Span attributes.
4. Select **OK**.

*Note:* The span is automatically added to the span bundle and is displayed in the Span Bundle Editor.

*Note:* There is **no Undo** option available. Select **File>Exit** to close the Span Bundle Editor without saving any modifications that have been completed.

5. Select **File > Save**.

### Repositioning Spans in a Span Bundle

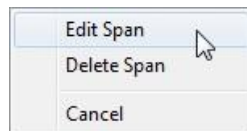
The Span Bundle Editor offers three ways you can reposition spans within the editor. To reposition span(s) in the span bundle using the Span Bundle Editor, use one of the following options:

- A. Select **Edit** and select a layout option from the Edit menu.
- B. Left click a span in the Span Bundle Display window and **drag the span** to a new location.
- C. Manually **enter a horizontal and/or vertical value** for a specific span in the Span Detail Table.

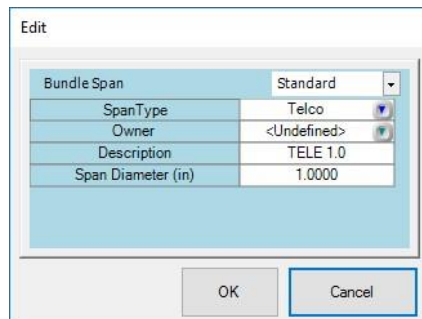
### Editing Spans in a Span Bundle

To edit span attributes from within the Span Bundle Editor, complete the following steps:

1. Right click on the **span** in the Span Bundle Display window.
2. Select **Edit Span** from the drop-down menu.



3. Complete any **modification** to the Span Bundle attributes.



4. Select **OK**.

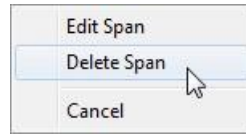
*Note:* There is **no Undo** option available. Select **File > Exit** to close the Span Bundle Editor without saving any modifications that have been completed.

5. Select **File > Save**.

### Deleting Spans in a Span Bundle

To delete a span within the Span Bundle Editor, complete the following steps:

1. Right click on the **span** in the Span Bundle Display window.
2. Select **Delete Span** from the drop-down menu.



3. Select **Yes** to the confirmation message.

*Note: There is **no Undo** option available. Select **File>Exit** to close the Span Bundle Editor without saving any modifications that have been completed.*

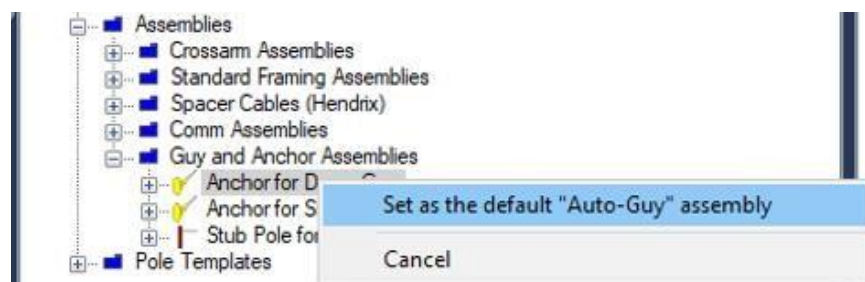
4. Select **File > Save**.

## Types of Guying Options

### Adding a Down Guy to a Pole using Auto-Guy

To properly guy a structure in O-Calc® Pro an Auto-Guy function has been added. The AutoGuy functionality uses the worst wind direction calculation to determine the lead angle placement of the anchor. And the pole deflection is used to determine the lead length of the Anchor.

To use the Auto-Guy feature, you must first select an anchor and guy assembly to be the default auto-guy assembly. To set up a default auto-guy assembly, go to a Master or User Catalog and right click on a guy and anchor assembly. Select the **Set as the default "Auto-Guy" assembly** option.



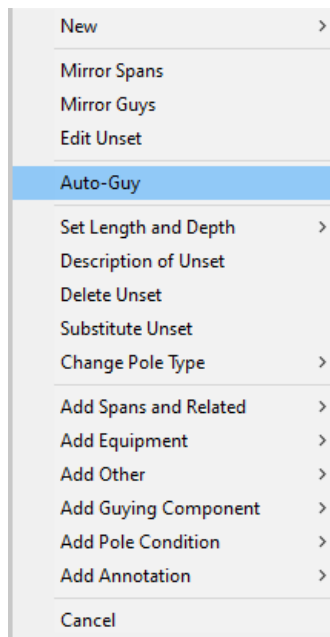
The Auto-Guy function also allows you to manually change Anchor and/or Guy attributes such as the lead angle, lead length, attachment height, etc. to ensure the structure is guyed properly. To use the Auto-Guy function in the 3D View, complete the following steps:

1. Right click the area on the **pole** where you want the Down Guy placed. The point at which you right click on the pole automatically assigns the Install

Height for the guy, which can be edited in the Data Entry, when selecting the Guy wire.



2. Select the **Auto-Guy** option.



**Note:** If a default Auto-Guy Assembly has not been set a warning message will display that the system will use the first assembly in the catalog. To set a default Auto-Guy Assembly see [Set a Default Auto-Guy Assembly](#).

3. Verify and edit any Anchor attributes. Select **OK**.

Edit

Anchor	
Description	Single Helix Anchor
Owner	<Undefined>
Lead Length (ft)	20.33
Lead Angle (°)	300
Delta Height (ft)	0.0
Offset Angle (°)	-N/A-
Rod Diameter (in)	0.750
Rod Length AGL (in)	18.0
Rod Description	Joslyn Copperbonded..
Rod Strength (lbs)	45000
Merge Anchors	Yes
Soil Class	Class 4
Holding Strength (lbs)	20000

OK Cancel

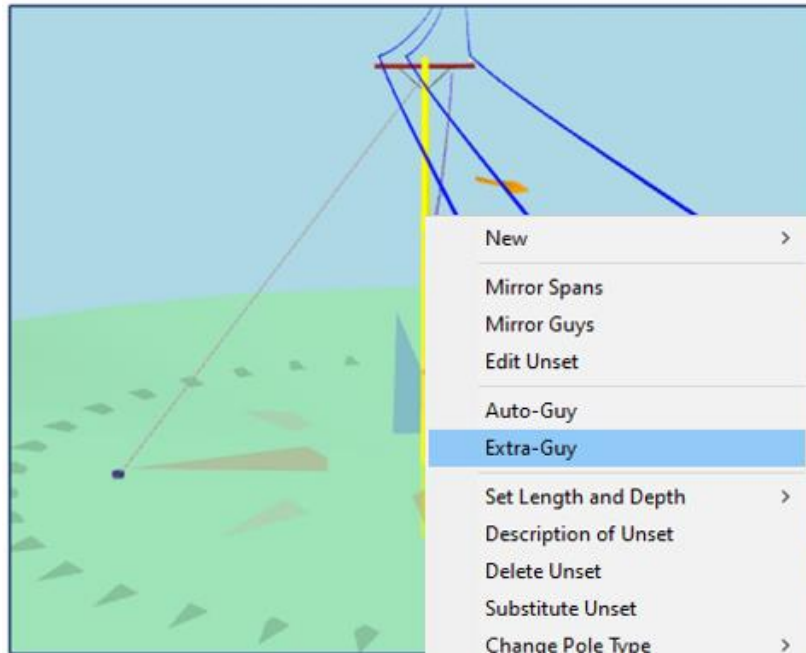


***Note:** The deflection of the pole is used to set the lead length. The anchor and guy wire are automatically added to the pole. The lead angle is picked based off the worst wind angle on the pole before the anchor/guy assembly was added.*

### Adding an Extra Down Guy to an Anchor

To automatically add extra down guys to an anchor already displayed in the 3D View, complete the following steps:

1. Select the **Anchor** that you want to add an additional down guy to in the 3D View.
2. Right click the area on the **pole** where you want the additional down guy placed.



### 3. Select **Extra-Guy**.



***Note:** Extra guy wires can be added to existing anchors as needed, you must select the anchor first.*

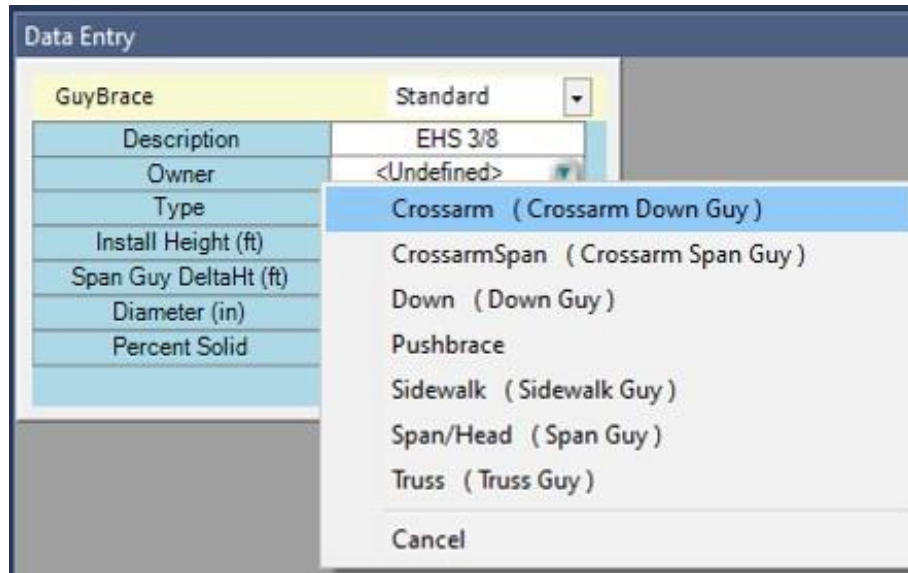
## Modifying a Down Guy into Another Type

The **Type** attribute gives users the ability to change the guys type. Guy wires may be pretensioned to a desired value before environmental loads are applied.

1. To change a down guy into another type of guy, complete the following steps:
2. Select the **Guy Wire** in the Inventory or 3D View



3. In the Data Entry, select the drop-down arrow next to the “Type” Attribute



4. Select the guying type you would like to use.

The **Type** attribute gives the user a number of options for the type of guying being used.

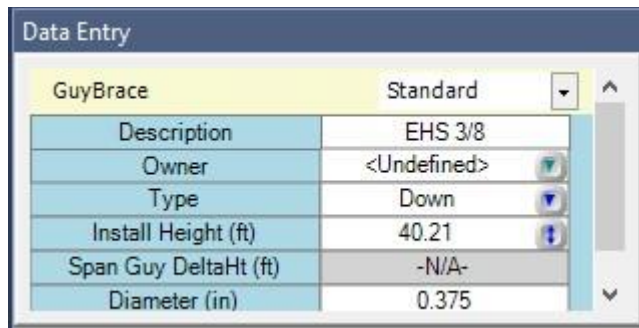
<b>Down (Down Guy)</b>	A down guy is modeled as an anchor set at a given distance and angle away from the pole, with one or more attached guy wires.
<b>Span/Head (Span Guy)</b>	A span guy, also called a stub guy, or a guy to a stub pole, models a blue “stub pole” and one or more associated guy wires.
<b>Sidewalk (Sidewalk Guy)</b>	A sidewalk guy models an anchor set at a given distance and angle away from the pole with one or more attached guy wires connected to one or more struts.  Use of this type creates a new filter option in the data entry panel called <b>Sidewalk</b> .
<b>Crossarm (Crossarm Down Guy)</b>	A crossarm guy models a standard down guy, with the ability to make the attachment point a crossarm instead of the pole.
<b>CrossarmSpan (Crossarm Span Guy)</b>	A crossarm Span guy models a standard span/head guy, with the ability to attach the guy wire to a crossarm instead of the pole.

<p><b>Pushbrace</b></p>	<p>A pushbrace is a pole that supports the structure being modeled, rather than using an anchor/guy wire combination.</p> <p><i>Note: The pole height and class of the pushbrace pole cannot be set.</i></p>
<p><b>Truss (Truss Guy)</b></p>	<p>A truss guy models a guy wire with several attachment points on the pole, rather than an attachment point connected to an anchor on the ground. This model also includes two struts.</p>

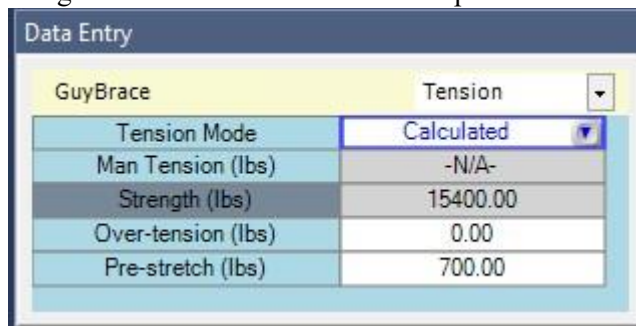
**Modifying the Guy Wire Tension**

Guy wires may be pre-tensioned to a desired value before environmental loads are applied.

1. Select the Guy Wire you want to change the Tension value for.
2. In the Data Entry change the filter from Standard to Tension.



3. Change the Tension Mode attribute drop-down menu from Calculated to Manual.



4. Enter the Man Tension attribute value as desired.

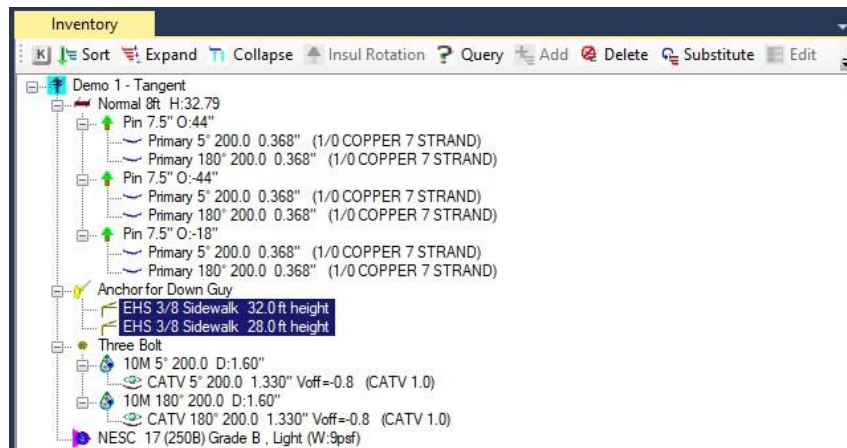
Data Entry	
GuyBrace	Tension
Tension Mode	Manual
Man Tension (lbs)	1500.00
Strength (lbs)	15400.00
Over-tension (lbs)	0.00
Pre-stretch (lbs)	700.00

### Merging Struts (Strut Compression)

O-Calc ® Pro offers the ability to combine comparable struts into one strut for analysis as a single entry. The struts need to be placed on the pole on the same anchor and at almost the same height, angle, and length before they can be combined. Struts are combined by default with the **Merge Like Struts** attribute set to **Yes** for multiple wires on the same strut. To unmerge (separate) the comparable struts, complete the following steps:

1. Select the guys you would like to unmerge in the Inventory Window.

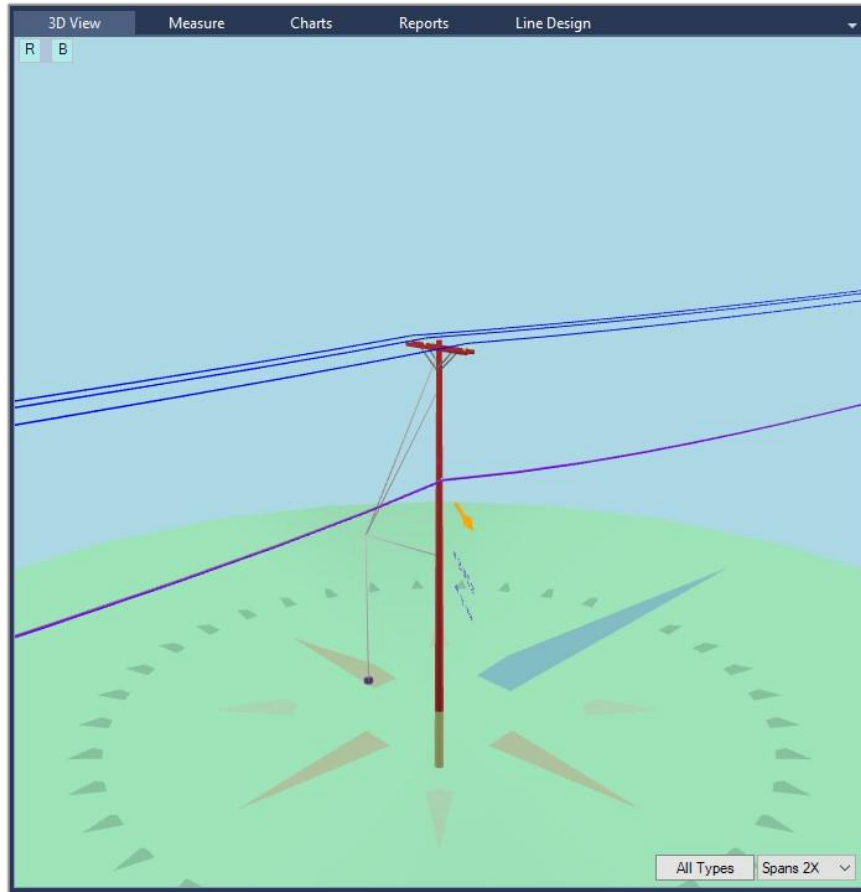
*Note: Multiple guys can be selected concurrently by holding down the ctrl key to select more than one guy that is out of sequence. If the guys are next to each other hold down the shift key to select them.*



2. In the Data Entry window toggle the **Merge Like Struts** attribute to **Yes**.

Data Entry		
GuyBrace < All >		
Description	EHS 3/8	EHS 3/8
Owner	<Undefined>	<Undefined>
Type	Sidewalk	Sidewalk
Install Height (ft)	32.00	28.00
Strut Height (ft)	12.00	12.00
Lower Strut Height (ft)	-N/A-	-N/A-
Strut Length (ft)	10.00	10.00
Strut Diameter (in)	3.00	3.00
Strut Weight/Len (lbs/ft)	2.27	2.27
Allowable Strut Load (lbs)	2500	2500
Max Strut Moment Cap (ft-lb)	800.0	800.0
Strut Fixity	Pinned	Pinned
Merge Like Struts	No	No
Span Guy DeltaHt (ft)	-N/A-	-N/A-
Diameter (in)	0.375	0.375
Percent Solid	75	75
Tension Mode	Calculated	Calculated
Man Tension (lbs)	-N/A-	-N/A-
Strength (lbs)	15400.00	15400.00
Over-tension (lbs)	0.00	0.00
Pre-stretch (lbs)	700.00	700.00
Vertical Offset (in)	0	0
Horizontal Offset (in)	0	0
Lateral Offset (in)	0.00	0.00
Weight (lbs/ft)	0.2730	0.2730
Modulus of Elasticity (psi)	2.30E+7	2.30E+7
Poisson's Ratio	0.3	0.3
Wind Drag Coef.	Auto	Auto
Thermal Coef ((in/in)/°f)	2.70E-6	2.70E-6
Guy Material	<Default>	<Default>
Strut Material	<Default>	<Default>

**Note:** All windows within O-Calc® Pro are automatically recalculated and updated to reflect the attribute selection.



**Note:** O-Calc ® Pro provides a Strut Evaluation Summary so you can easily evaluate the load applied to a sidewalk guy strut arm by the guy or guys impinging upon it. To display the Strut Evaluation Summary, see [Viewing the Data in Reports](#).

### Over-Tensioning

O-Calc ® Pro offers the ability to set a minimum tension on a guy brace regardless of the environmental loading. This attribute is called Over-tension and is found on the Guy Brace object. This attribute can be edited in the data entry panel as shown below.

Data Entry	
GuyBrace	Tension
Tension Mode	Calculated
Min Tension (lbs)	-N/A-
Strength (lbs)	15400.00
Over-tension (lbs)	0.00
Pre-stretch (lbs)	700.00

**Note:** This field will not apply any tension to the guy if the regular pole loading is greater than the value the user sets. If the pole loading doesn't apply greater tension than the Over-tension value, the Overtension value will be applied.

## Modifying the Span Drop or Rise

To modify the end, drop or rise of a span, complete the following steps:

1. Select the span in either the Inventory or 3D View
2. In the Data Entry panel, enter a value under the Edit Drop/Rise (Ft) attribute

Data Entry	
Span	Standard
SpanType	Primary
Owner	<Undefined>
Description	ACSR 1/0 AWG 6/1 RA..
Rotation (°)	0.00
Span Length (ft)	220.00
End Drop/Rise (ft)	-5.00
Span Diameter (in)	0.3980

*\*Note: When modifying the height of the pole, it is also possible to maintain the set heights of the opposite ends of the span created by entering an End Drop/Rise.*

## Maintaining Span Height after Pole Modification

To ensure the attachment heights of the opposite end of a span are maintained if the height of the pole is changed, follow the following steps:

1. Select the pole in the Inventory or 3D View
2. Right-Click on the pole and select the Substitute option.

- New >
- Mirror Spans
- Mirror Guys
- Edit Demo1
- Auto-Guy
- Set Length and Depth >
- Description of Demo1
- Delete Demo1
- Substitute Demo1**
- Change Pole Type >
- Add Spans and Related >
- Add Equipment >
- Add Other >
- Add Guying Component >
- Add Pole Condition >
- Add Annotation >
- Cancel

3. Select the new pole from the available Catalogs and click **OK**.

4. In the **Height Adjustments** Window, check the box **Keep Span End Heights**.
5. Click **OK**.

Height Adjustments

Setting Depth (ft) 6.5 (Original Depth: 6.5 ft)

All Tip Relative All GL Relative  Keep Span End Heights

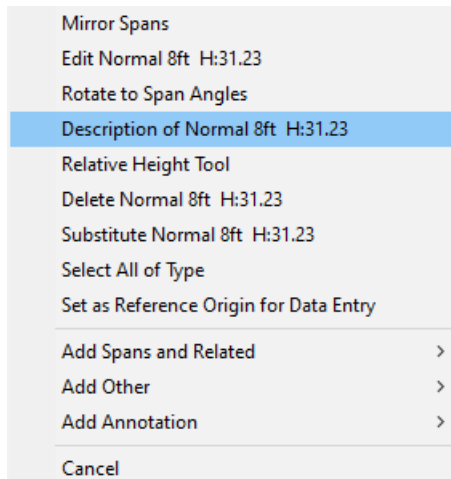
Normal 8ft H:32.79	Maintain Distance from Tip
EHS 3/8 Sidewalk 32.0 ft height	Maintain Distance from Tip
EHS 3/8 Sidewalk 28.0 ft height	Maintain Distance from Tip
Three Bolt	Maintain Distance from Tip

OK Cancel

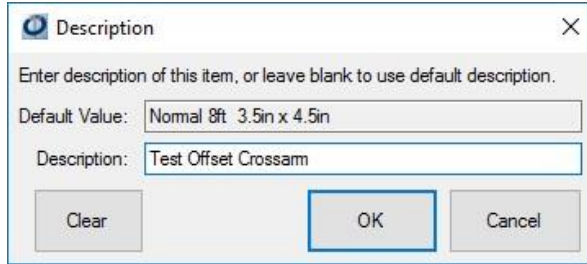
### Change the Display Description

To change the description that displays next to a pole or attached equipment, complete the following steps:

6. Right click on the **pole or attached equipment** you want to change the display description of.
7. Select **Description of (*pole or equipment display name*)**.



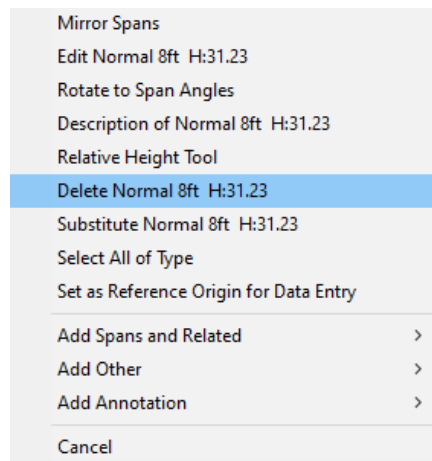
8. Enter the **Description** you would like to be displayed. Click **OK**.



### Deleting Attached Equipment

To delete equipment that is attachment to the pole in 3D View, complete the following steps:

1. Right click on the **attached equipment** to be deleted.
2. Select **Delete (pole or equipment display name)**.

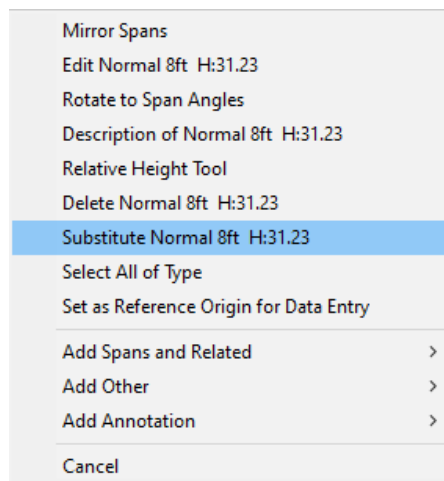


*Note: To undo the deletion, select **Edit>Undo**.*

### Substituting Attached Equipment

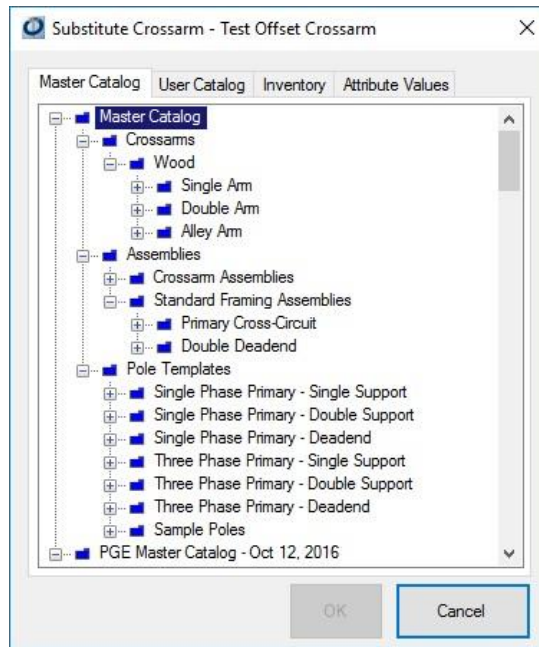
To substitute attached equipment in the 3D View, complete the following steps:

1. Right click on the **attachment** you would like to substitute.
2. Select **Substitute (equipment display name)**.





3. In the **Substitute Crossarm** Window, select the equipment needed, click **OK**.



*Note:* Available tabs are dependent on corresponding equipment displayed in your catalogs or Inventory.

4. To **substitute equipment** from the catalog tabs or the Inventory tab select the appropriate tab and select the equipment you want to use as a substitute.

*Note:* For additional information on the Catalog Window see [Working With the Catalog Window](#).

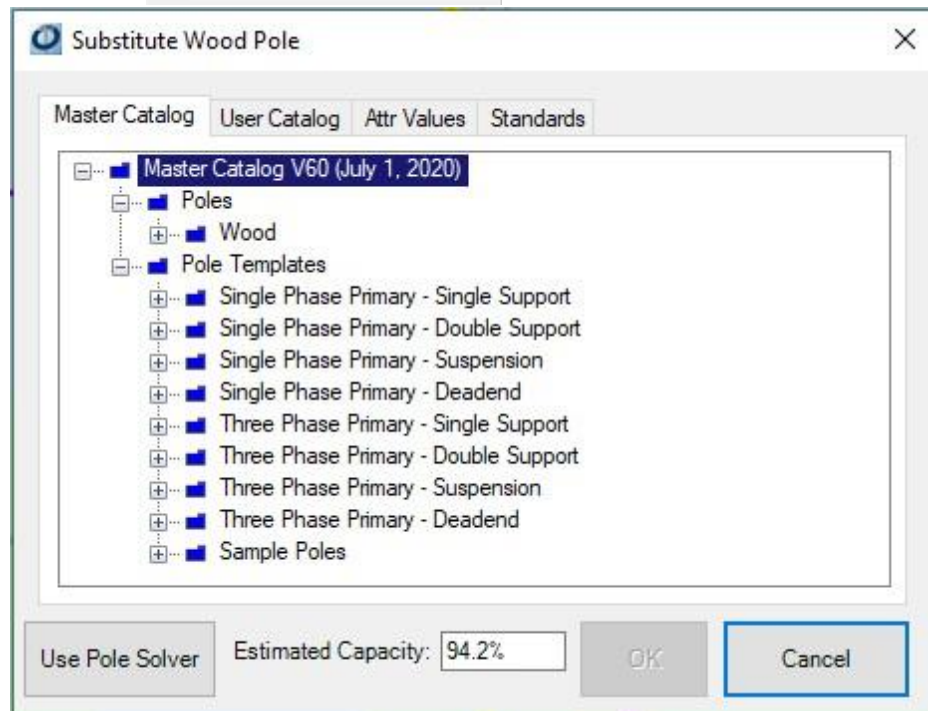
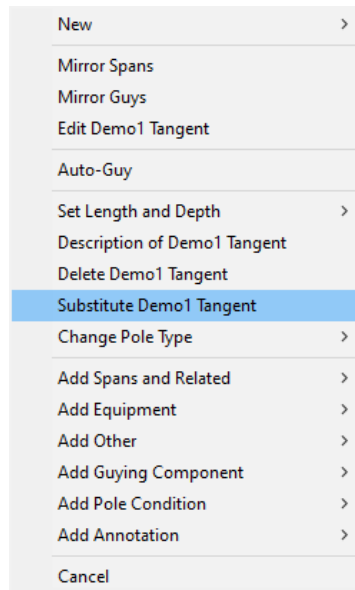
5. Select the **Attribute Values tab** to modify the equipment attributes.
6. Select **OK**.

### Substituting a Pole

To substitute a pole in the 3D View O-Calc® Pro provides you with three options. You can either manually select the substitute pole, select the substitute pole from the Catalog Window or you can use the Pole Solver option to help you select the substitute pole. The pole solver option will display the minimum pole class and the estimated capacity that would be used based on the pole's current load. To substitute the current pole, complete the following steps:

1. Right click on the **pole** you would like to substitute.

2. Select **Substitute** (*pole's display name*).



**Note:** Available tabs are dependent on corresponding poles displayed in your catalogs or Inventory Window

3. Use one of the following methods to select the substitute pole you want:
  - A. **Manually** select the substitute pole attributes using the **Attr Values** or **Standards** tab.
  - B. To select the substitute pole from a **Catalog**, select the appropriate tab and select the pole you want to use as a substitute. The attributes can still be modified if needed.

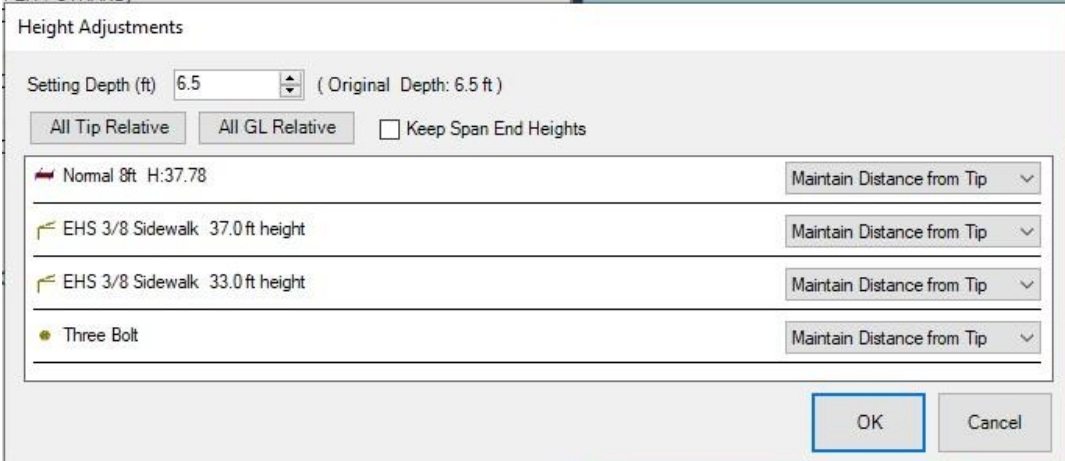
**Note:** For additional information on the Catalog Window see [Working With the Catalog Window](#).

- C. Select the **Use Pole Solver** button  to have O-Calc® Pro automatically select the minimum Pole Class that would provide you with a passing pole.

4. Select **OK**.

*Note: The Estimated Capacity percentage will automatically be updated dependent on your attribute selections.*

If there are attachments already on the pole the Height Adjustment window will automatically be displayed. The Height Adjustment window allows you to adjust the substitute poles depth and the height of the attachments relative to groundline or the tip of the substitute pole.



5. Modify the **Setting Depth** for the pole if required.
6. **Maintain Distance from Tip** or **Maintain Height from Groundline** for attachments heights as needed.
7. Select **All Tip Relative** or **All GL Relative** for attachment heights as needed.
8. Select **OK**.

*Note: To undo the substitution change, select **Edit > Undo**.*

### Create a New Version of the Existing Pole

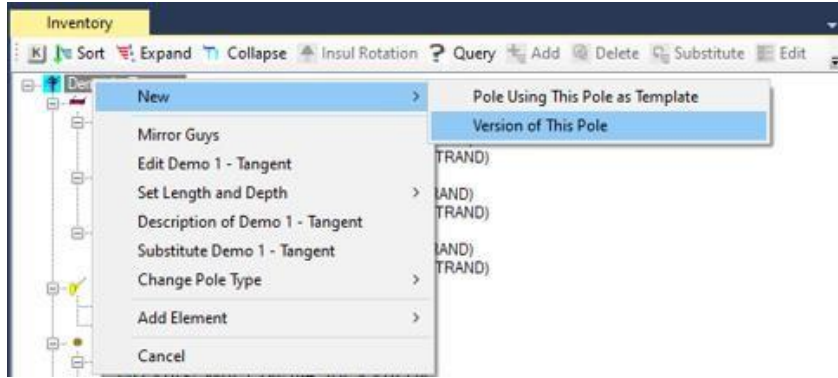
While working with a pole in the 3D View it may be beneficial to compare multiple versions of the pole simultaneously. O-Calc® Pro provides the ability to create multiple pole versions.

To create a new version of the existing pole in the 3D View, complete the following steps:

1. Right click on the **Pole** in the 3D View that you would like to create another version of.

*Note: The pole will automatically be highlighted in yellow once selected.*

2. Select **New > Version of This Pole**.



**Note:** To remove the new version, select **Edit > Undo**.



The new version automatically becomes the active version in the 3D View. The active version of a pole is always outlined in red in the Inventory Window to easily identify which pole’s data is being displayed in O-Calc ® Pro.

When saving a pole, all the versions of the pole will be saved at that time.

### Repositioning Object in 3D View

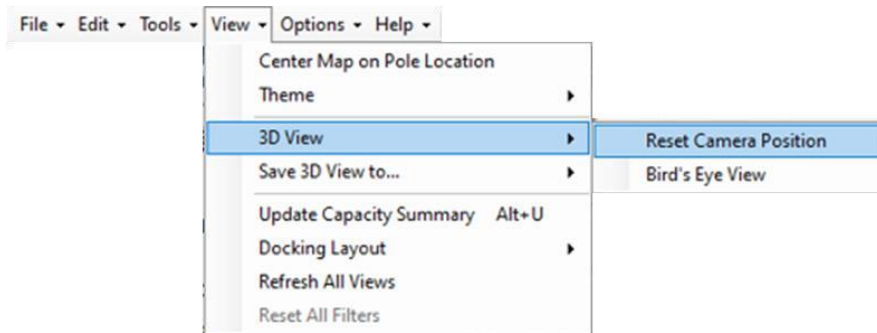
Objects can be repositioned from within the 3D View by selecting the object to be repositioned and using the following shortcut keys:

Angle	Holding down the “A” key and selecting an object allows you use the mouse to rotate the object to reposition it.
Vertical	Holding down the “V” key and selecting an object allows you to use the mouse to reposition the object up or down.
Horizontal	Holding down the “H” key and selecting an object allows you to use the mouse to reposition the object to the left or the right. (Use the “G” key option if the front of the object is facing you).
Reverse Horizontal	Holding down the “G” key and selecting an object allows you to use the mouse to reposition the object to the left or the right. (Use the “H” keys if the back of the object is facing you)

### Resetting the Camera Position in 3D View

To reset the 3D View back to the default view, complete the following steps:

1. Select **View > 3D View > Reset Camera Position**.



The 3D View is automatically reset back to the default 3D view.

*Note:* The camera position can also be reset by clicking on the **R** button in the 3D View. To see the Birdseye view, click the **B** button in 3D View.

### Changing to an Overhead View

To change the 3D View to an overhead view or “Bird’s Eye View”, complete the following steps:

1. Select **View > 3D View > Bird’s Eye View**.



The 3D View is automatically changed to the overhead view.

*Note:* When the Bird’s Eye View option is selected, basic movements such as rotating and panning are enabled.

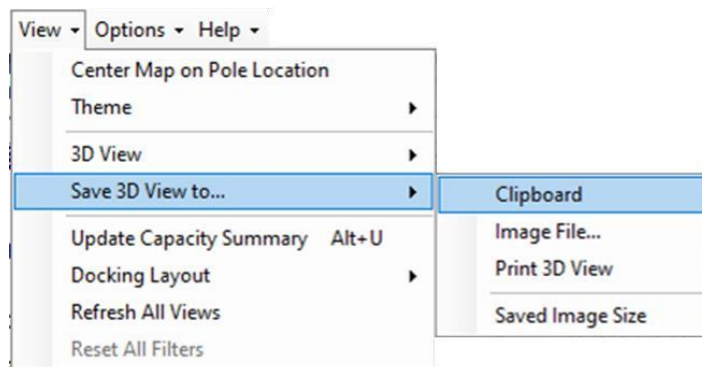
### Saving the 3D View

To easily access the current 3D View at a later time you can save the current 3D View to a .png file or place the 3D View on the clipboard.

#### Place the 3D View on the Clipboard

To place your current 3D View on the clipboard, complete the following steps:

1. Select **View > Save 3D View to > Clipboard**.

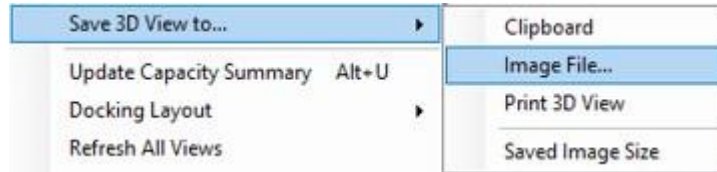


*Note: A **Copy 3D View to Clipboard** option is also available by holding down the ctrl key and right clicking on the 3D View background display.*

**Save the 3D View**

To save your current 3D View to a .png file, complete the following steps:

1. Select **View > Save 3D View to > Image File.**



*Note: To adjust the size of the 3D View image being saved select **Saved Image Size**.*

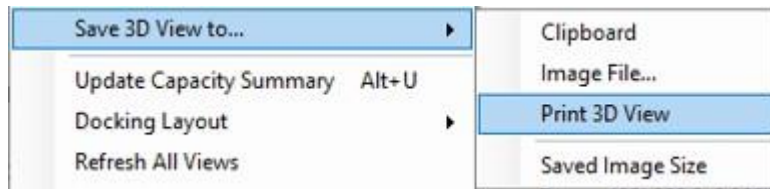
*Note: The **Save 3D View to File** option can also be accessed by holding down the ctrl key and right clicking on the 3D View background display.*

2. Browse to where you want to save the 3D View .png file and select **Save**.
3. Select **OK** to the confirmation message.

**Print the 3D View**

To print the current 3D View, complete the following steps:

1. Select **View > Save 3D View to > Print 3D View.**

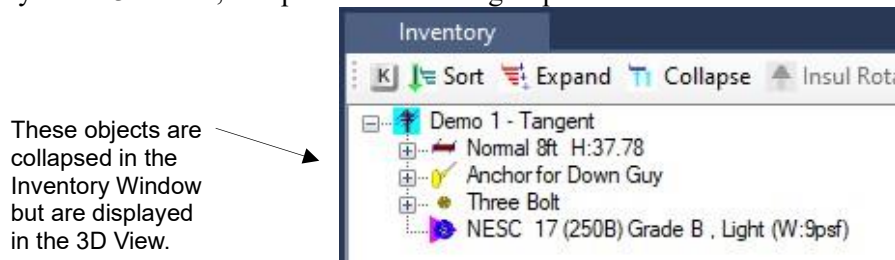


*Note: The 3D View is automatically printed to your default printer.*

*Note: The **Print 3D View** option can also be accessed by holding down the ctrl key and right clicking on the 3D View background display.*

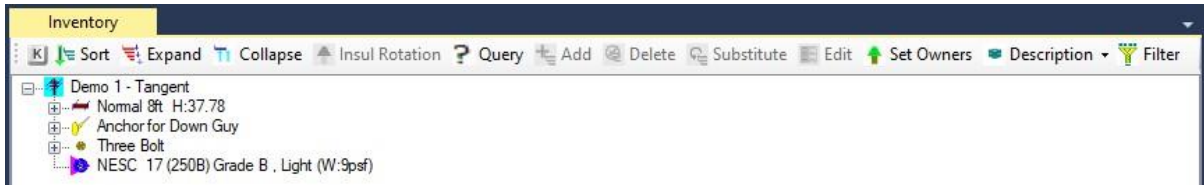
**Filtering the 3D View**

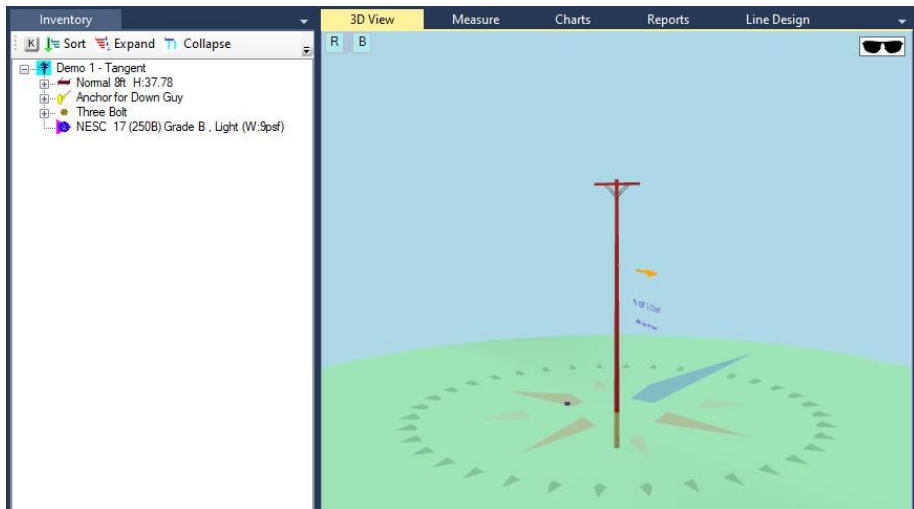
To filter the 3D View so that only the objects that are expanded in the Inventory Window display in the 3D View, complete the following steps:





1. Collapse the desired objects in the Inventory by clicking on the minus button.

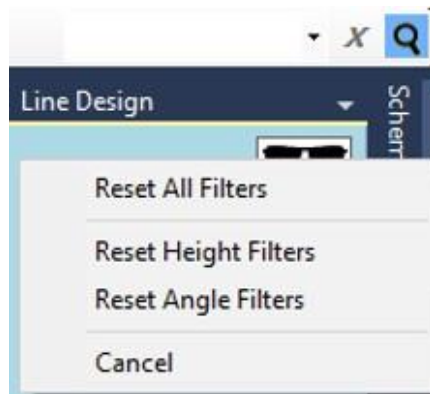
2. Select the **Filter** button  in the Inventory Window.





OR

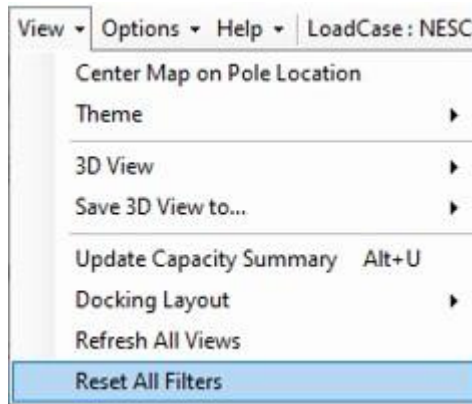
3. To turn the **filtering option off** deselect the Filter button  button  in the 3D View > Reset All Filters.



select the sunglasses



*Note: The filtering option can also be turned off by selecting **View > Reset All Filters** or select the Filtering Notification button and selecting the **Reset All Filters** option.*



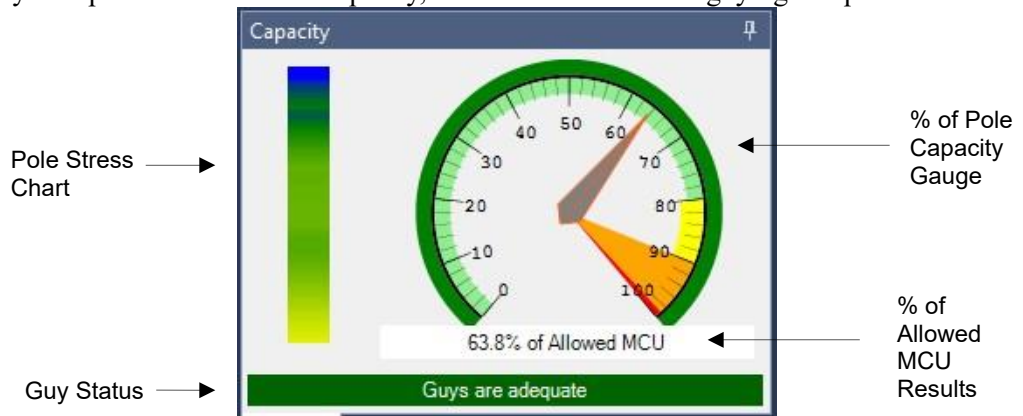
### Working with the Capacity Window

#### Understanding the Capacity Window

The Capacity Window displays a summary of the active pole’s capacity. The summary provides you with a quick and easy to understand overview of the active pole capacity information. The Capacity Window can be displayed in either a metered format, a more detailed summary view, or explicit for GO95 load cases, a pole factor of safety view.

#### About the Capacity Meter Display

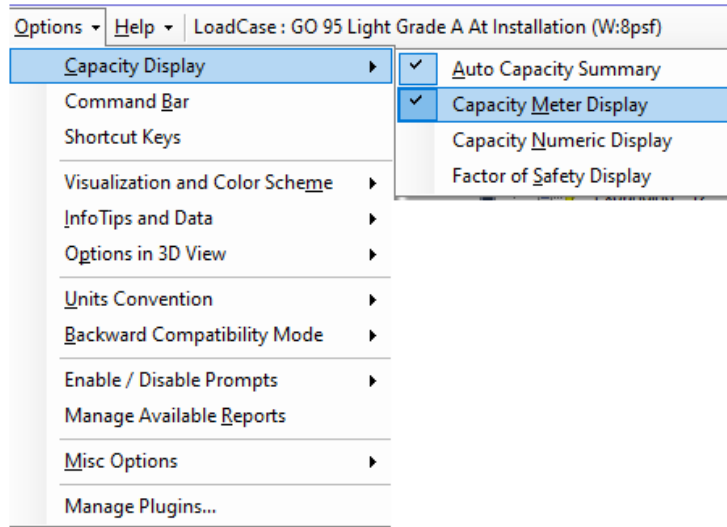
The Capacity Meter calculates the load capacity for the active pole. The meter view displays the percent of the Pole Capacity, the Pole Stress and the guying adequacies.



#### Enabling the Capacity Meter Display

To enable the Capacity Meter Display, complete the following steps:

1. The Capacity Meter is the default display option. There are various display options, which are controlled by selecting **Options > Capacity Display** options.



**Note:** The Capacity Meter is one of the three options. A check mark displays next to the menu option that is currently active. Only one of the options can be displayed at a time.

**Note:** All options can be enabled/disabled by simply clicking on them (toggle on/off) again. Any enabled option displays the check mark symbol indicating it is on.

### Understanding the Capacity Meter Display

The following tables describe the default color representations in the Pole Stress Chart and the Percent of Pole Capacity Gauge.

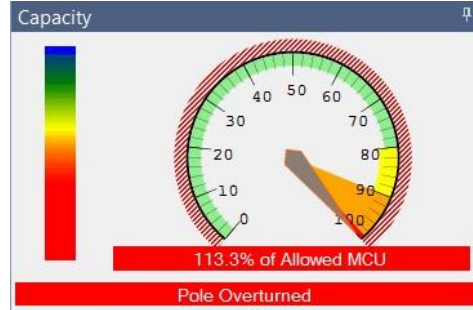
<i>Pole Stress Chart</i>		<i>% of Pole Capacity Gauge</i>		
<i>Display Color</i>	<i>Description</i>	<i>Display Color</i>	<i>MCU Thresholds</i>	<i>Description</i>
Blue	0% Pole Stress	Green	< 80%	Acceptable Capacity
Green	...	Yellow	80% to 89.9%	Near Capacity
Yellow	50% Pole Stress	Orange	90% to 99.4%	Near Capacity
Orange	...	Red	99.5% or above	At or Over Capacity
Red	100% + Pole Stress			

**Note:** Color Legend is also available from the **Tools>View Color Legend**.

**Note:** The Capacity Meter display color schema can be changed by selecting a color schema from the **Options>Visualization Color Scheme** menu.

**Acceptable Pole Capacity Example**

**Failed Pole Capacity Example**



### About the Numeric Capacity Display

The Numeric Capacity Display calculates and displays details regarding the Maximum and Groundline moment, capacity utilizations, wind direction and guying adequacies.

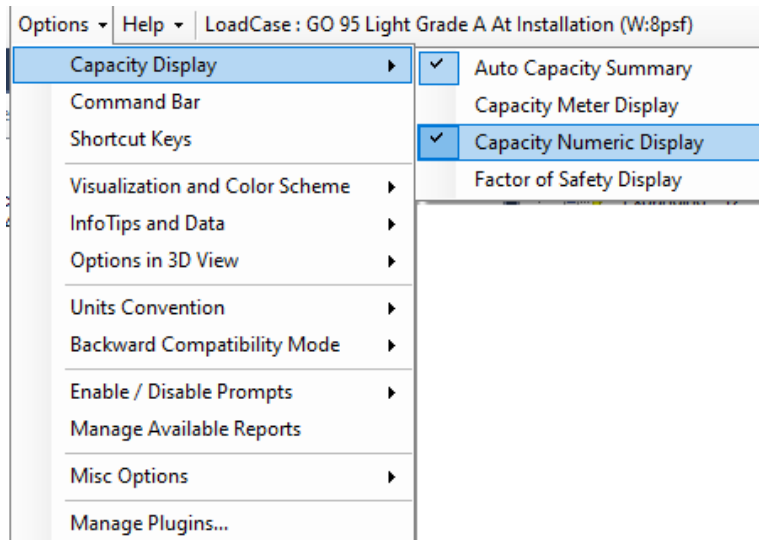
		Groundline		Max Cap Util	
Moment		13,578 ft-lb		13,578 ft-lb	
		%	Height	Wind Angle	Load Angle
Max	31.6	0.0 ft	89.3°	83.0°	
GL	31.6	0.0 ft	89.3°	83.0°	
Buckling	8.9	33.4 ft	0.0°		
Guys are adequate					

*Note: The appearance of the Numeric Capacity Display can be change to a flat style by selecting **Options > Misc Options > Flat Visual Style.***

### Enabling the Numeric Capacity Display

To enable the Numeric Capacity Display, complete the following steps:

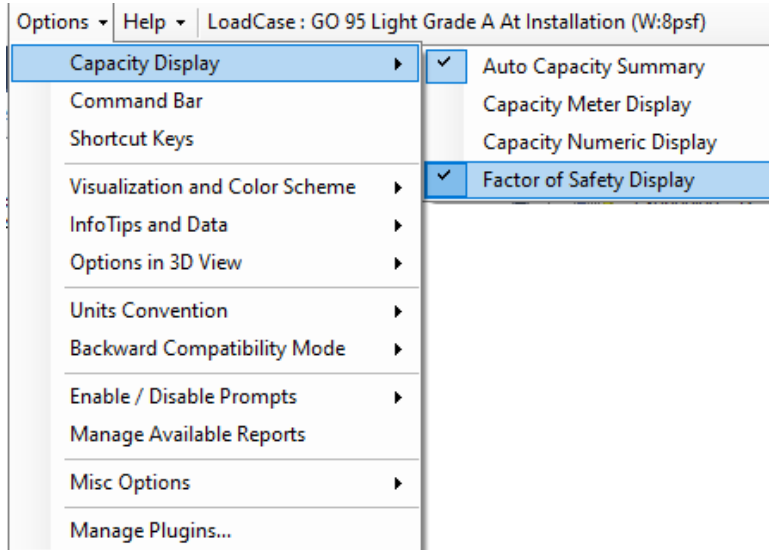
1. Deselect **Options > Capacity Display > Capacity Numeric Display.**



### Enabling the Factor of Safety Display

To enable the Factor of Safety Display for use with GO 95 Load Cases, complete the following steps:

2. Deselect **Options > Capacity Display > Factor of Safety Display**.



*Note: All options can be enabled/disabled by simply clicking on them (toggle on/off) again. Any enabled option displays the check mark symbol indicating it is on.*



### Capacity Window Menu Display Options

Right clicking on the Capacity Window background provides several options.



**Copy Image.** Select the Copy Image option to copy the current Capacity Window as an image to the clipboard so that the image of the Capacity Window can be pasted directly into other applications such as Microsoft Word, E-Mail, and Notepad etc.

**Copy Data.** Select the Copy Data option to copy the

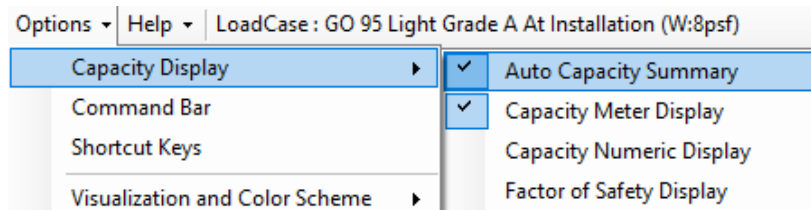
Capacity Window data to the clipboard so that the Capacity Window data can be pasted directly into other applications such as Microsoft Word, E-Mail, etc.

**Cancel.** Select the Cancel option to close the Capacity Window menu option pop-up without taking any action.

### Automatically Updating the Capacity Window

The Capacity Window is automatically updated each time a change is made to the active pole, by default, to disable the automatic calculation toggle it off complete the following steps:

1. Select **Options > Capacity Display > select Auto Capacity Summary.**



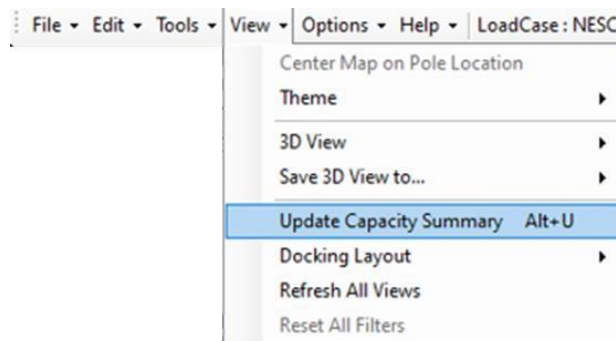
*Note:* All options can be enabled/disabled by simply clicking on them (toggle on/off) again. Any enabled option displays the check mark symbol indicating it is on.

*Note:* To change the idle time interval between updates, see [Set the Idle Time Interval.](#)

### Manually Updating the Capacity Window

If the Auto Capacity Summary option is disabled, you can manually update the Capacity Window by completing the following steps:

1. Select **View > Update Capacity Summary.**



2. Or you can manually update the Capacity Window by clicking the red **Ready** button.



## Working with the Measure Window

### Measure Window Overview

The Measure Window allows you to take measurements from images using Digital Measurement Technology (DMT). You can efficiently measure equipment attachment heights, arbitrary lengths, conductor diameters, and angles. With DMT we can learn a poles height above ground line and the resulting setting depth using an image.

Before any measurements are taken from an image the calibration needs to be set for that image. See [Setting the Calibration](#). As each measurement is done, the value is automatically updated in the Inventory Window, 3D View, and Data Entry Panel. Labels are also placed on the image.

The camera's lens calibration needs to be set before any measurements can be taken. To set a camera's lens calibration see [Working with the Lens Calibration Tool](#).

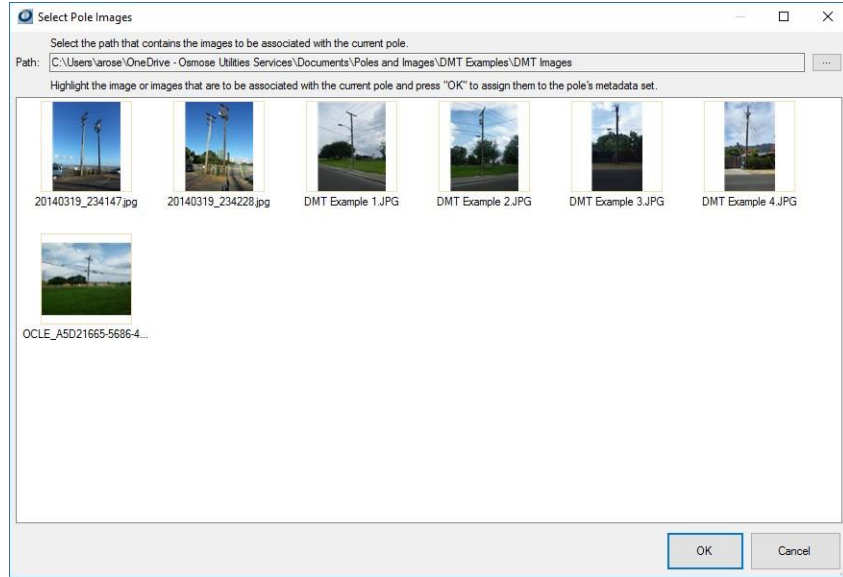
### Working with Images in the Measure Window

#### Selecting Images to Display

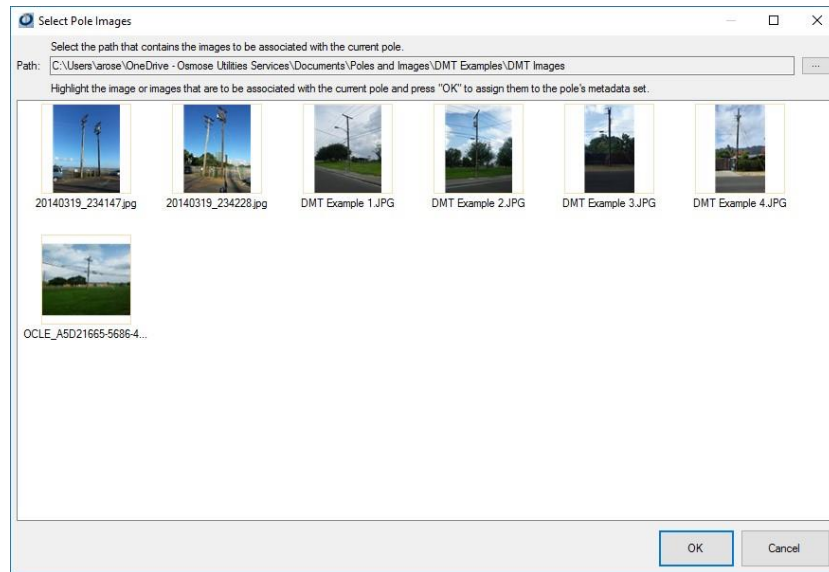
To select the images needed to complete measurements, complete the following:

1. Select **Edit > Pole Images > Select Images**.

*Note: Images can only be added after a pole has been added to the Inventory Window.*



2. Select the image path by clicking the ellipsis button and navigate to where the images are for the current pole.
3. In the Select Folder window, select the folder that contains the images you want. Click the **Select Folder** button, the images will load in the Select Pole Images window.



4. Select the **images** to be associated to the current pole. Click **OK**.

*Note: Hold down the ctrl key to select more than one image out of sequence. Hold down the shift key to select a range of images next to each other.*

### Selecting Additional Images to Display

Additional images can be added to the current pole at any time.

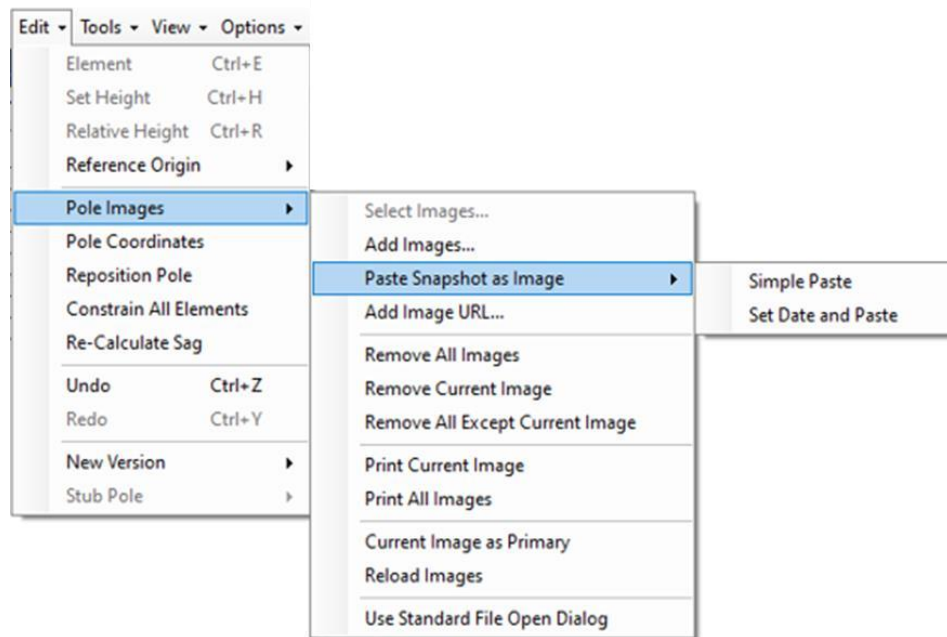
To select additional images, you need to complete measurements, complete the following steps:

1. Select **Edit > Pole Images > Add Images**.
2. Select additional images from the current Path or click the **Ellipsis** button to navigate to other folders and click the **Select Folder** button.
3. In the Select Pole Images window, select the **images** you want.
4. Click **OK**.

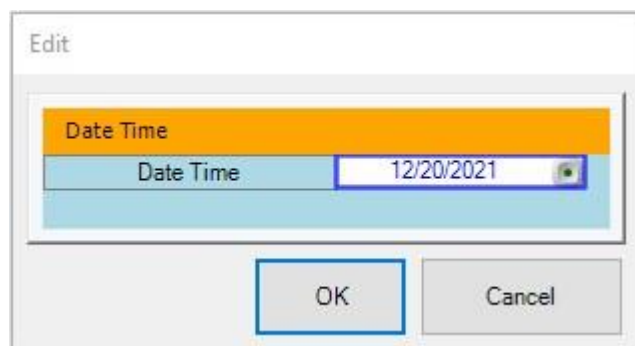
**Paste Snapshot as Image**

Some images that need to be used in the Measure Window can be found as embedded images rather than standalone files. These can be pasted into the Measure Window as snapshots and saved as standalone files. To paste a snapshot as an image, follow these steps:

1. Take a snapshot of an image and paste it to the clipboard; this can be done using a snipping or screen capture tool.
2. Select **Edit > Pole Images > Add Images**.
3. Select **Paste Snapshot as Image** or **Simple Paste** or **Set Date and Paste**.



4. Select the Set Date and Paste option to save the images with a date stamp.



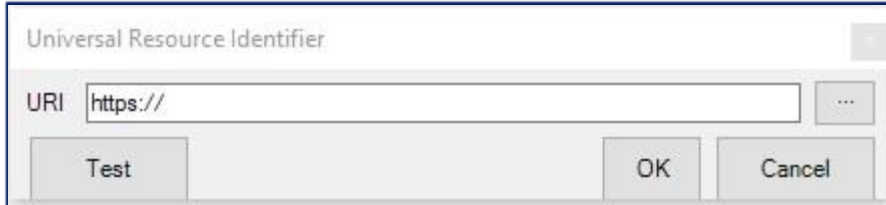
5. In the Measure Window, the copied Image will be available to use in the Calibration Process.



**Add Image URL**

To add an image URL (Universal Resource Identifier), complete the following steps:

1. Select **Edit > Pole Images > Add Image URL**. Enter the URI address, click **OK**.

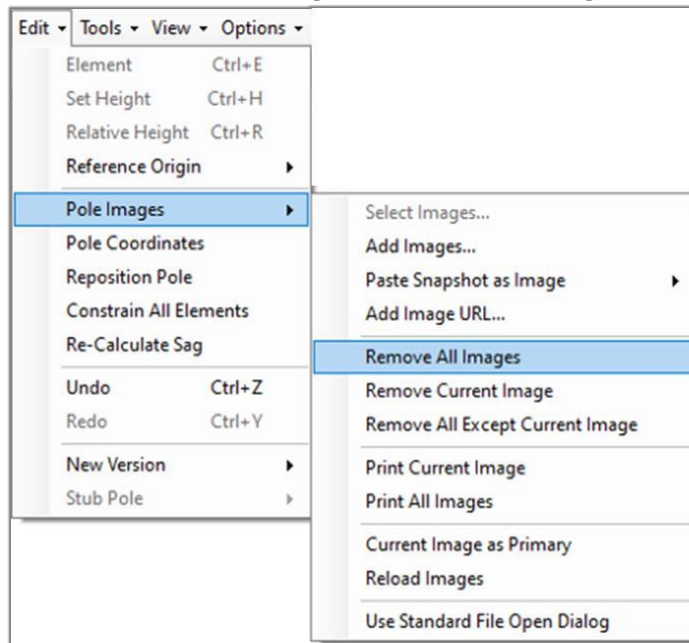


*Note:* To test that the URL location entered is correct, click the Test button.

**Remove All Images**

To remove all the images that are displayed in the Measure Window for the current pole, complete the following steps:

1. Select **Edit > Pole Images > Remove All Images**.



2. Select **Yes** to the confirmation message.



*Note: To undo the removal of all the images, select **Edit > Undo**.*

### **Remove Current Image**

To remove the current image that displays in the Measure Window for the current pole, complete the following steps:

1. Select **Edit > Pole Images > Remove Current Image**.
2. Select **Yes** to the confirmation message.

### **Remove All Except Current Image**

To remove all the images except for the currently selected image that displays in the Measure Window, complete the following steps:

1. Select **Edit > Pole Images > Remove All Except Current Image**.
2. Select **Yes** to the confirmation message.

### **Print the Images that Display**

To print the images that display in the Measure Window for the current pole, complete the following steps:

1. Select **Edit > Pole Images > Print Current Image**.

To print all the images that are displayed in the Measure Window:

1. Select **Edit > Pole Images > Print All Images**.

### **Current Image as Primary**

The primary image is printed out on the Analysis Report and located at the top of all the thumbnail images displayed in the Measure Window. To select the currently displayed image as the primary image, complete the following steps:

1. Select the thumb nail of the image you want to be the primary image.
2. Select **Edit > Pole Images > Current Image as Primary**.

### **Reload Images**

To reload the images that display in the Measure Window for the current pole, complete the following steps:

1. Select **Edit > Pole Images > Reload Image**. Or click the button on the far right within the Measure tool bar.

### **Set the Target Type**

Initially when the Measure Window is opened a Target Type is set by default. The target type represents which Calibrated Visual Target (CVT) or Range Survey Pole was used when the image was captured.

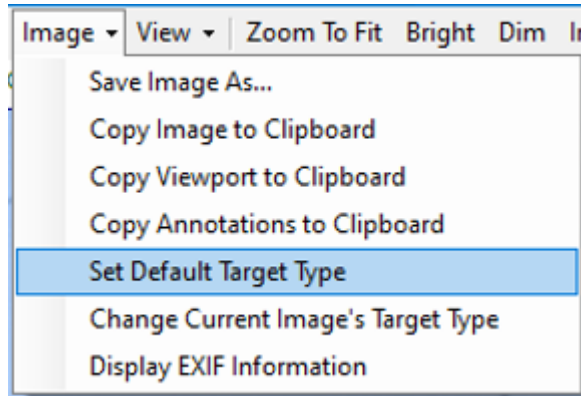
### **Set Default Target Type**

The default target type 'CVT: White 13 Foot' displays when you initially open the Measure tab, shown in the image below in the upper left corner.

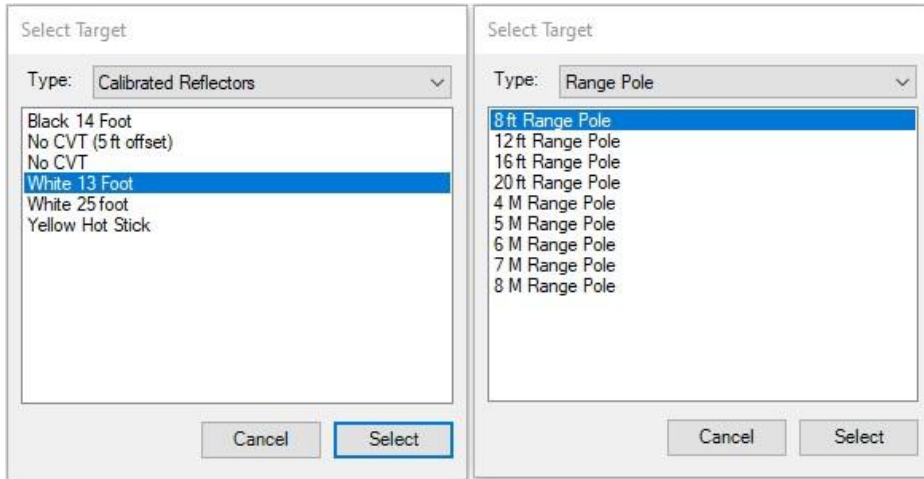


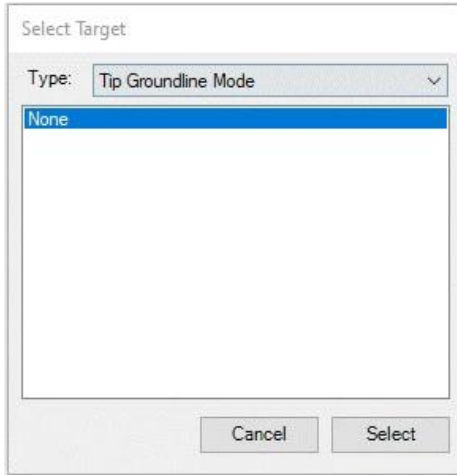
To change the default target type, complete the following steps:

1. Under the **Image** drop-down menu, select the **Set Default Target Type** option.



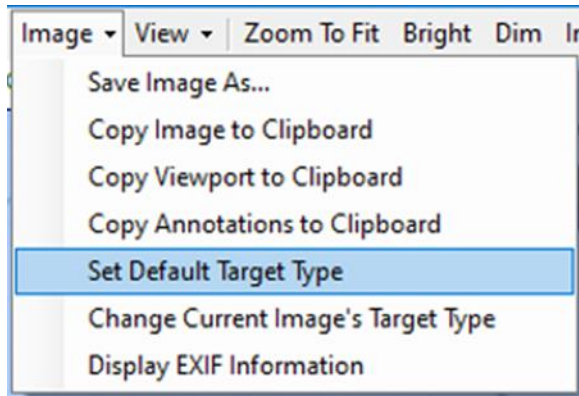
Begin by choosing the target type from the **Type** drop-down menu; the choices are **Calibrated Reflectors**, **Range Pole**, or **Tip Groundline Mode**.





2. Within the **Type** category select the specific target from the choices available.
3. Click the **Select** button.

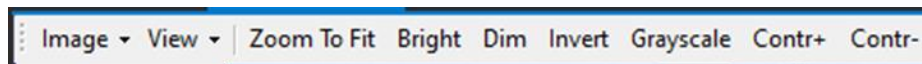
**Change Current Image's Target Type**



To change the target type of only the current image displayed in the Measure Window, complete the following steps:

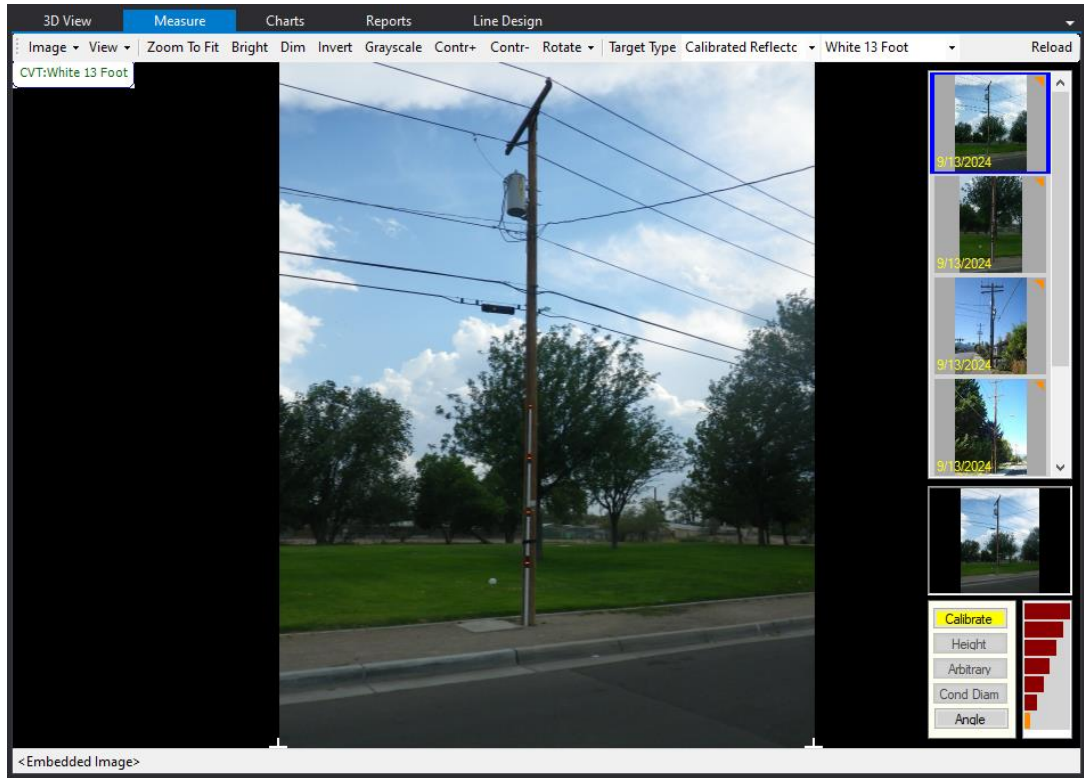
1. Under the Image drop-down list, select **Change Current Image's Target Type** from the list.
2. Select the **Type** of target that to be used for the current image.
3. Select the specific target from the list and click **Select**.

The Image target type can be changed by selecting an option from the dropdown lists located on the far right in the Measure tool bar.



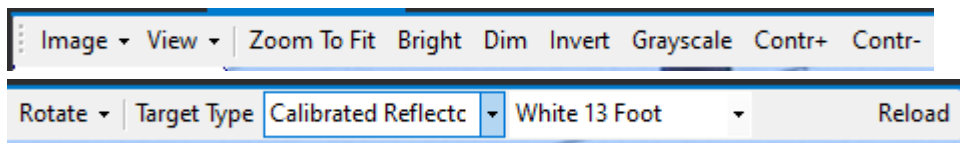
## Understanding the Measure Window

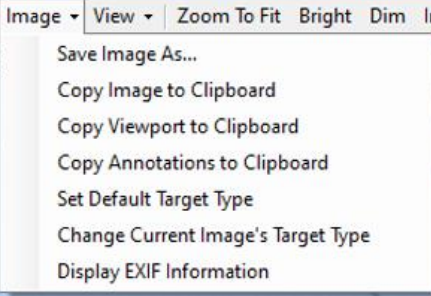
The Measure Window provides various tools designed to allow the user to complete image measurements, review and enhance image data.

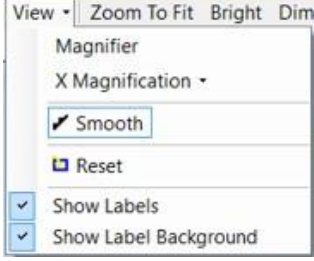




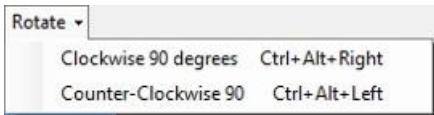

## Measure Toolbar Menu Options

The Measure toolbar menu provides you with a variety of options. Options appear left to right beginning with the Image option and ending with the Reload option.

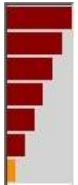


	<p><b>Image.</b> The following options are available from the Image menu:</p> <p><b><i>Save Image As.</i></b> Select the Save Image As option to save the current image as a variety of file types (JPEG, BMP, GIF or PNG).</p> <p><b><i>Copy Image to Clipboard.</i></b> Select the Copy Image to Clipboard option to copy the current selected image to the clipboard so that the image can be pasted directly to other applications such as Microsoft Word, E-mail, etc.</p> <p><b><i>Copy Viewport to Clipboard.</i></b> Select the Copy Viewport to Clipboard option to copy the selected image as it is currently displayed to the clipboard. The copied image can then be pasted directly to other applications such as Microsoft Word, E-mail, etc.</p> <p><b><i>Copy Annotations to Clipboard.</i></b> Select the Copy Annotations to Clipboard option to copy the measure labels from the image. The copied annotations can then be pasted directly to other applications such as Microsoft Word, etc.</p> <p><b><i>Set Default Target Type.</i></b> Select the Set Default Target Type option to select the Calibrated Visual Target (CVT) used to get accurate measurements.</p> <p><b><i>Change Current Image's Target Type.</i></b> Select the Change Current Image's Target Type option to change the currently selected (displayed) images target type.</p> <p><b><i>Display EXIF Information.</i></b> Select the Display EXIF Information option to display the metadata in the image.</p> <p><b><i>Photo Edit.</i></b> Select the Photo Edit option to display other applications with which to view/edit the image.</p>
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	<p>The following options are available from the <b>View</b> menu:</p> <p><b>Magnifier.</b> Click this option to show or hide the magnification window. With the magnification window displayed, move the mouse anywhere in the image to view that area in the magnification window.</p> <p><b>X Magnification.</b> Select the magnification level to use with the Magnification Window.</p> <p><b>Smooth.</b> This option is toggled on by default to smooth hard edges of the image.</p> <p><b>Reset.</b> Click the Reset option to undo any display/enhancement options that were selected.</p> <p><b>Show Labels.</b> This option is toggled on by default to show the results of the measured values.</p> <p><b>Show Label Background.</b> This option is toggled on by default to show a white background to enhance label visibility.</p>
<p>Zoom To Fit</p>	<p><b>Zoom to Fit.</b> Click the Zoom to Fit option to reset the image to its original size and fill the image frame.</p>
<p>Bright</p>	<p><b>Bright.</b> Click the Bright option to brighten the image.</p>
<p>Dim</p>	<p><b>Dim.</b> Click the Dim option to darken the image.</p>
<p>Invert</p>	<p><b>Invert.</b> Click the Invert option to invert the colors of the image.</p>
<p>Grayscale</p>	<p><b>Grayscale.</b> Click the Grayscale option to set the image to black and white.</p>

	<p><b>Contr +</b> Click the Contr + option to set the contrast higher.</p> <p>Increasing the contrast will make dark tones darker and the light tones brighter. Using the Contrast option also affects the sharpness of the image.</p>
	<p><b>Contr -</b> Click the Contr – option to set the contrast lower.</p>
	<p><b>Rotate.</b> Select the Rotate option to rotate the image 90 degrees to the right or left.</p>
	<p><b>Reload.</b> Select the Reload option to reload the images that display in the Measure Window.</p>

The Image Viewer also provides several ways to navigate within the image by providing the following tools:

<p>Mouse Wheel</p>	<p>To zoom in or out move the mouse wheel to scroll forwards or backwards. To pan right click.</p>
<p>Added Images</p>	<p>All images associated with the selected pole are displayed as thumbnails in the upper right side of the Measure Window. Select any thumbnail to change images.</p>
<p>Navigation Pane</p>	<p>Clicking a point in the Navigation Pane will center the image on that point in the Image View Window.</p>
 <p>Zoom Scale</p>	<p>Click various levels on the scale to zoom-in or zoom-out to see more details in an image or use the roller wheel on your mouse.</p>




<p>Measure Modes</p> <div style="border: 1px solid black; padding: 5px;"> <p style="background-color: yellow;">Calibrate</p> <p>Height</p> <p>Arbitrary</p> <p>Cond Dia</p> <p>Angle</p> </div>	<p>Click any Measure Mode to activate the measurement task for the selected mode.  <i>Note: The image must be calibrated first, then the other measure modes are available to use.</i></p>
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### Setting the Calibration

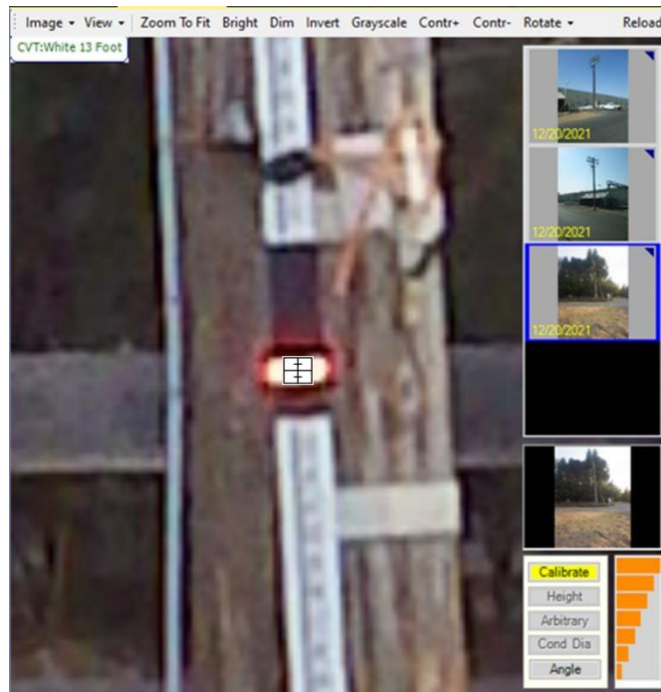
When the Measure Window is initially opened, the Calibrate mode is selected by default. The image must be calibrated first, then the other measure modes are available to use. To perform the Calibration measurement, complete the following steps:

1. Select the **image** you want to calibrate.

*Note: When setting the calibration, the cursor will change to a box  enabling you to get a precise measurement.*

The **Calibrate** mode requires 3 – 4 targets be placed on the image, based on the use of the CVT (White 13 Foot). The number of targets to be placed varies based on the Target Type selected.

2. Place the mouse cursor box over the red reflective band closest to the base of the pole. Begin at the bottom and work your way up as a best practice. Zoom in so close that the red reflective band and cursor box are the same size on the top and bottom. Zooming in this close increases measurement accuracy.



- Place the cursor box where the first calibration point is and click the left mouse button. A red plus sign “target” marks your first calibration measurement.



- Using the **cursor box** continue placing the remaining calibration targets at the same zoom level. Right click to pan up the CVT in the image and click to place targets at each red reflective band.

***Note:** If you need to estimate one of the calibration points due to vegetation or an obstruction limiting your view of a red reflective band, hold the Shift key and left click with mouse to place a white target. Since these CVT points are known points in DMT, it can accurately locate the estimated white target calibration point.*



Once the **Calibrate** process is complete the **Height** mode will automatically be selected. At this point you can begin placing height labels or select any of the other measure modes.

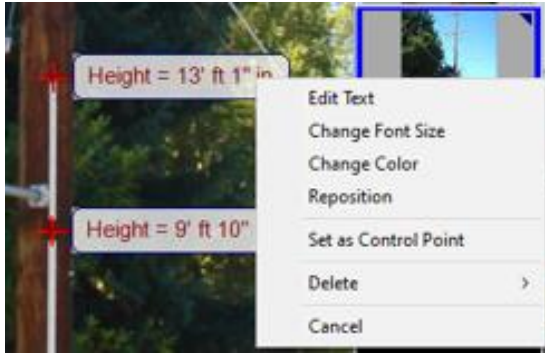
***Note:** If you need to redo the calibration process at any time, select the Calibrate mode and repeat the steps as directed. There is no cancel or undo options for the Calibration process.*

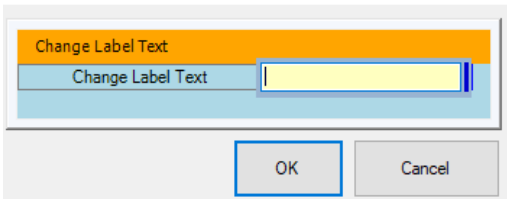
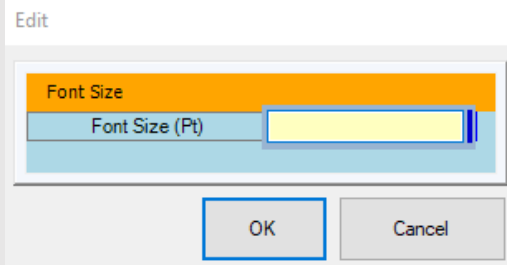
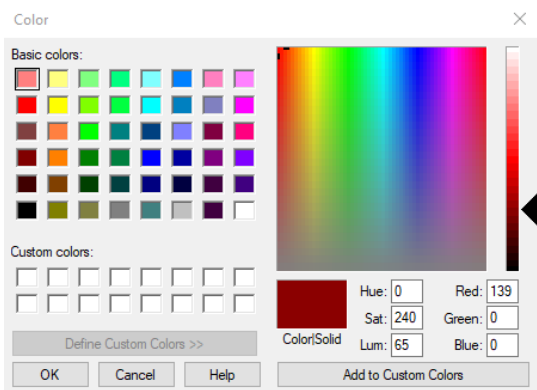
***Note:** Redoing the calibration process does not affect any of the measurements that have already been completed you would need to redo the measurements.*

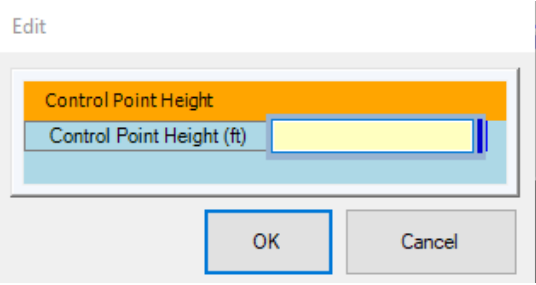
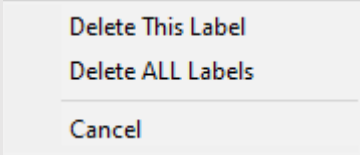
***Note:** When using **IKE Images** the Calibrate Mode is automatically changed to Select GL. This mode only requires one point on the image before additional measurements can be taken. If the ground line is not visible in the image an offset value can be entered by selecting File > Groundline Offset after the initial, Select GL point has been added.*

### Configuring the measurement labels

Once the height labels are placed, right click on the label to open a menu for edits.







	<p><b>Edit Text.</b> Select Edit Text to change the label text.</p>
	<p><b>Change Font Size.</b> Select Change Font Size to change the font.</p>
	<p><b>Change Color.</b> Select Change Color to open a color pallet. Select a color and click ok to change the color of the label.</p>
	<p><b>Reposition.</b> Select Reposition to reposition the label on the image.</p>

	<p><b>Set as Control Point.</b> Select Set as Control Point to add the point where calibration begins to measure attachments on the pole in the image. Control points can be any known location such as the ground line or the height of the lowest communication attachment.</p>
	<p><b>Delete.</b> Select Delete to remove all labels or only the label selected.</p>

### Overview of Measurement Mode Selector

To complete measurements you will need to select the corresponding Mode. Each Mode uses a different visual tool to help you complete the measurements.

<p><b>Calibrate</b></p>	<p><b>Calibrate.</b> In the Calibrate Mode the cursor changes to a  measurement sight for an accurate measurement.</p>
<p><b>Height Mode</b></p>	<p><b>Height Mode.</b> In the Height Mode the cursor changes to crosshairs  for an accurate measurement of height relative to groundline.</p>
<p><b>Arbitrary (Arbitrary Length) Mode</b></p>	<p><b>Arbitrary Mode.</b> In the Arbitrary Mode the cursor changes to  crosshairs for an accurate measurement between two points in the plane of the target. Left click (1) and drag the red line to the point to measure, release the click. Select Yes.</p>
<p><b>Cond Dia (Conductor Diameter) Mode</b></p>	<p><b>Cond Dia Mode.</b> In the Cond Dia Mode draw a line to accurately determine the conductor size by left click (1) and drag the yellow expanding band along any object (conductor) to be measured and release click. Select Yes.</p>

<b>Angle Mode</b>	<b>Angle Mode.</b> Click the Angle Mode and the cursor will change to crosshairs  to accurately calculate angles. Left click (1) on the object and drag gold line to the desired angle midpoint and click (2), continue to drag cursor to the final angle point and click (3). Select Yes.
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*Note: If a mode is selected that does not have any associated task an error message will be displayed.*

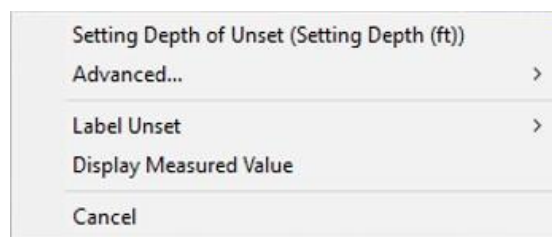
## Height Mode Measurements

The height is relative to the groundline of the pole. To complete a Height measurement, complete the following steps:

1. Select the **equipment** in the Inventory Window that you want to measure the height of.
2. Select the **Height Mode**.



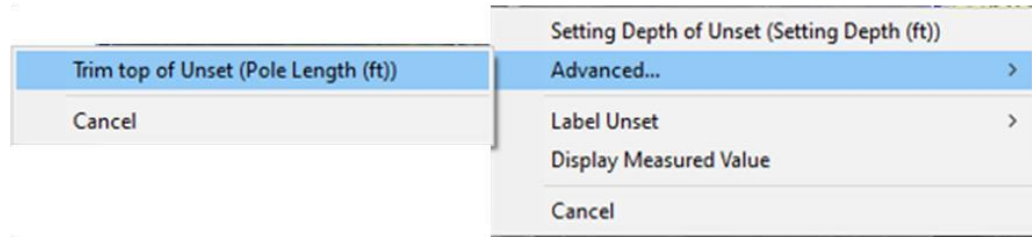
3. Place the **crosshairs** at the point you want the Height measurement to be taken at.
4. Left click, a menu listing the **Height Task** to be performed is displayed. Select the Height Task you would like the measurement associated with.



5. The Inventory and Data Entry windows will **automatically be updated** to reflect your measurement.

*Note: To cancel the current Height measurement, select the **Cancel** Option. If you need to retake the measurement after it has been set, completed steps 1 thru 4 as directed above. There is no undo option available.*

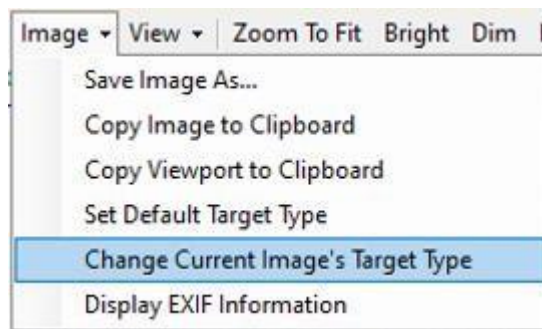
6. To trim the pole top but keep the taper and setting depth, select **Advanced > Trim top of** (name of pole).



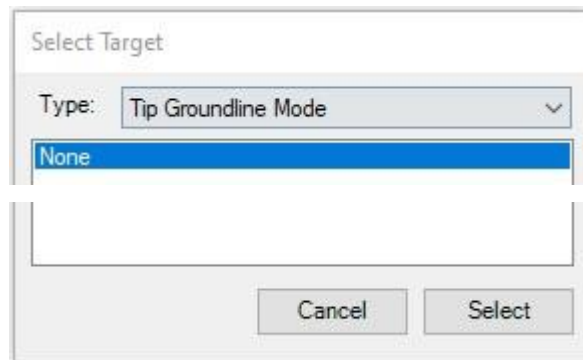
### Using Control Points

When there is no CVT Stick or Range Pole in the images, measurements can be taken using Control Points set in the image, if the Target Type has been set to no CVT. Control Points can be used in the following way:

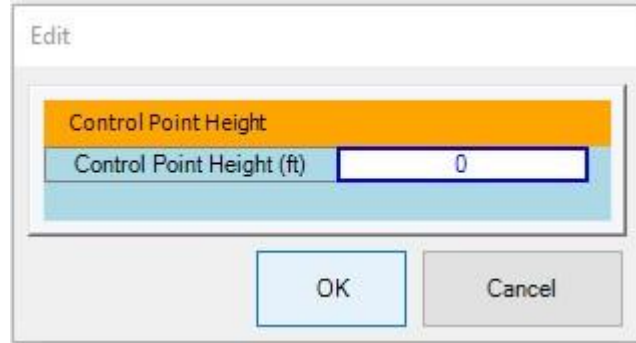
1. In the **Measure** Window, select the **Image** menu, select the **Change Current Image's Target Type** option.



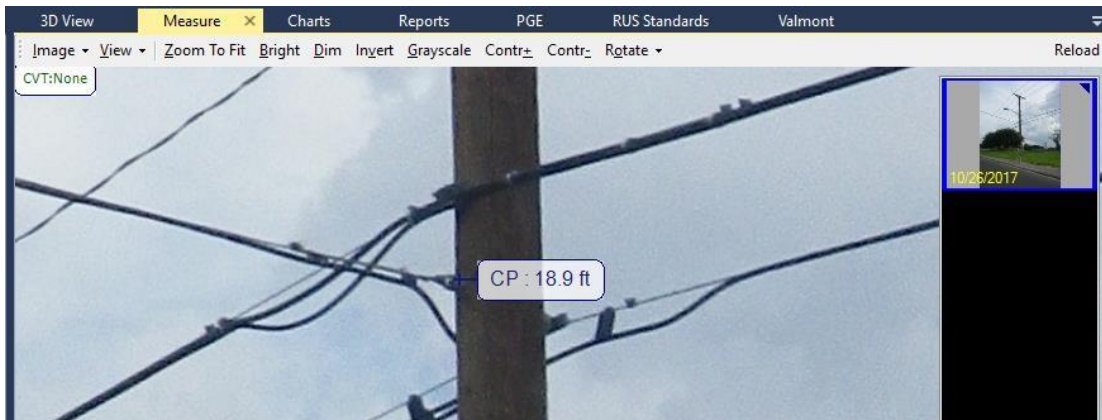
2. Select the **Type: Tip Groundline Mode**. The default choice is **None**, click the **Select** button.



3. While in **Calibrate** mode, click to place a red target at the base the pole.
4. While in **Calibrate** mode, click to place a red target at the top of the pole.
5. While in **Height** mode, hold down the **Ctrl** key, and click a point on the pole that is the known height.
6. In the **Edit** window enter the control point height value that is known.



### 7. Select **OK**



***Note:** Only one control point can be used at a time. Control points ensure greater accuracy of attachment heights near the control point, when no CVT or Range pole is available in the image. This method only works if the pole is not selected in the Inventory Window or 3D View, deselect the pole if it is selected.*

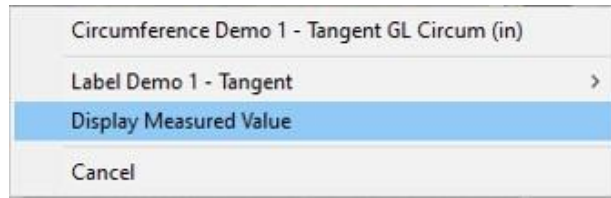
### Arbitrary Mode Measurements

To complete an Arbitrary measurement between two points in the plane of the target, complete the following steps:

1. Select the **equipment** in the Inventory Window that you want to take an Arbitrary measurement of.
2. Select the **Arbitrary Mode**.



3. Place the **crosshairs** at the point you want the Arbitrary measurement to start.
4. Hold down the left mouse button and draw a line to where the Arbitrary measurement ends.
5. Select the option from the list displayed.



6. The Inventory and Data Entry Windows will **automatically be updated** to reflect your measurement.

**Note:** To cancel the current Arbitrary measurement select the **Cancel** Option. If you need to retake the measurement after it has been set, completed steps 1 thru 5 as directed above. There is no undo option available.

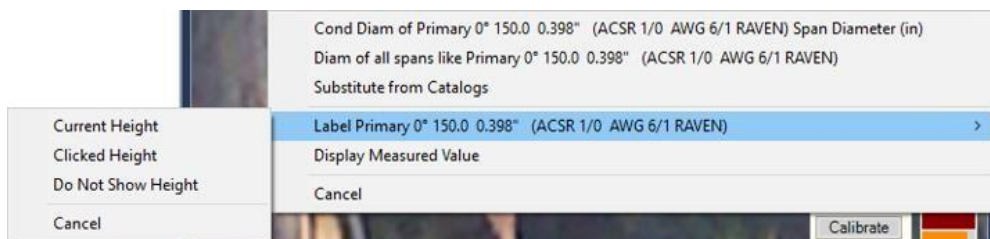
### Conductor Diameter Mode Measurements

The Cond Diam (Conductor Diameter) is used to collect wire sizes. To complete a Conductor Diameter measurement, complete the following steps:

1. Select the **equipment** in the Inventory Window that you want to measure the diameter of.
2. Select the **Cond Diam Mode**.



3. Place the cursor on the middle of the Conductor whose diameter you want to measure.
4. Hold down the left mouse button and drag along the conductor until the yellow line is the same width as the conductor then release the mouse button.
5. Left click and select the Conductor Diameter Task you would like the measurement associated with.



6. The Inventory and Data Entry Windows will **automatically be updated** to reflect your measurement.

**Note:** To cancel the current Conductor Diameter measurement, select the **Cancel** Option. If you need to retake the measurement after it has been set, completed steps 1 thru 5 as directed above. There is no undo option available.

### Angle Mode Measurements

Angle measurements need be entered into O-Calc® Pro manually. To assist you in measuring an Angle, complete the following steps:



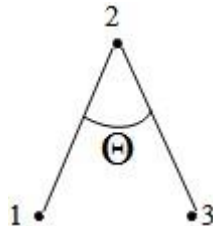
1. Select the **equipment** in the Inventory Window that you want to measure the angle of.
2. Select the **Angle Mode**.



3. Place the **crosshairs** at the point you want the Angle measurement to start.

*Note: The Angle measurement is a three-point process. After the Angle measurement is complete the Angel measurement is displayed for reference purposes only.*

4. Click the left mouse button and draw your first line, click the left mouse button again and draw your second line.



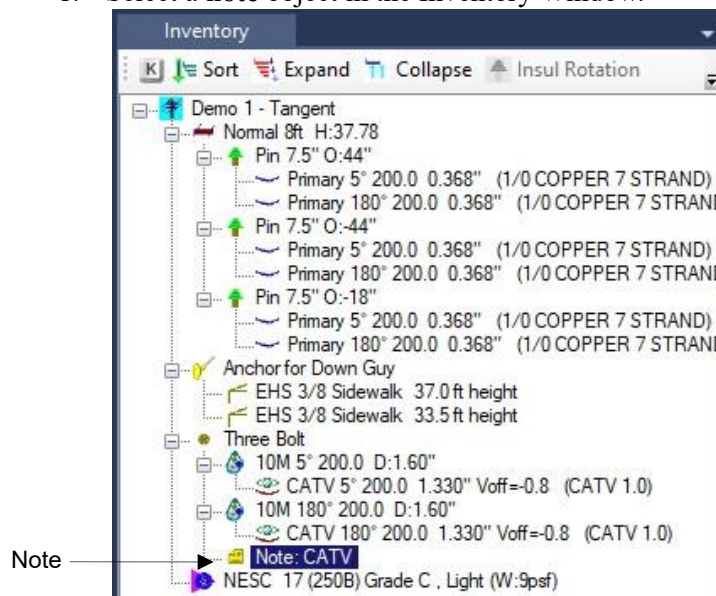
5. Left click and the Angle measurement is **automatically displayed** for reference purposes.

*Note: If you need to retake the measurement, completed steps 1 thru 5 as directed above. There is no undo option available.*

### Adding Measurement Information to a Note

To add measurement information to an existing note, complete the following steps:

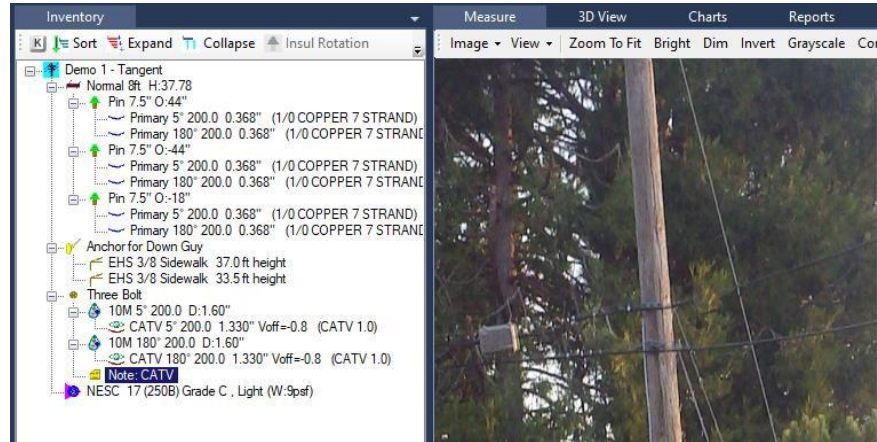
1. Select a **note** object in the Inventory Window.



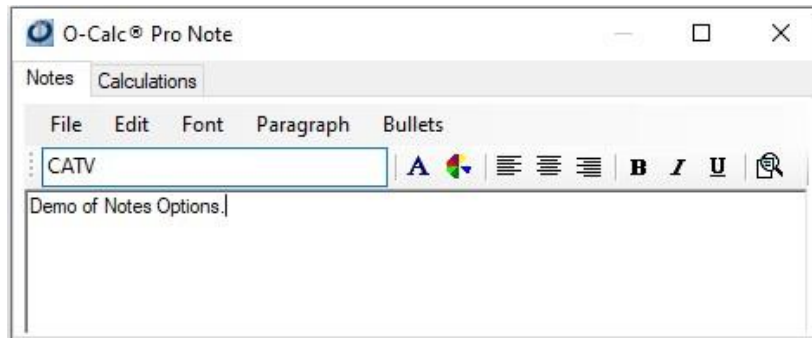
2. Select the **Mode** you would like to use for the measurement.



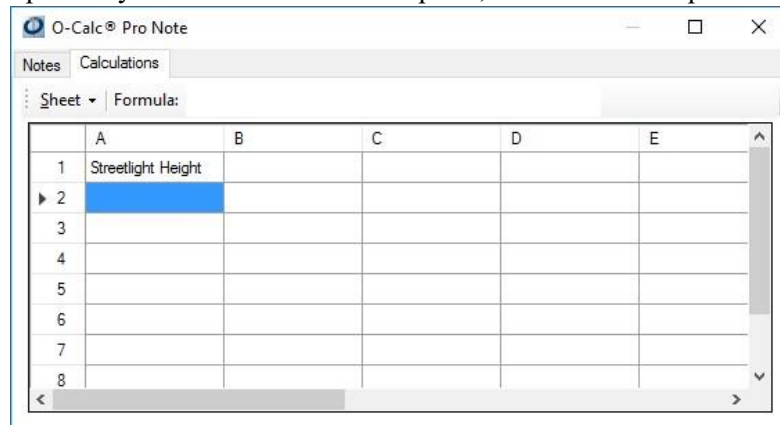
3. Place the **crosshairs** at the point you want the measurement to be taken at and click the left mouse button. You may want to use the Scale Tool or the mouse wheel to zoom into a specific area in the image.



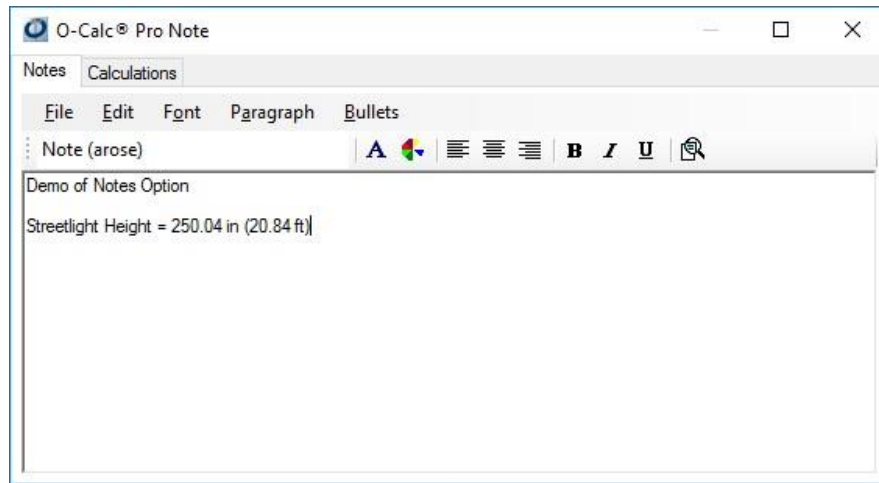
4. The selected **note** in the Inventory Window automatically is displayed.



5. Complete any **edits** to the notes description, note context or spreadsheet.



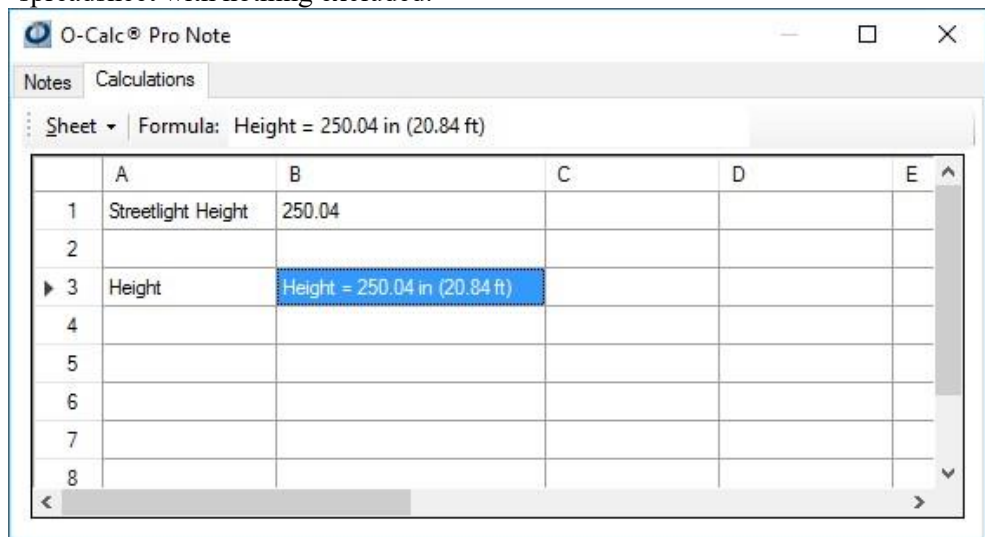
6. Select **Edit > Paste** to incorporate the measurement into the note content area of the note. The selected measurement is automatically inserted into the selected note.



7. To have the measurement automatically pasted into the spreadsheet, select the cell you want to paste the measurement into and select one of the following options from the **Sheet** menu:

**Sheet > Paste > Value Only** - Excludes the measurement text and only paste the measurement value into the spreadsheet.

**Sheet > Paste > All Text** - Pastes the complete measurement into the spreadsheet with nothing excluded.



8. Select **File > Save**.

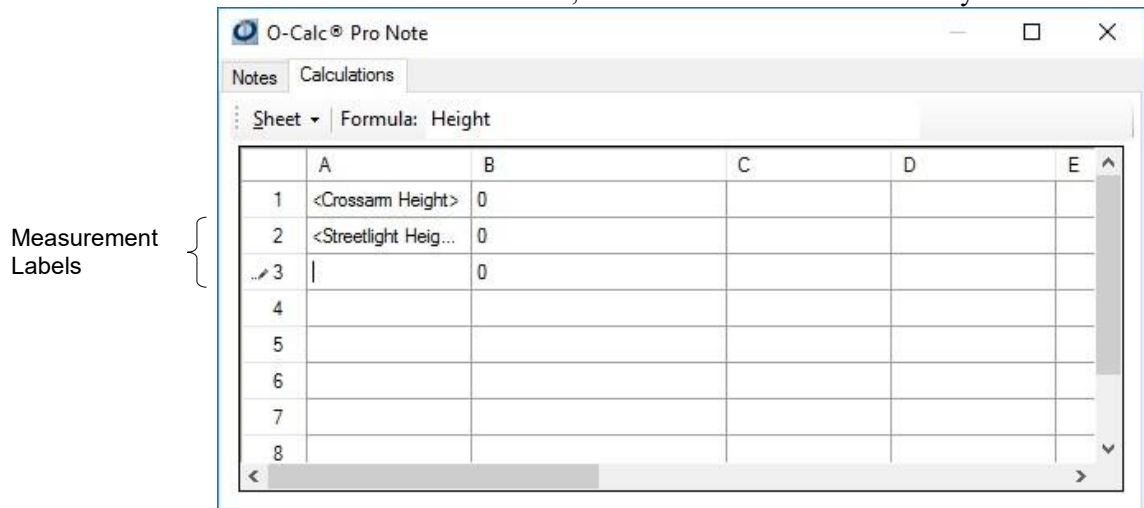
### Adding Specific Measurements to the Notes Data Grid

To add specific measurements to the Data Grid while working in the Measurement Window you can create custom Measurement Labels in a Note's Data Grid. These Measurement Labels display each time the note is selected while completing measurement. To create a Measurement Label in a note and use them to paste measurements directly into the selected note, complete the following steps:

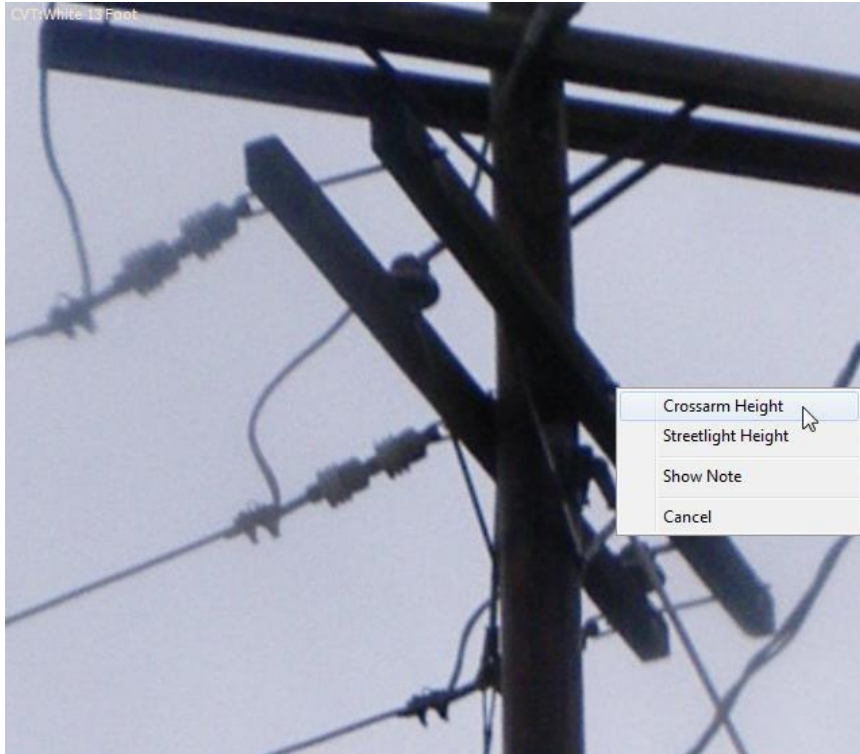
1. Create a **new note** object or open an existing note object in Edit Mode.
2. Enter a **description** and the note **context**.
3. Select a cell in the Data Grid View and enter a Measurement Label.

There is not limit as to the number of Measurement Labels you can enter. The only exception is that the measurement label needs to be entered with brackets around it <Measurement Label>.

As there is no measurement value enter, place holder values of zero where you would like the measurement value to be entered. Also, enter calculation formulas if they are needed.



4. Select **File > Save**.
5. Select the **Note** object in the Inventory Window.
6. Select the **Measure** tab.
7. Click the left mouse button where you would like each measurement taken from and select the appropriate Measurement Label.



8. To return to the select note object left mouse click and select **Show Note**.

	A	B	C	D	E
1	<Crossarm Height>	16.7276			
2	<Streetlight Heig...	14.7288			
3		0			
4					
5					
6					
7					
8					
9					
10					

**Note:** Additions and modified can be made to any area of the note at any time. The note can also be copied to a User Catalog to be used as a template for future use.

**Note:** If measurements have been incorporated into the Data Grid using Measurement Labels and the Units Convention (English or Metric Convention) is changed the measurements that are displayed in the Notes Data Grid will not change.

## Working with the Data Entry Window

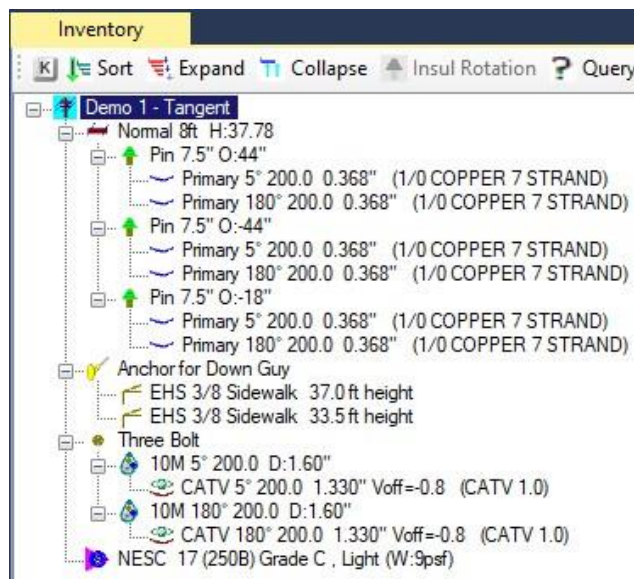
### Data Entry Overview

The Data Entry Window works in conjunction with the Inventory Window. When selecting an object(s) in the Inventory Window the object’s attributes are displayed in the Data Entry Window. This provides a comprehensive way to review or make changes to editable attributes.

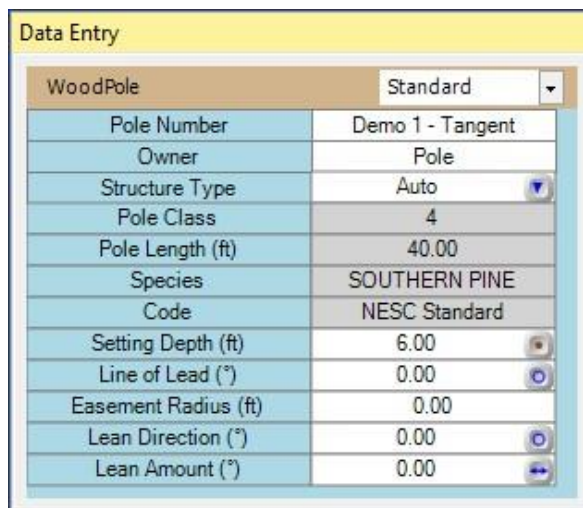
### Editing Attributes

To edit an attribute, complete the following steps:

1. Select the **Data Entry** tab.
2. Select an **object** in the Inventory Window.



3. The selected **object** displays in the Data Entry Window.

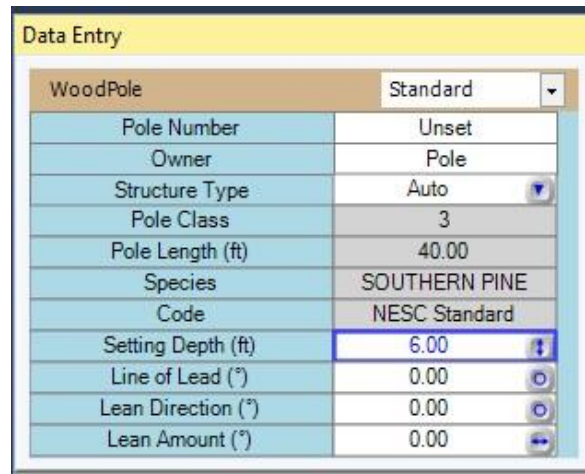


4. Select the **attribute** to be edited in the Data Entry Window.

**Note:** If additional attributes are available a drop-down menu will display next to the selected object's name in the Data Entry Window. Select the drop-down menu to display additional attributes.

5. Press the **space bar** and edit the selected attribute.

**Note:** Certain attributes are only editable in Administrative User Mode. If you are not in Administrative User Mode, the attribute will be grayed and not changeable.



**Note:** For a complete list of the editable icon's descriptions [Editing Equipment Attributes](#).

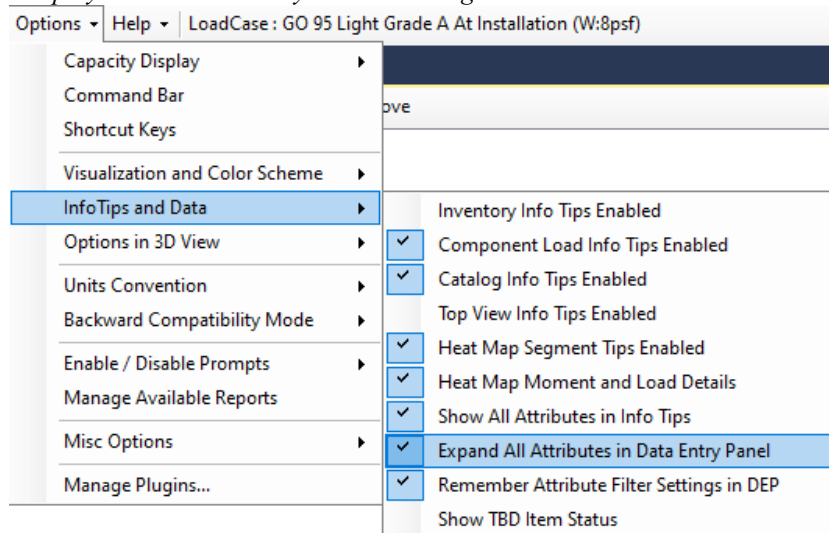
6. Select **Enter**.

### Expand All Attributes

By default, the Standard list of attributes is initially displayed in the Data Entry Window when an object is selected in the Inventory Window. To change the default setting so that all the selected object's attributes are displayed, complete the following steps:

1. Select **Options > Info Tips and Data > click the Expand all Attributes in Data Entry Panel** option.

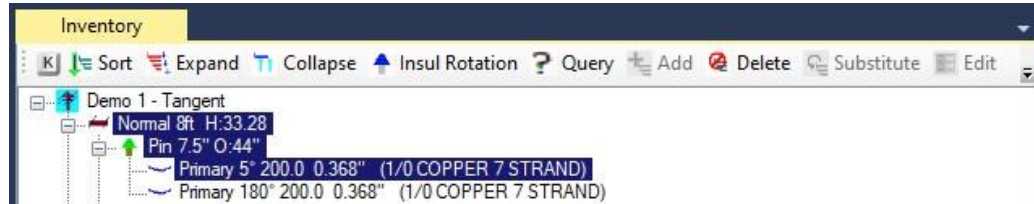
**Note:** All options can be enabled/disabled by simply clicking on them (toggle on/off) again. Any enabled option displays the check mark symbol indicating it is on.



## Display Multiple Attributes

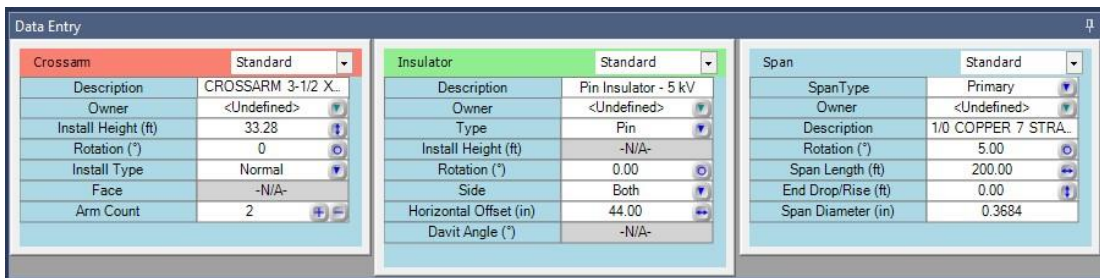
To display multiple objects for review or editing from the Inventory Window, complete the following steps:

1. Select any **objects** in the Inventory Window.



*Note:* Hold down the ctrl key to select more than one object out of sequence. Hold down the shift key to select a group of objects that are next to each other.

2. The selected **objects** are displayed in the Data Entry Window.



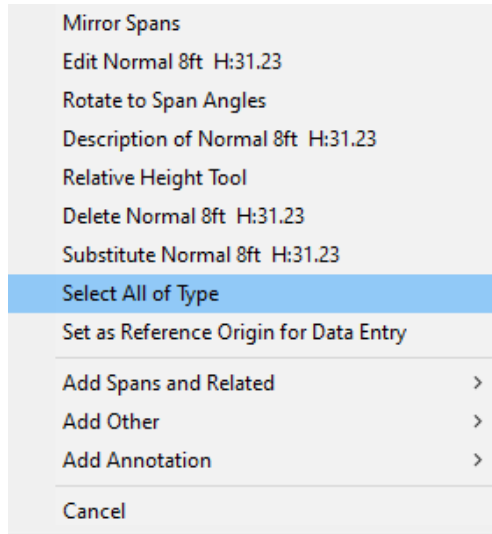
*Note:* When multiple objects are displayed in the Data Entry Window all like objects are automatically grouped together.

## Display Multiple Corresponding Attributes

To display multiple objects that are of a specific type, that are all on the same hierarchy level, for review or editing from the Inventory Window, complete the following steps:

1. Right click on any **object** in the Inventory Window.
2. Select the **Select All of Type** option.





- The selected **object** and any like objects within that hierarchy level are displayed in the Data Entry Window.

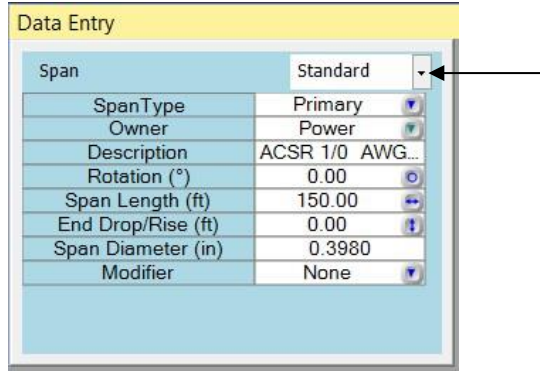
Data Entry			
Insulator			Standard
Description	Pin Insulator - 5 kV	Pin Insulator - 5 kV	Pin Insulator - 5 kV
Owner	<Undefined>	<Undefined>	<Undefined>
Type	Pin	Pin	Pin
Install Height (ft)	-N/A-	-N/A-	-N/A-
Rotation (°)	0.00	0.00	0.00
Side	Both	Both	Both
Horizontal Offset (in)	44.00	-44.00	-18.00
Davit Angle (°)	-N/A-	-N/A-	-N/A-

***Note:** Hierarchy levels (parent-child relationships) indicate how objects are connected. A visual indicator of hierarchy levels is indicated by the dotted line icons which show the connections between objects in the Inventory Window.*

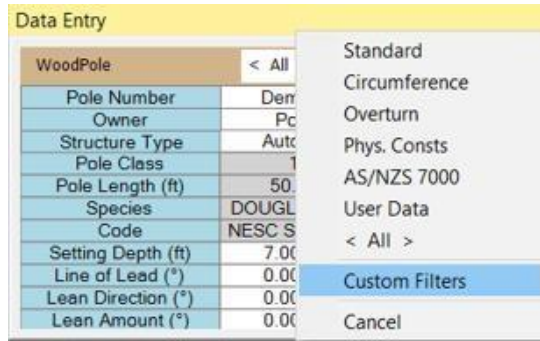
### Creating a Custom Attribute List

To create a **Custom Filter** containing a list of attributes to view in the Data Entry Window, complete the following steps:

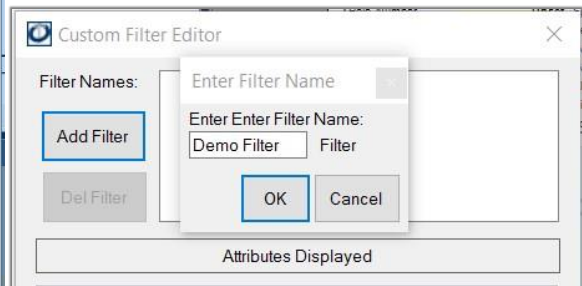
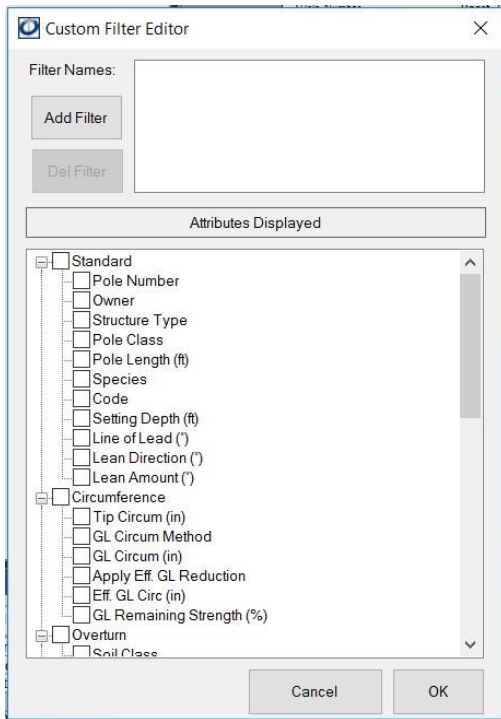
- Select an object in the **Inventory** Window.
- In the **Data Entry** Window, select the attributes filter drop-down menu arrow.



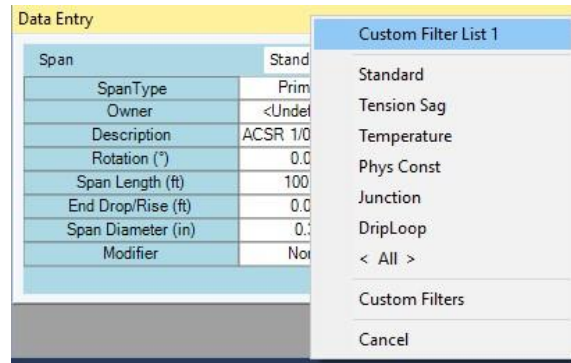
3. From the filters list, select the **Custom Filters** option.



4. The **Custom Filter Editor** window opens; select the **Add Filter** button and enter a name for the custom filter. Check the boxes for the attributes you want included in the custom filter.



5. Select the attributes to be included in this filter list from the available checklist of **Attributes Displayed**.
6. Once Selections have been made, select **OK**.
7. In the Data Entry Window, open the filters drop down list.
8. The new custom list of attributes will display at the top of the filter list.

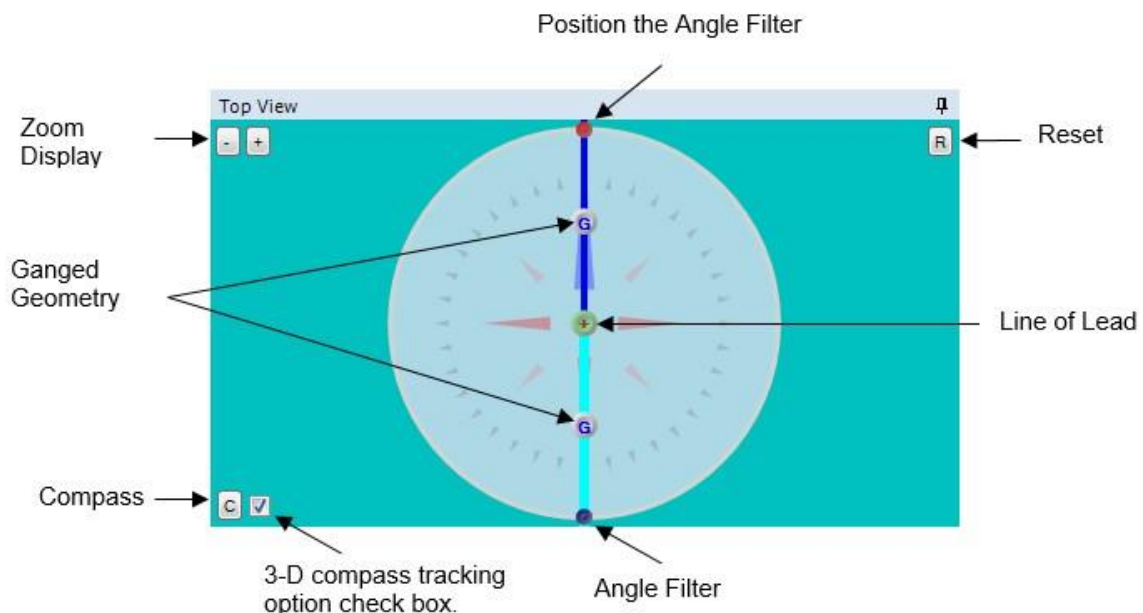


*Note: A Custom Filter listed can be deleted in the Custom Filter Editor Window. If the custom filter is displayed in the Data Entry, it can not be deleted. To delete, first deselect the customer filter, then you can delete it in the Custom Filter Editor Window.*

## Working with the Top View Window








### About the Top View Window

The Top View Window displays a polar (North/South orientation) view of the pole with span angles. Changing the Ganged Geometry or the Line of Lead will automatically change all the spans.





### Top View Display Options

The Top View provides a variety of operations and options.

<i>Functionality Icons</i>	<i>Description</i>
	<p><b>Zoom-Out.</b> Click the Zoom-Out option to zoom the display out.</p> <p><b>Zoom-In.</b> Click the Zoom-In option to zoom the display in.</p>
	<p><b>Gang Editor.</b> Click the Gang Editor button to set of spans in a single direction to edit. This also automatically select all the spans in the given direction.</p>
	<p><b>3D Compass.</b> Click the “C” button to cause the Top View Window and the 3D View Window to track in concert with one another. The permanently enable simply check the 3D Compass box.</p>
	<p><b>Reset.</b> Check the Reset option to undo any display options that were selected.</p> <p><i>Note: This does not undo any changes completed in the Ganged Geometry Editor or to the Line of Lead.</i></p>
	<p><b>Line of Lead.</b> Click the Line of Lead option to change the line of lead.</p>
	<p><b>Angle Filter.</b> Click and drag the Angle Filter button to set the area to be filtered.</p>
	<p><b>Position the Angle Filter.</b> Click and drag the Position Angle Filter button to reposition the Angle Filter.</p>

### Change the Zoom Level


To change the zoom level in the Top View display, which is helpful in expanding/contracting the space between the “G” buttons, complete the following steps:

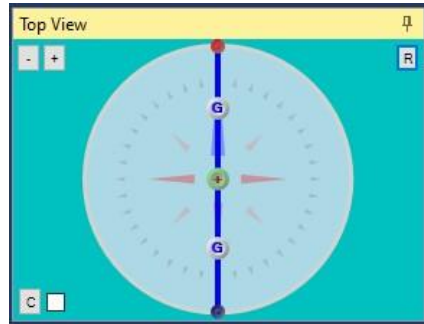
1. Click the **Zoom In** button  to zoom in the view of the spans. Click the **Zoom Out** button  to zoom out the view of the spans.

*Note:* To remove the zoomed display level select the **Reset** button .

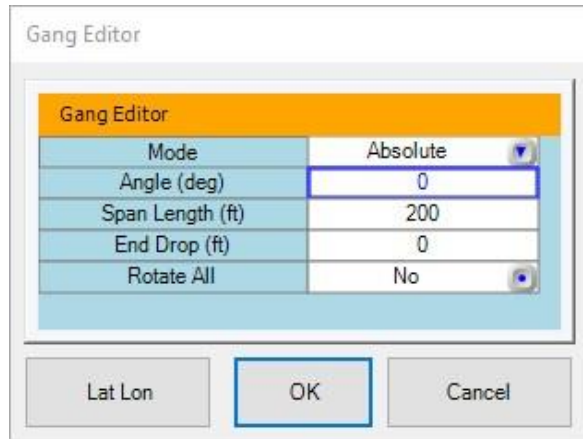
### Using the Gang Editor for Span sets in a Single Direction

To edit the attributes for set of spans in a single

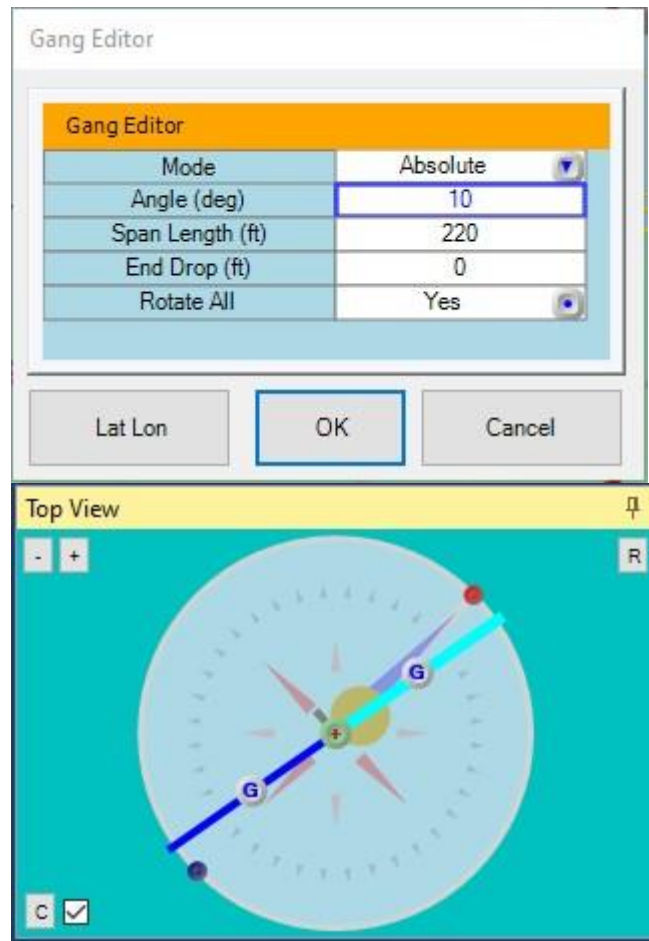
1. Select the “**G**” button  direction, complete the following steps: in the Top view Window on the spans you want to edit.



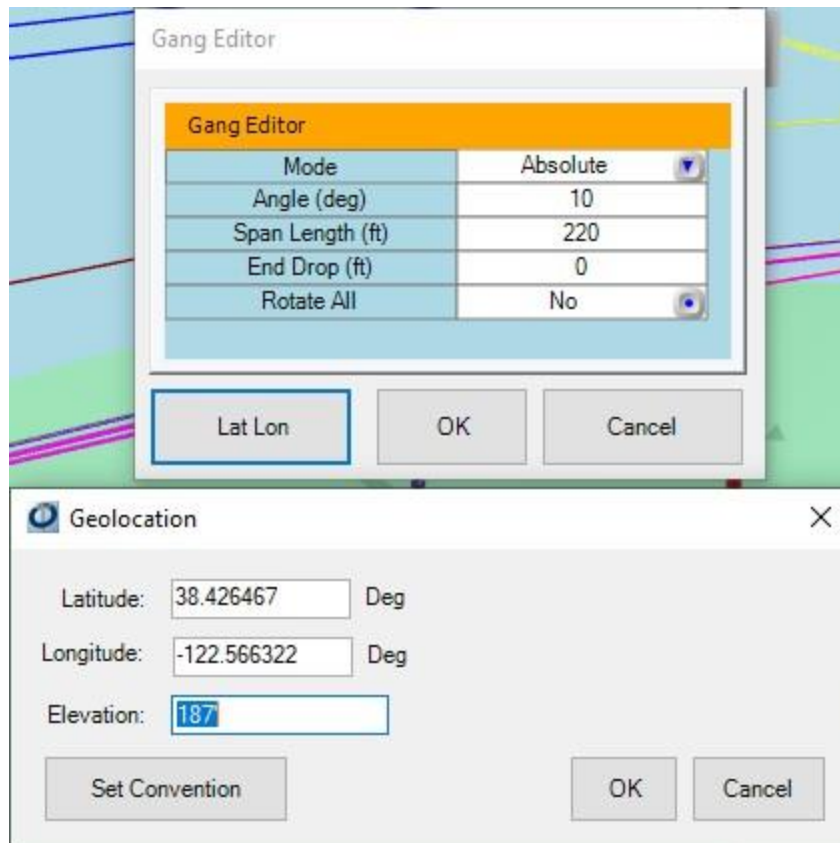
2. In the **Gang Editor** window, use the default **Absolute Mode**, or select the Relative mode option from the drop-down list.



3. Modify the **Angle**, **Span Length**, **End Drop** value.
4. Modify the **Rotate All** option by changing the **No** radio button to **Yes** and enter a value in the **Angle** attribute. Click **OK**. Resulting in the entire structure being rotated to reflect the new Line of Lead (LOL) value entered.



5. Click the **Lat Lon** button for a shortcut to the **Geolocation** information for the pole.




6. Select **OK**.


**Note:** To undo the Gang Editor change, select **Edit > Undo**.

### Incorporating the 3D Compass View

Click the "C" button to cause the Top View Window and the 3D View Window to track in concert with one another. The permanently enable tracking, simply check the 3D Compass box. Complete the following steps:

1. Click the **3D Compass** button . The display is automatically rotated to match the 3D View.

**Note:** To enable the 3D Compass tracking so that every time the 3D View is repositioned the Top View

Window automatically tracks the change, check the 3D Compass box . Deselect the 3D Compass check box to disable tracking.

### Reset the Top View Display

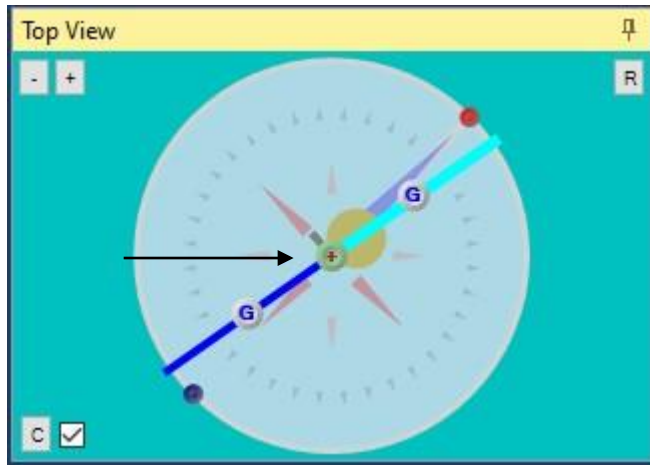
To undo any changes to the Top View display, complete the following steps:

1. Click the **Reset** button .

**Note:** Resetting the Top View display does not undo any changes that have been completed in the Gang Editor or Line of Lead.

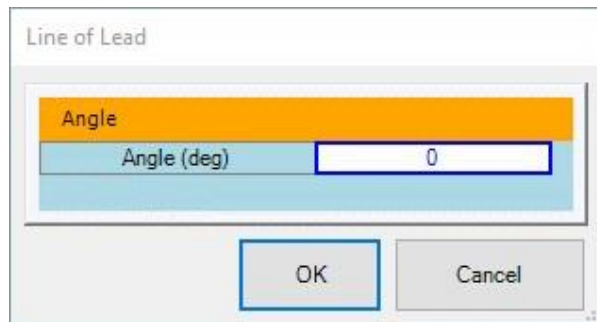
### Edit the Line of Lead

To change the line of lead, complete the following steps:



1. Select the **Line of Lead** button  located in the center of the Top View .

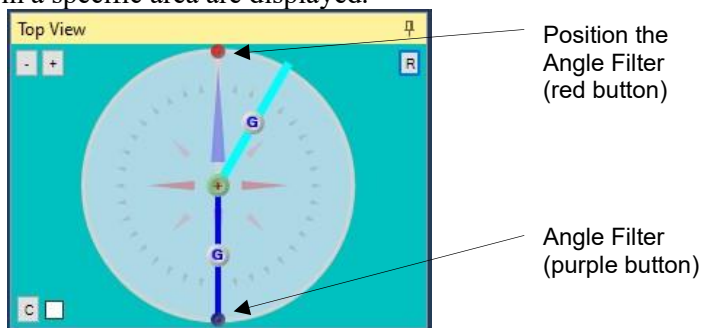
*Note: The Line of Lead will rotate the complete pole and all attachments.*



2. Enter a value for the **Angle** which will rotate the entire pole. Click **OK**.

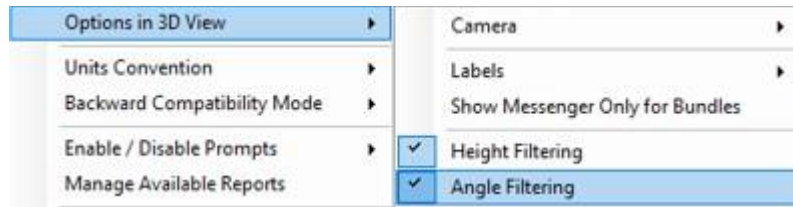
### Setting an Angle Filter

When working with a pole that has numerous spans attached at different angles, it may be beneficial to narrow the scope of the data displayed. The Angle Filter allows you to set a filter so that only spans in a specific area are displayed.

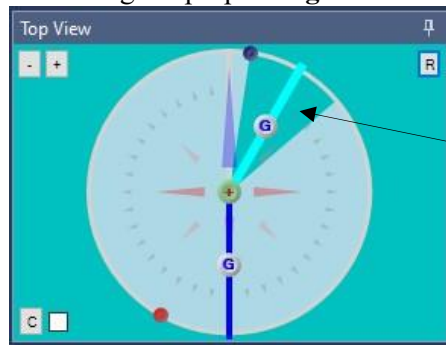


1. Complete the following steps to enable the **Angle Filter**, select **Options > Options in 3D View > Angle Filtering**.

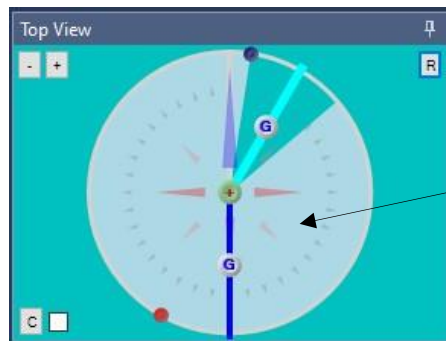


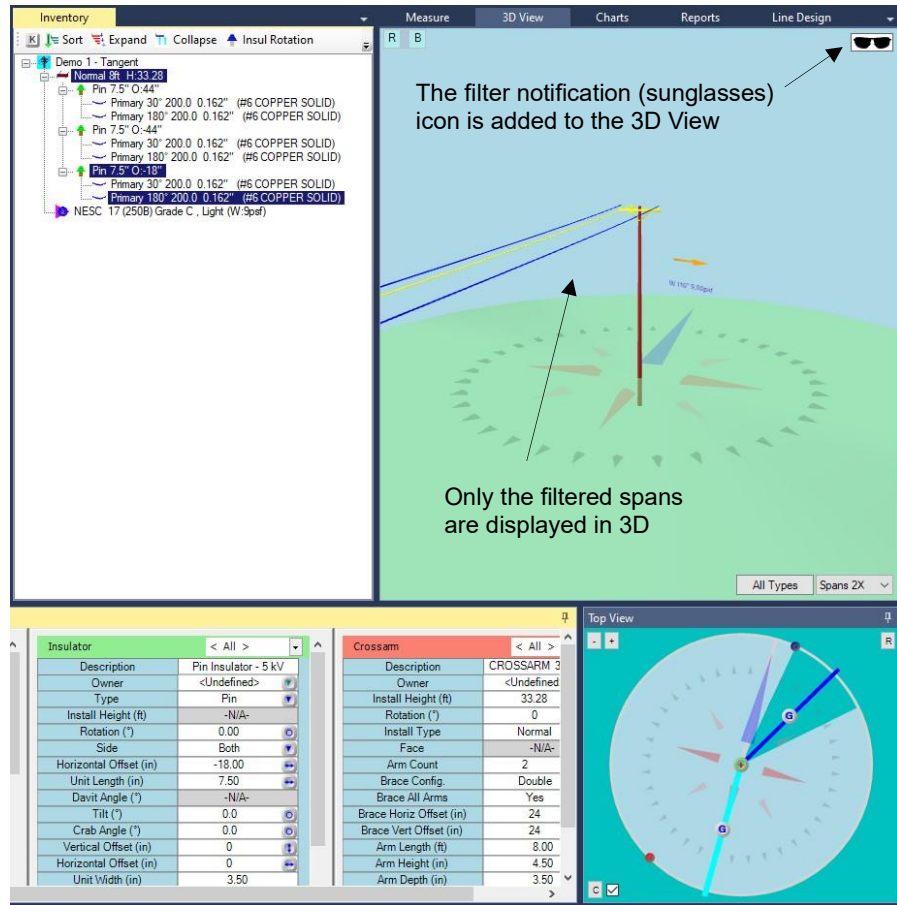


2. Click and drag the purple **Angle Filter** icon to set the position of the filter.




3. Click and drag the red **Position the Angle Filter** icon to set the amount of area to be filtered.





**Note:** To remove the Angle Filtering select the Rest button .

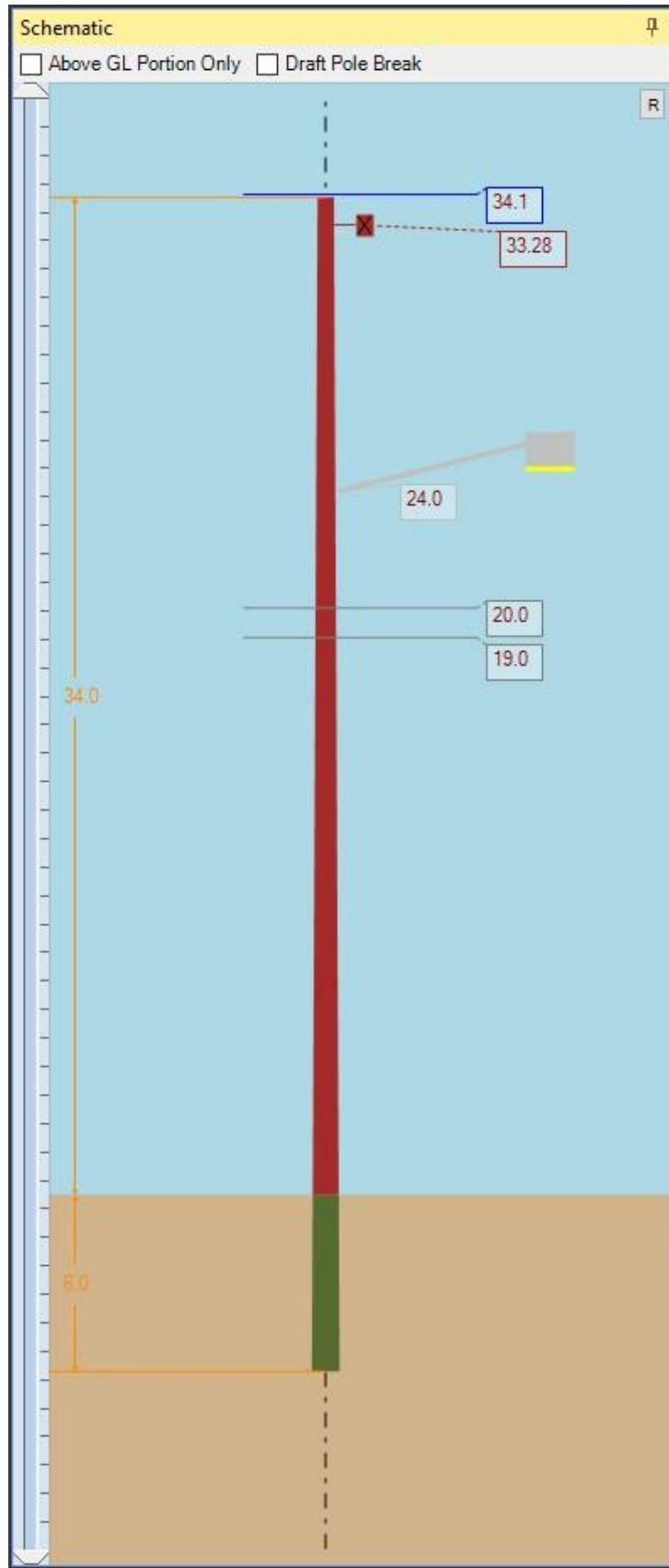
**Note:** If you have multiple filters set you can remove just one or all of the filters by right clicking on the Filter Notification button  and selecting one of the Reset Filter options.

## Working with the Schematic Window

### About the Schematic Window

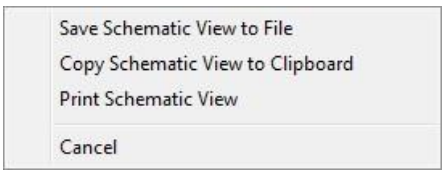
The Schematic Window displays a side elevation view of the major equipment on the pole. Within the Schematic Window you can change the height of the equipment, view basic information about the equipment, or filter the scope of the data displayed.

**Note:** Hovering over the equipment height will display basic information about the equipment.



### Schematic Window Menu Display Options

Right clicking on the Schematic Window background provides several options.

	<p><b>Save Schematic View to File.</b> This option saves the current Schematic View as a variety of file types (JPEG, BMP, GIF or PNG)</p> <p><b>Copy Schematic View to Clipboard.</b> This option copies the current Schematic View to the clipboard so that the Schematic View can be pasted directly into other applications such as Microsoft Word, E-Mail, etc.</p> <p><b>Print Schematic View.</b> This option prints the currently displayed Schematic View.</p> <p><b>Cancel.</b> This option closes the available Schematic View options without taking any action.</p>
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### Display Above GL Portion Only

To display only the portion of the pole above the groundline (GL), complete the following steps:

1. Check the **Above GL Portion Only** box to display only the portion of the pole that is above the groundline. Un-check the box to display the complete pole.

### Display Draft Pole Break

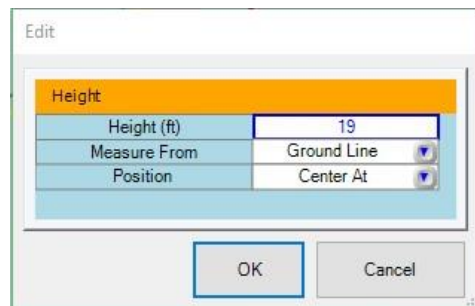
To replace a portion of the pole with no attachments with a drafting break, complete the following steps:

1. Check the **Draft Pole Break** box to insert a temporary drafting break. Un-check the box to display the entire pole.

### Changing Equipment Height

To edit the equipment height, complete the following steps:

1. In the Schematic View, click on the **equipment height** label you would like to change. In the **Edit** window enter a new height for the equipment. Click **OK**.

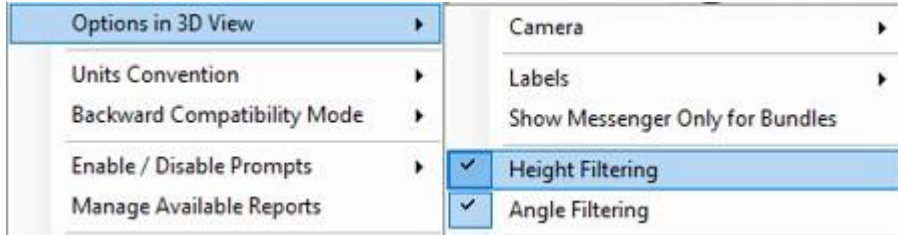


*Note: To undo a height modification, select **Edit>Undo**.*

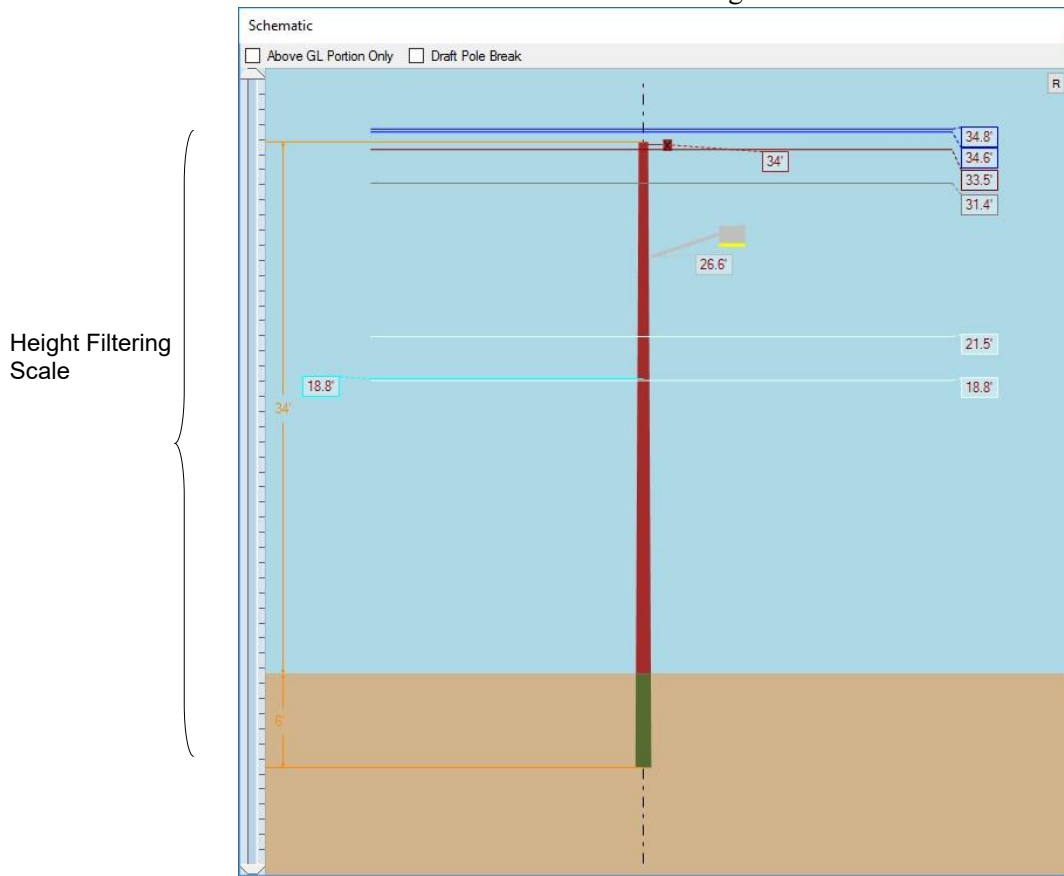
### Setting a Height Filter

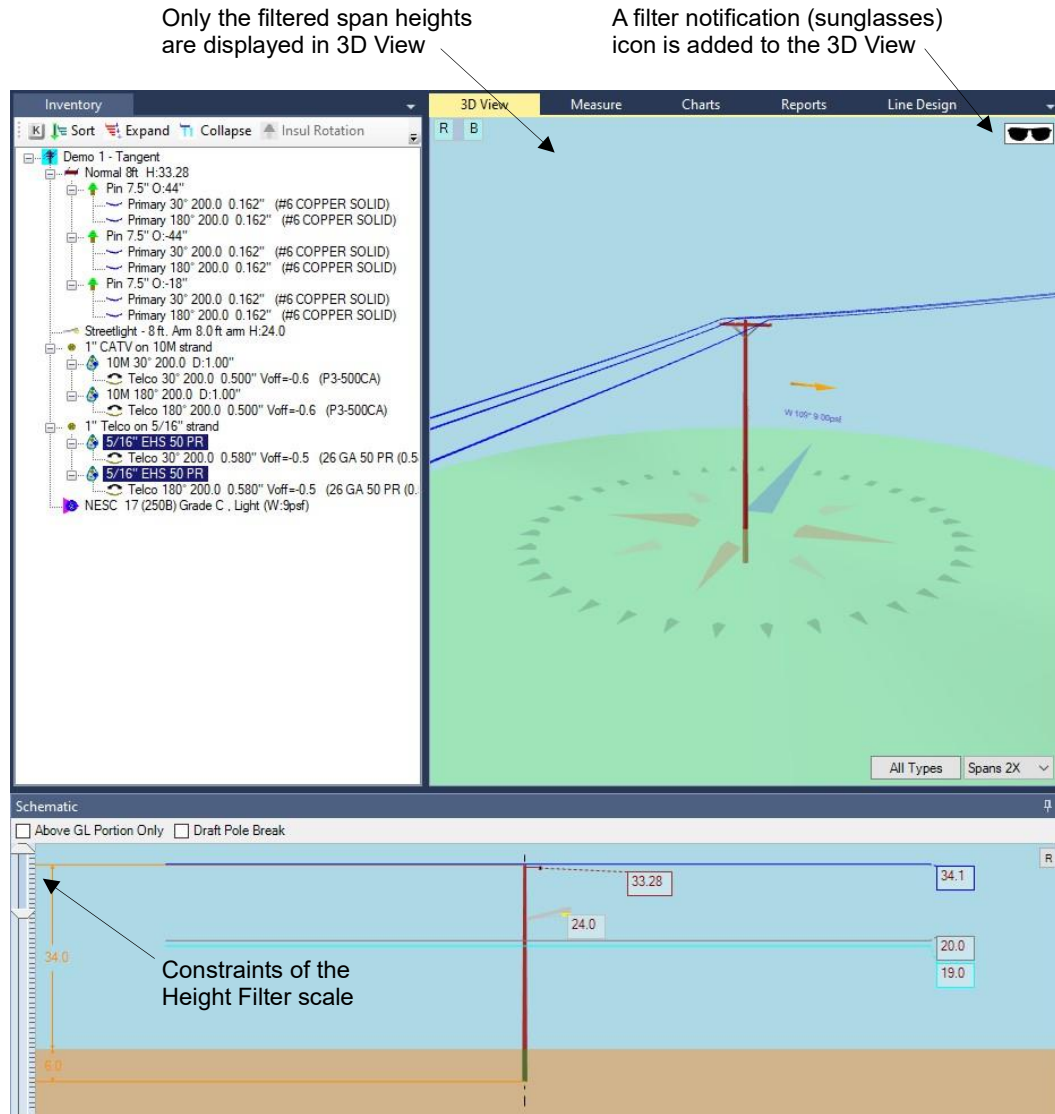
To filter the spans on the pole according to height, complete the following steps:

1. To enable the Height Filtering option, select **Options > Options in 3D View > Height Filtering**.




2. Use the **slider scale** buttons to set the filter height. Slide one or both buttons.





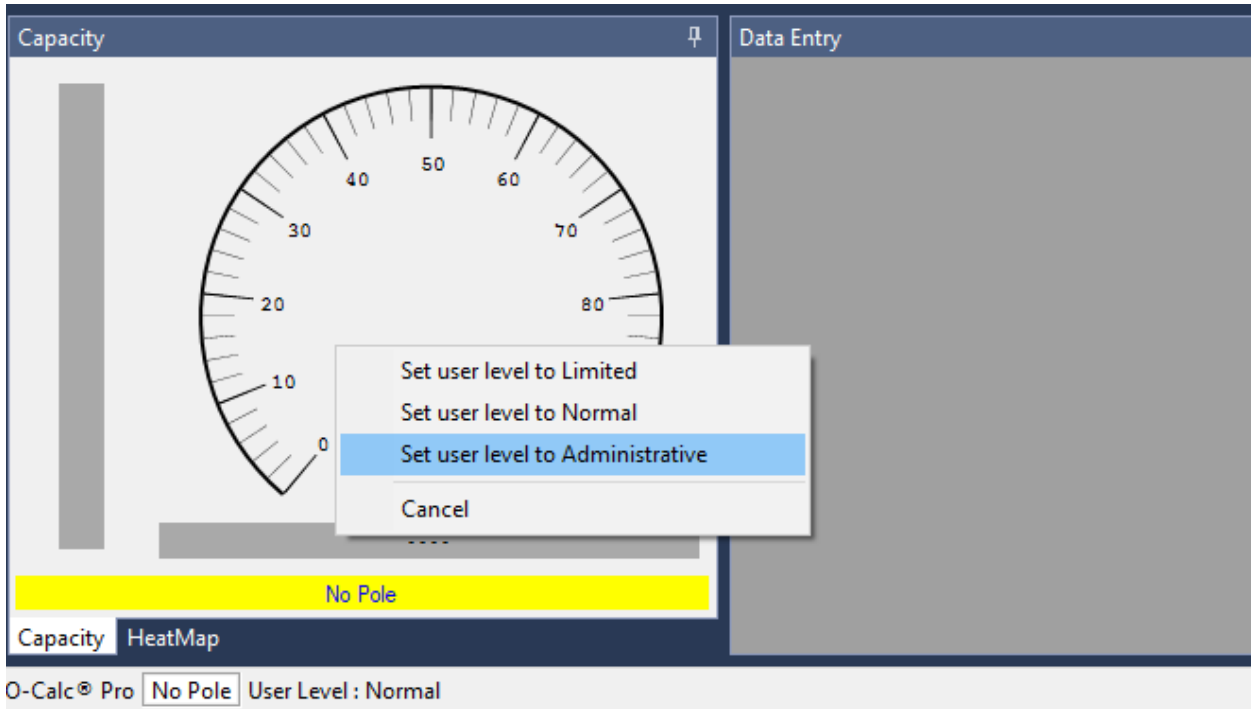
**Note:** To remove the Height Filtering select the Reset button .

**Note:** If you have multiple filters set you can remove just one or all of the filters by right clicking on the **Filter Notification** button  and selecting one of the **Reset Filter** options.

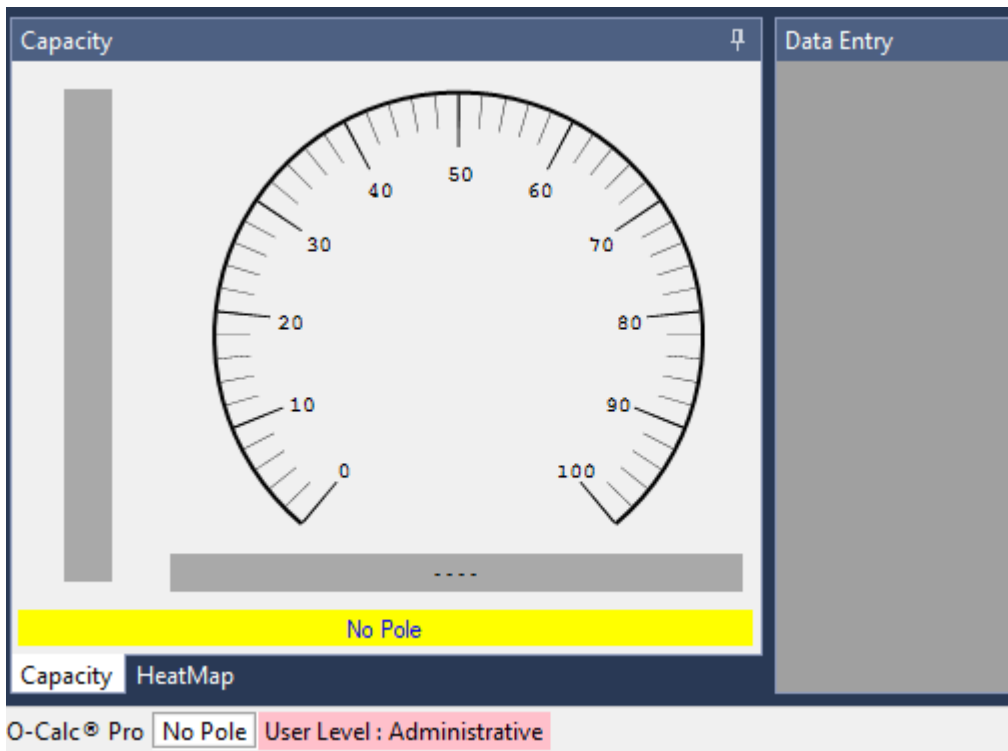
### Administrative Settings Tool

This tool allows the user to control certain O-Calc Pro settings only accessible to advanced O-Calc Pro users with administrative privileges. Below are the steps to activate administrative mode for qualified users.

1. In the lower left of the O-Calc Pro application is the user level designation, typically set to 'Normal'. Select this button to access the User Level pop up window.



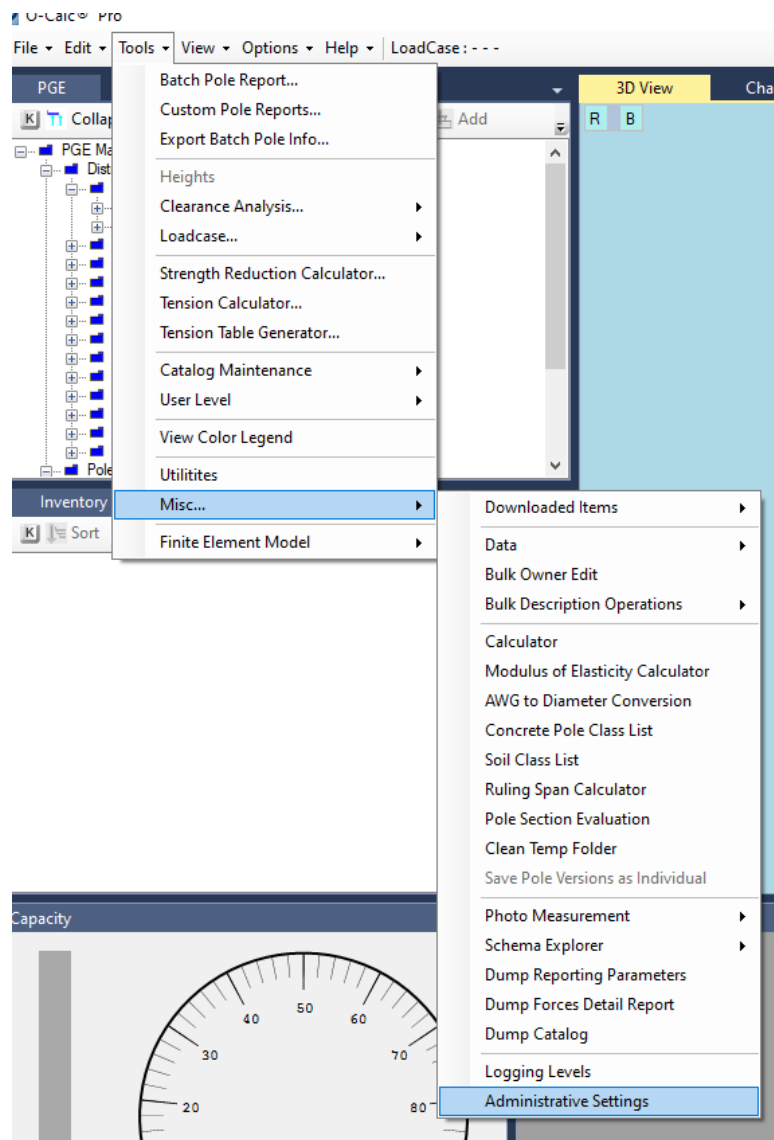
- For Administrative Mode select Set user level to Administrative. When selected, you will see the user level change to Administrative in the lower left of the application.



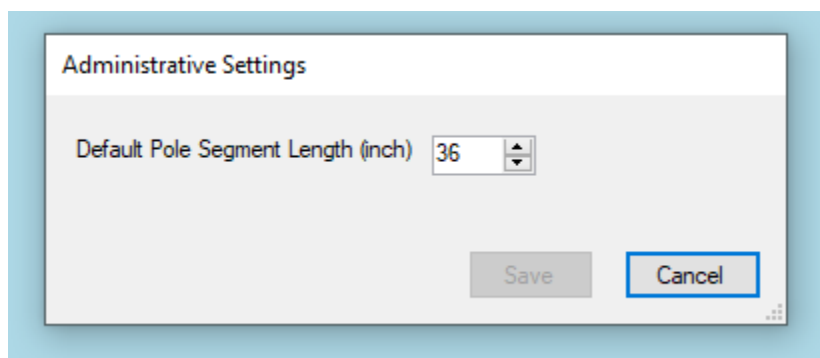
With the user level set to administrative you will be able to see the Administrative Settings menu option under the Tools dropdown menu where otherwise you would not be able to.

### Using the Administrative Settings Feature

To access Administrative Settings go to Tools>Misc> Administrative Settings from the main toolbar at the top left of the application.

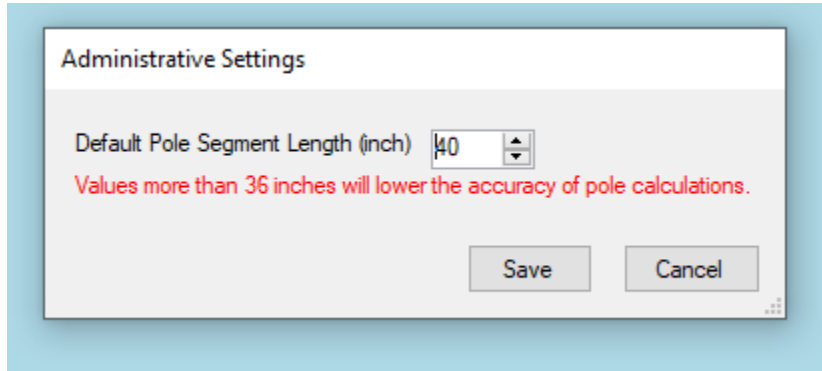


After clicking on the Administrative Settings menu option this following window will appear

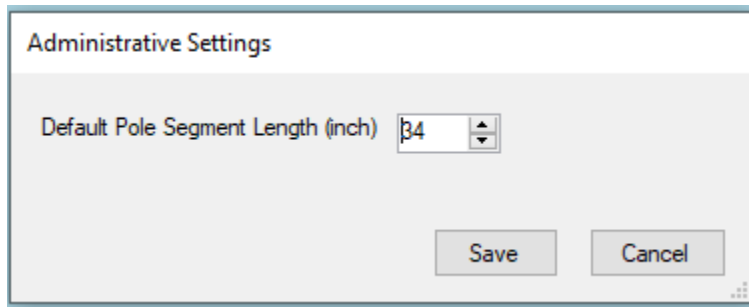




This setting allows the user to change the Default Pole Segment Length used by the O-Calc Pro finite element analysis calculations. User may want to increase or decrease this value in order to adjust the resolution of the finite element model of the pole being calculated.

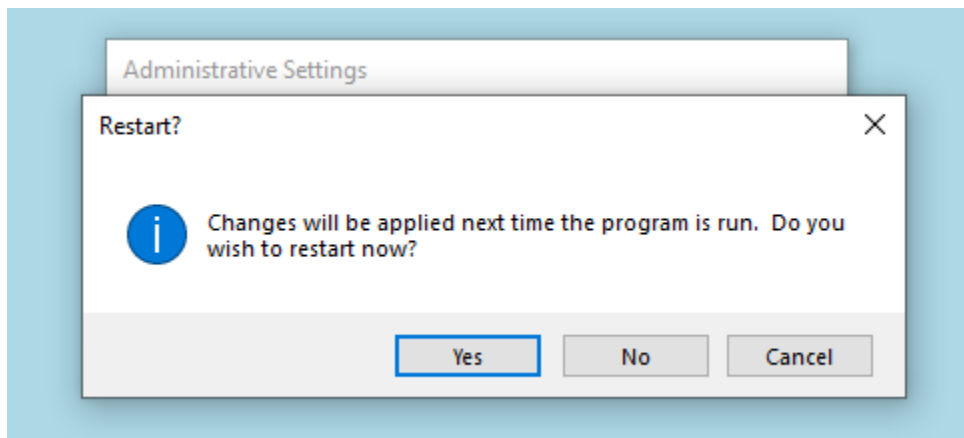


Increasing the value decreases the number of elements used per model, thus lowering the definition of the analysis and potentially lowering the accuracy of the analysis, with the trade off being a quicker calculation time.



Decreasing the value in the dialog has the opposite effect, increasing the number of elements in the analysis. This results in a higher resolution calculation which may be more accurate at the cost of being less time performant.

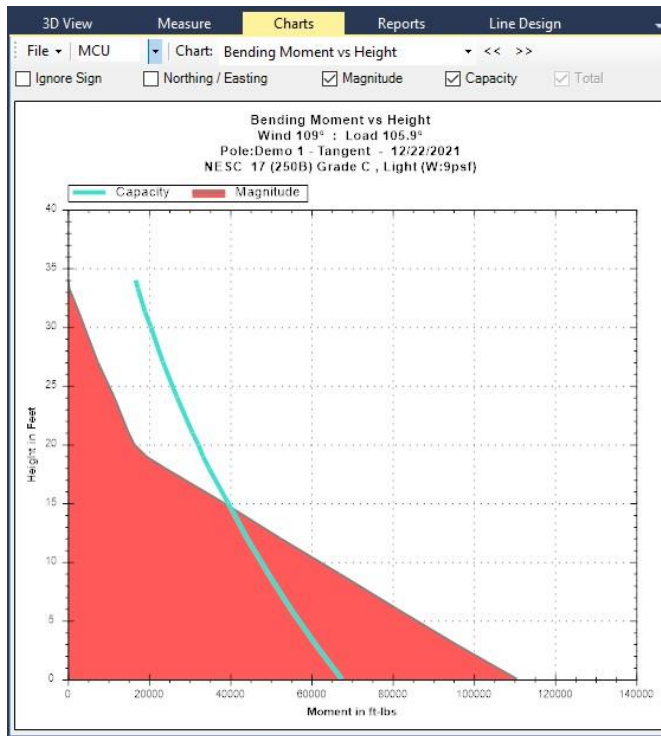
In order to save any changes to the Administrative Settings O-Calc Pro will have to be restarted.



# Working With the O-Calc® Pro Data

## Viewing the Data in Charts

Once a pole is completed in the Inventory Window you may want to perform additional analysis by consulting several predefined charts.

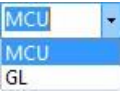


*Note:* A pole needs to be displayed in the Inventory Window in order for data to display in the Charts.

## Toolbar Menu Options for Charts

The charts toolbar menu provides you with a variety of operations and options.

	<p><b>File.</b> The following options are available from the File menu:</p> <p><b>Print Chart.</b> Select the Print Chart option to print the currently displayed chart.</p> <p><b>Page Setup.</b> Select the Page Setup option to configure how the chart will be printed.</p> <p><b>Print Preview.</b> Select the Print Preview option to preview the currently displayed chart exactly as it will be printed.</p>
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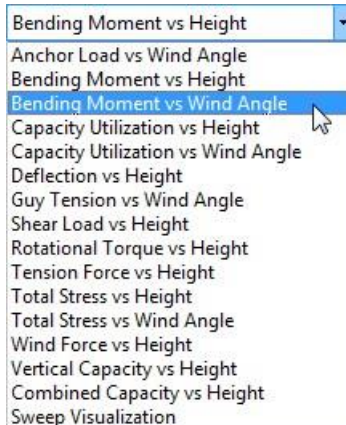
	<p><b>Condition Selector.</b> Select MCU to see data at maximum capacity utilization or select GL to see data at groundline.</p>
<p>Chart:</p>	<p><b>Chart.</b> Select the desired Chart to display from the drop-down menu.</p>
<p><input type="checkbox"/> Ignore Sign</p>	<p><b>Ignore Sign.</b> Check the Ignore Sign option to ignore the Trans/Long values.</p>
<p><input checked="" type="checkbox"/> Northing / Easting</p>	<p><b>Northing / Easting.</b> Check the Northing / Easting option to plot the individual component vector lines in the selected chart.</p>
<p><input checked="" type="checkbox"/> Magnitude</p>	<p><b>Magnitude.</b> Check this option to plot the Magnitude line in the selected chart.</p>
<p><input checked="" type="checkbox"/> Capacity</p>	<p><b>Capacity.</b> Check this option to plot the Capacity line in the selected chart.</p>
<p><input checked="" type="checkbox"/> Total</p>	<p><b>Total.</b> Check this option to plot the sum of the individual components in the selected chart.</p>
<p>&lt;&lt; &gt;&gt;</p>	<p><b>Left\ Right arrows.</b> Select the left\ right arrows to scroll through and display the various charts without having to use the chart drop down menu.</p>

*Note: Available plotting options are dependent on the selected chart.*

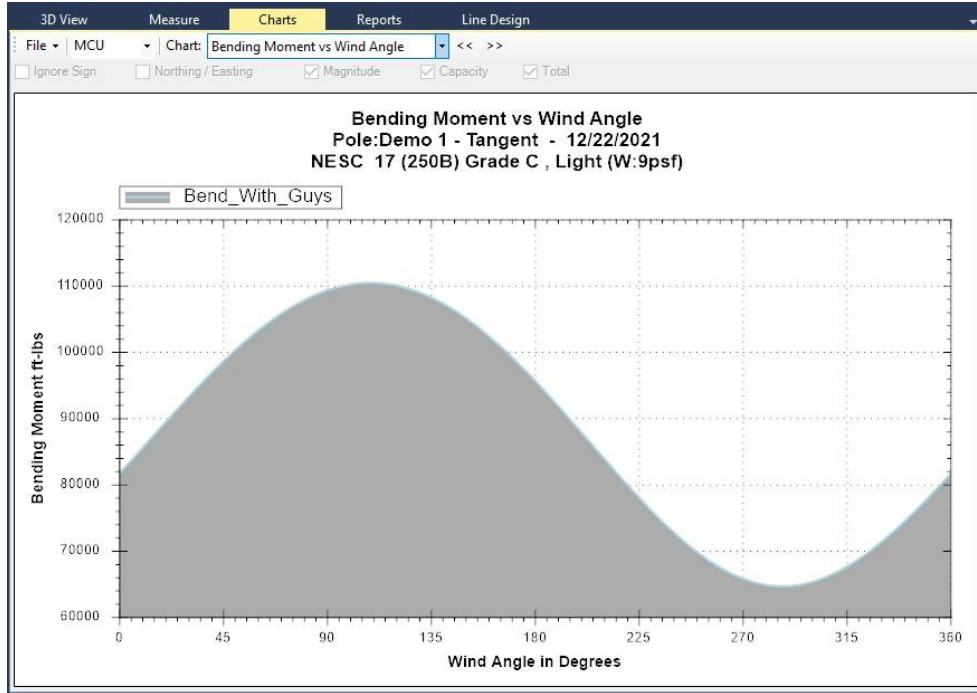
### Viewing Charts

To perform a pole analysis using a Chart, complete the following steps:

1. Load a **pole** that has a LoadCase in the Inventory Window.
2. Select a **Chart** to be displayed from the available Charts drop down list.



Once a Chart has been selected the Chart will automatically be loaded.



**Note:** The chart uses the currently selected LoadCase when calculating and displaying a chart.

**Note:** Use the mouse wheel to zoom in and out on a specific area on the chart. To set the chart back to the default view, See [Additional Menu Options for Charts](#).

### Additional Menu Options for Charts

In addition to the basic menu options that are available, once a chart is displayed additional chart options are available by right clicking on the chart.

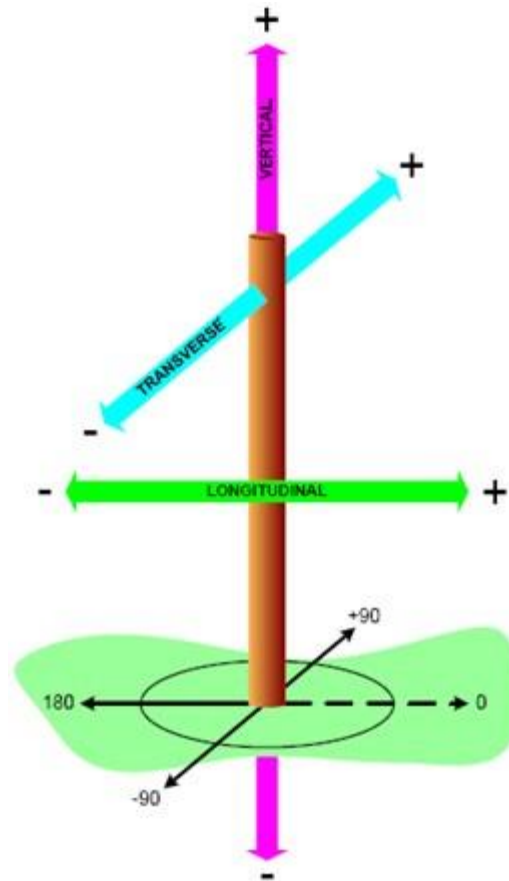
<ul style="list-style-type: none"> <li>Copy</li> <li>Save Chart...</li> <li>Show Point Values</li> <li>Un-Zoom</li> <li>Set Scale to Default</li> </ul>	<p><b>Copy.</b> Select to copy the current chart to the clipboard so that the chart can be pasted directly into other applications such as Microsoft Word, E-Mail, etc.</p> <p><b>Save Chart.</b> Select to save the current chart as a variety of file types (JPEG, BMP, GIF, etc.).</p> <p><b>Show Point Values.</b> Select to display floating point values when hovering in a chart.</p> <p><b>Un-Zoom.</b> Select to undo a previous zoom operation.</p> <p><b>Set Scale to Default.</b> Select to set the chart back to the default scale.</p>
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### Interpreting the Chart

Each chart value is plotted using lines as identified by color in the chart legends.

The line definitions are as follows:

Capacity(Gray)	<p><b>Capacity.</b> The Pole Fiber Stress X Strength Factor is plotted on Moment and Stress Charts.</p> <p><i>Example: For a yellow southern pine (8,000 psi) under NESC Grade C (.85 strength factor) criteria, the pole's allowable stress is plotted at 6,600 psi on a Total Stress chart.</i></p>
Easting (Blue)	<p><b>Easting.</b> These values are perpendicular to the frame of reference and represent results in the 90°/270° direction. Easting values are plotted on all charts.</p>
Northing (Green)	<p><b>Northing.</b> These values are those in the direction of the northing value and represent results in the 0°/180° direction. Northing values are plotted on all charts.</p>
Magnitude (Red)	<p><b>Magnitude.</b> A non-directional value representing the summary of forces along the length of the pole. This line is critical because it represents a combined value of the Easting and Northing directions. This line represents the summary of forces acting on the pole.</p>



### Viewing the Data in Reports

Once the pole is completed in the Inventory Window you may want to generate a variety of reports. The O-Calc ® Pro Analysis Report is provided to help you inspect the analysis results.



*Note:* A pole needs to display in the Inventory Window to enable the Reports option.

### Toolbar Menu Options for Reports

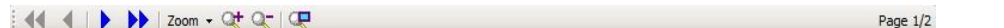



The report's toolbar menu provides you with a variety of operations and options.

	<p><b>File.</b> The following options are available from the File menu:</p> <p><b>Print Report.</b> Select Print Report to print the current report.</p> <p><b>Page Setup.</b> Select the Page Setup option to configure how the report will be printed.</p> <p><b>Save to PDF.</b> Select Save to PDF to save the current report to edit an existing report template.</p> <p><b>Save to RTF.</b> Select the Edit Report Template to edit an existing report template.</p> <p><b>E-Mail Report To.</b> Select the E-Mail Report To option to e-mail the currently viewed report.</p>
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Report:	<b>Report.</b> Select the desired Report to display the from the drop-down menu.
<< >>	<b>Left\ Right arrows.</b> Select the left\ right arrows to scroll through and display the various Reports without having to use the chart drop down menu.
Refresh	<b>Refresh.</b> Select to refresh the Report Window.
Batch Report	<b>Batch Report.</b> Select to open and work with the Batch Pole Reporting tool.
Custom Reports	<b>Custom Reports.</b> Select to create Custom Reports.
Manage Reports	<b>Manage Reports.</b> Select to manage which reports display in the Report drop-down list. <i>Note: Manage Report configurations are carried over to Bulk Reports</i>
Auto	<b>Auto.</b> Select to automatically reload the currently displayed report after calculations have been performed.

### Reports Toolbar Options

Once a Report is displayed the report’s toolbar menu provides you with a variety of operation and options.

	
Navigation Controls 	<b>Navigation Controls.</b> Click the arrows to navigate through the document. Double arrows navigate to the first or last page. Single arrows navigate to one page at a time.
Zoom ▾	<b>Zoom.</b> Select the Zoom drop-down list to change the report magnification level.
	<b>Zoom In/Zoom Out.</b> Click the zoom in or zoom out buttons to manually zoom within the currently selected report.
	<b>Zoom to Fit.</b> Click the Zoom to Fit option to automatically have the report fill the space provided.



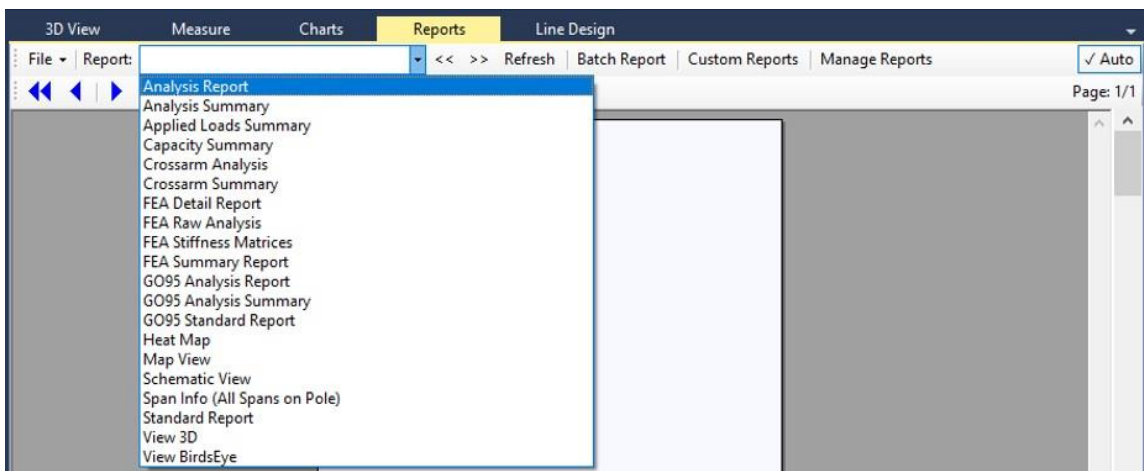
Page 1/2	<b>Page Count.</b> Displays the current page/the total pages in the report.
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## Viewing Reports

To view an existing report, complete the following steps:

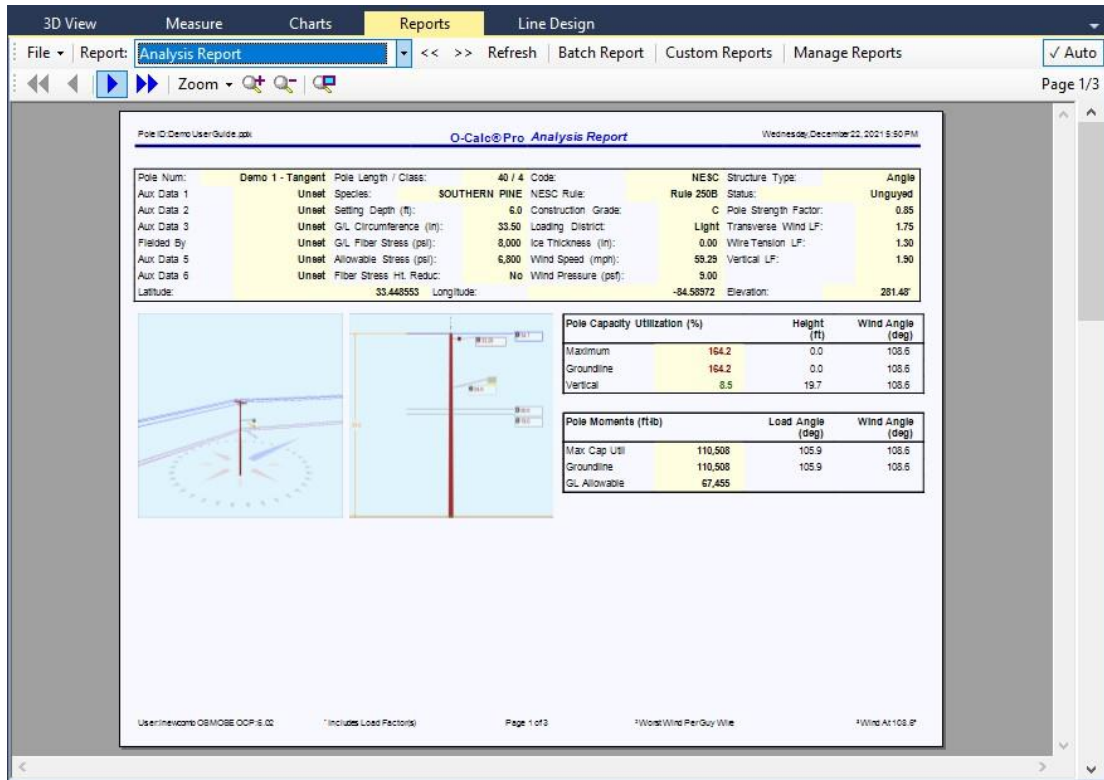
1. Load a **pole** that has a LoadCase in the Inventory Window.
2. Select a **Report** to be displayed from the available Report drop down list.

***Note:** The list of available reports is dependent on which reports are selected under Manage Report. The list of available reports also corresponds with the currently loaded pole. (Example: The crossarm reports will not be displayed in the report list if there are no crossarms on the currently loaded pole).*



Once a report has been selected the Report will automatically be loaded.

***Note:** The report may take a moment to load.*



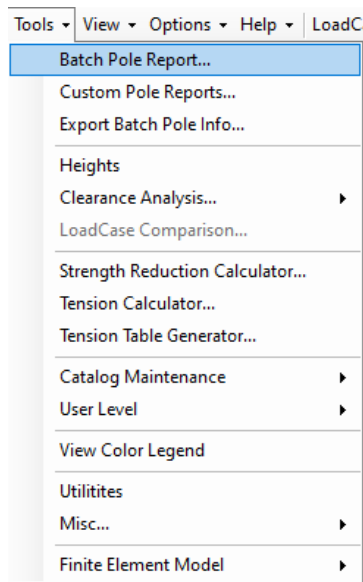
**Note:** The selected report uses the currently selected LoadCase when calculating and displaying a report.

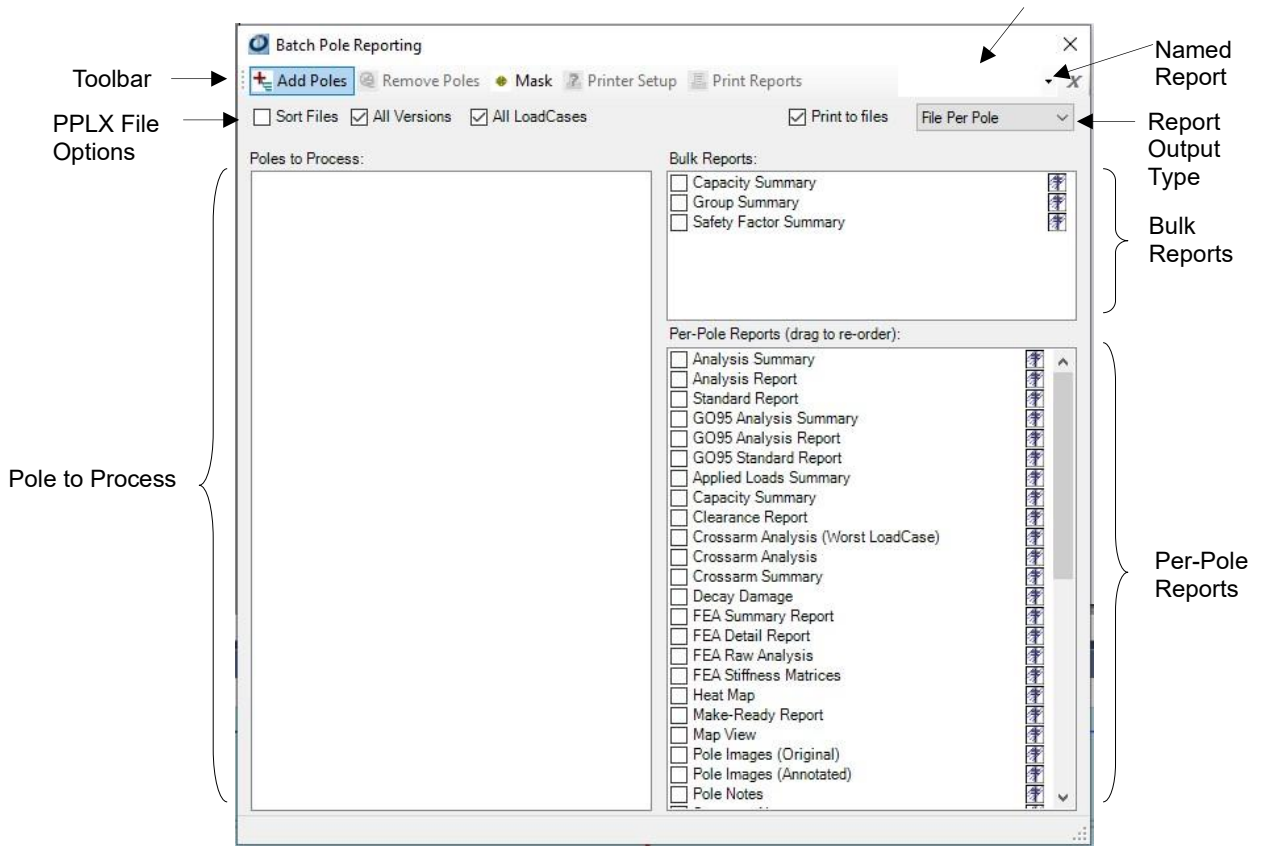
### Creating a Batch Pole Report

The Batch Pole Report allows you to print report(s) against specific poles that you select. To create a Batch Pole Report, complete the following steps:

1. Select **Tools>Batch Pole Report**.

**Note:** The Batch Pole Report can also be accessed by selecting **Batch Report** in the Reports Window.






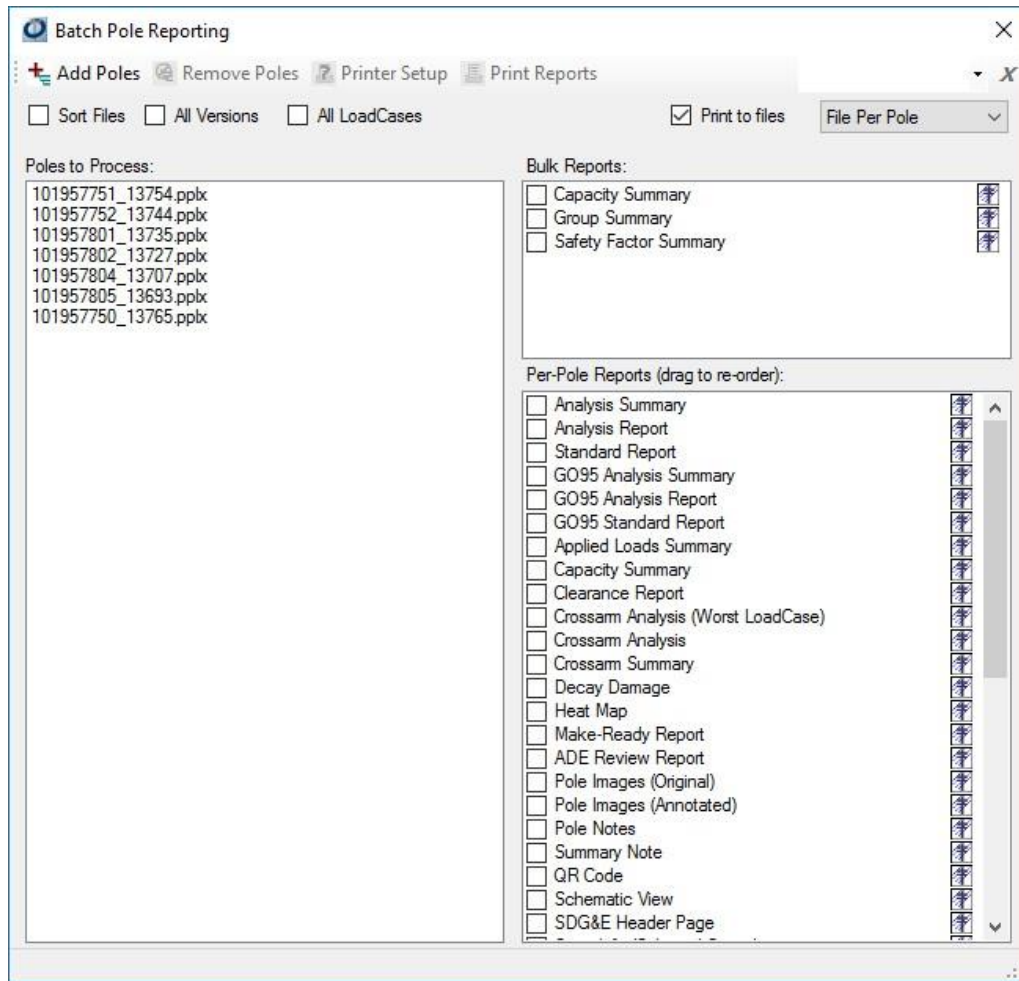
Display Layout


<p>Toolbar Menu Options</p>	<p><b>Add Poles.</b> Select the Add Poles option to add poles that will be processed in the Batch Reports.</p> <p><b>Remove Poles.</b> Select the Remove Poles option to remove poles that have been to the Poles to Process list.</p> <p><b>Printer Setup.</b> Select the Printer Setup option to configure the printer that the Bulk Reports will utilize.</p> <p><b>Print Reports.</b> Select the Print Reports option to print the currently selected batch reports.</p>
<p>Display Layout</p>	<p><b>Display Layout.</b> Enables the ability to switch between different window layouts.</p>
<p>Sort Files</p>	<p><b>Sort Files.</b> Select the Sort Files option to sort the PPLX files in alphabetical order when they are printed to files.</p>

All Versions	<p><b>All Versions.</b> Select this option to create a print to file report for each version within the selected PPLX files.</p> <p><i>Note: For additional information on pole versioning, see <a href="#">Create a New Version of the Existing Pole</a>.</i></p>
All LoadCases	<p><b>All LoadCases.</b> Select this option to create a separate print to file report for each loadcase attached to a PPLX file.</p>
Print to files	<p><b>Print to files.</b> Select the Print to files option to print the currently selected batch reports into file format.</p> <p><b>File Per Report:</b> Select the File Per Report option to create an individual file for each report selected.</p> <p><b>File Per Pole:</b> Select the File Per Pole option to create one file per each processed pole.</p> <p><b>Single File:</b> Select the Single File option to create a single file that includes all the selected Per-Pole Reports.</p>
Poles to Process	<p><b>Poles to Process.</b> Displays the poles that will be processed in the selected Batch Reports.</p> <p><i>Note: The order of the poles can be changed by using the drag-and-drop option.</i></p>
Bulk Reports	<p><b>Bulk Reports.</b> Displays the list of available Bulk Reports.</p> <p><i>Note: These reports print separate from the Per-Pole Reports.</i></p>
Per-Pole Reports	<p><b>Per-Pole Reports.</b> Displays the list of available Per-Pole Reports.</p> <p><i>Note: The order in which the reports will be printed can be changed by using the drag-and-drop option.</i></p>


2. Select the **Add Poles** button .
3. **Browse** to the location of the **pole(s)** you wish to add to the Batch Report process and select the (*pole name*).pplx file and click **Open**.

*Note: Hold down the ctrl key to select more than one pole out of sequence. Hold down the shift key to select a group of poles that are next to each other.*

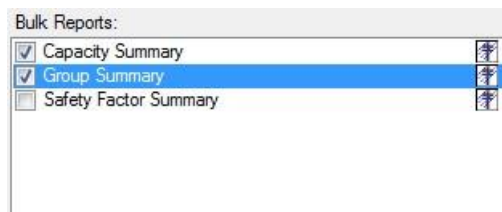


**Note:** To remove selected poles from Poles to Process area select the pole then select the **Remove Poles** button . Hold down the ctrl key to select more than one pole out of sequence. Hold down the shift key to select a group of poles that are next to each other.

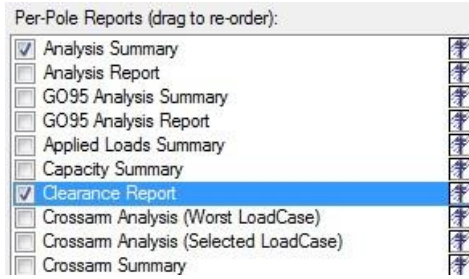
- To change the **order** in which the (pole name).pplx file(s) will be printed click and drag the .pplx file.

**Note:** When a .pplx file is being dragged to a new location the cursor will change to indicate a valid move .

- Select the **Bulk Report(s)** to be include.

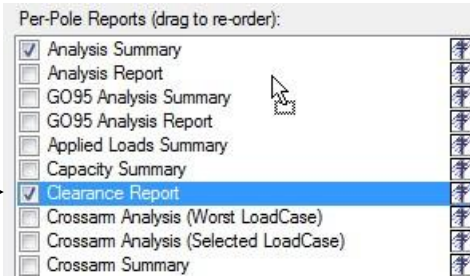



- Select the **Per-Pole Report(s)** to be included.

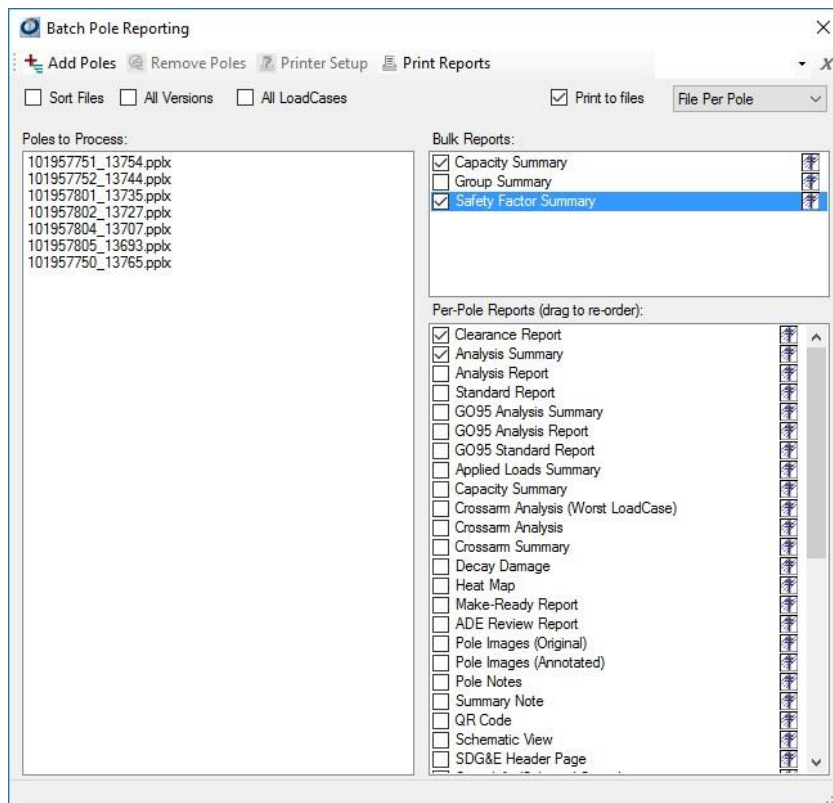


- To change the **order** in which the Per-Pole Report(s) will be printed click and drag the report.

The O-Calc® Pro Clearance Report is repositioned to print before the Analysis Summary.




*Note:* When a report is being dragged to a new location the cursor will change to indicate a valid move . To save the changed layout of the Batch Pole Reporting window see [Save a Named View](#).

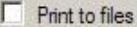


- Check the **Sort Files** to sort the PPLX files in alphabetical order when printed to file(s).
- Check the **All Versions** to create a report for each version within the selected PPLX files.

10. Check the **All LoadCases** to create a report for each loadcase attached to a PPLX files.
11. Select the **Print Reports** button  to print the Batch Reports to your default printer.

To print the Batch Reports to a different printer, select the **Printer Setup** button  and select your printer of choice.

OR

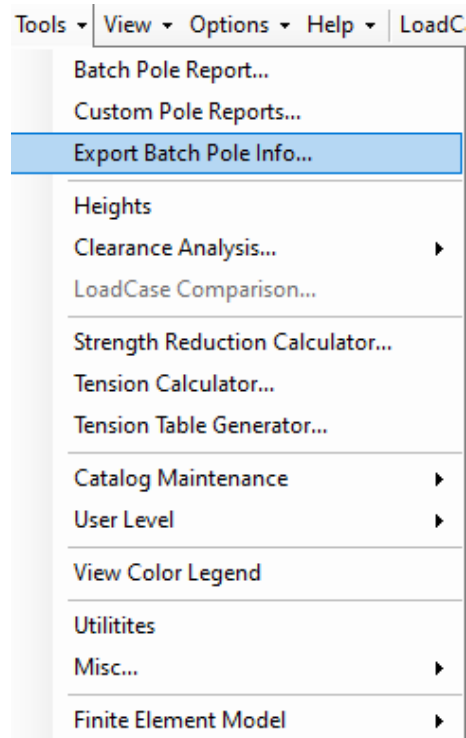
Check the **Print to files**   option, select the Report Output Type then navigate to and select where you want the Batch Report files saved to.

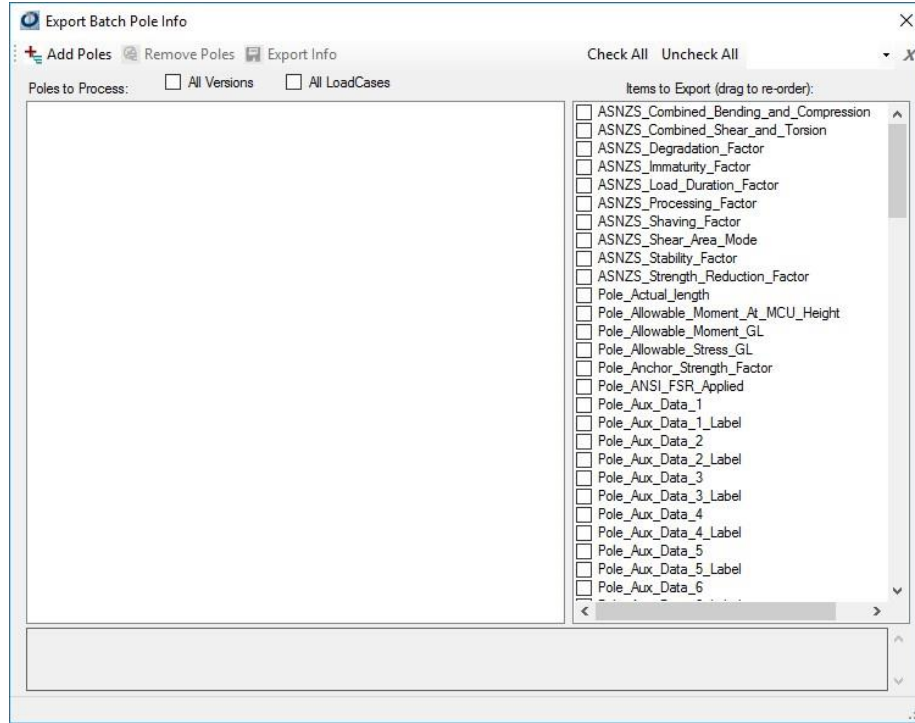
*Note: Only the initial Pole Image will be included in the Batch Report. Subsequent images that are attached to the .pplx file will be printed or saved as individual PDF files as 'pplx file name\_image#'.*

### Exporting Batch Pole Information

The Export Batch Pole Information Report allows you to export specific pole attributes and calculation results to a .CSV file. To export a Batch Pole Information, complete the following steps:

1. Select **Tools > Export Batch Pole Report Info.**

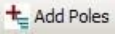




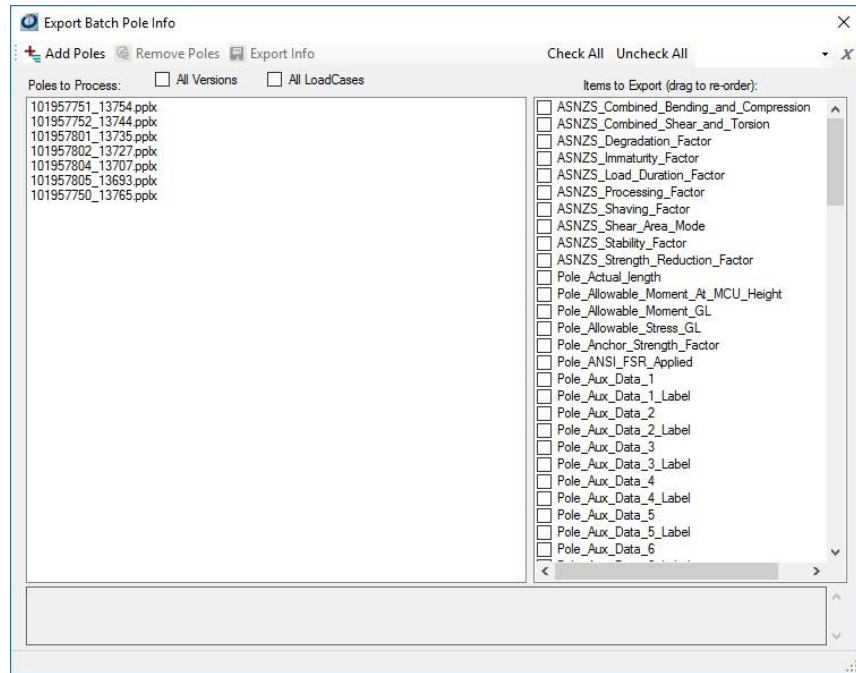
<p>Toolbar Menu Options</p>	<p><b>Add Poles.</b> Select the Add Poles option to add poles that will be processed in the export.</p> <p><b>Remove Poles.</b> Select the Remove Poles option to remove poles that are listed in the Poles to Process list.</p> <p><b>Export Info.</b> Select the Export Info option to export the selected items and calculations to a .CSV file.</p>
<p>Check All</p>	<p><b>Check All.</b> To select the entire Items to Export list.</p>
<p>Uncheck All</p>	<p><b>Uncheck All.</b> To uncheck the entire Items to Export list.</p>
<p>Display Layout</p>	<p><b>Display Layout.</b> Enables you to swiftly switch between different window layouts.</p>
<p>All Versions</p>	<p><b>All Versions.</b> Select create a separate entry for each item and calculation based on each version within the selected PPLX files.</p> <p><i>Note: For additional information on pole versioning, see <a href="#">Create a New Version of the Existing Pole.</a></i></p>




All LoadCases	<b>All LoadCases.</b> Select to create a separate entry for each item and calculation based on the loadcase(s) attached to a PPLX file.
Poles to Process	<b>Poles to Process.</b> Displays the poles that will be processed in the exported batch pole .CSV file.  (The order of the poles can be changed by using the drag-and-drop option)
Items to Export	<b>Items to Export.</b> Displays a list of available items (attributes) that can be exported.  (The order of the items can be changed by using the drag-and-drop option)
Selected Items	<b>Selected Items.</b> Displays a complete list of all the selected Items to Export.

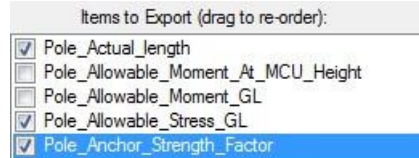
2. Select the **Add Poles** button  .
3. **Browse** to the location of the **pole(s)** you wish to add to the Batch Pole Information Export process and select the *(pole name).pplx* file and click **Open**.

*Note: Hold down the ctrl key to select more than one pole out of sequence. Hold down the shift key to select a group of poles that are next to each other.*

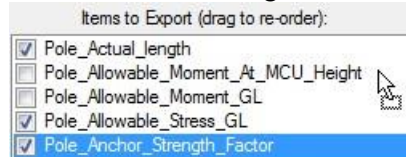



**Note:** To remove selected poles from Poles to Process area select the pole then select the **Remove Poles** button  Remove Poles. Hold down the ctrl key to select more than one pole out of sequence. Hold down the shift key to select a group of poles that are next to each other.

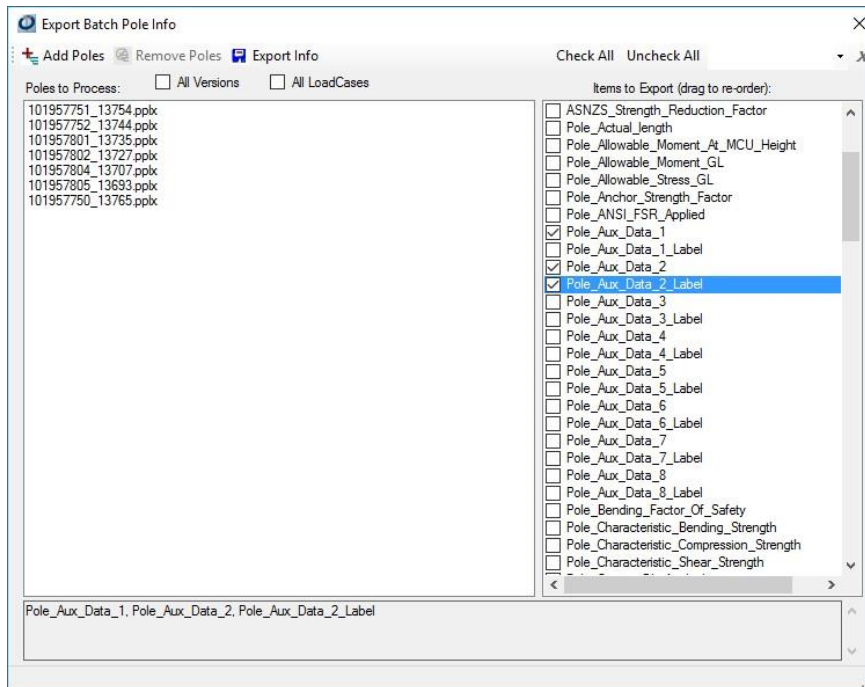
4. Select the **Items to Export** from the available list.




5. To change the **order** in which the Items to Export will be displayed in the .CSV file click and drag an item to arrange the items placement.



**Note:** When an item is being dragged to a new location the cursor will change to indicate a valid move . To save the changed layout of the Items to Export window see [Save a Named View](#).



6. Select the **Export Info** button  Export Info.
7. Browse to the location you would like the Batch Pole Information Export saved to and **enter** a file name.
8. Select **Save**.
9. Select **OK** to the export confirmation message.

## Working with the Clearance Analysis Tool

The Clearance Analysis Tool allows you to evaluate and report on clearance violations along the spans emanating from a pole. Examples of clearance requirements that can be encoded and violations that might be found between them are:

- Spans of different types (power to comm. for example)
- Spans and structures or vehicles
- Spans and surfaces
- Spans and foliage

The tool provides the ability to model actual field conditions accurately, giving you the ability to define elements arrayed under or interfering with the spans emanating from a pole.

Creating a Clearance Analysis on a new or existing (transmission) pole allows you to take into effect field conditions such as surfaces (terrain), structures, foliage and wires. The Clearance Analysis tool creates a 2D representation (model) of the spans and field conditions that you have input. A Clearance Analysis report is also available to easily detect any clearance issues.

Creating a Clearance Analysis is a four-step process:

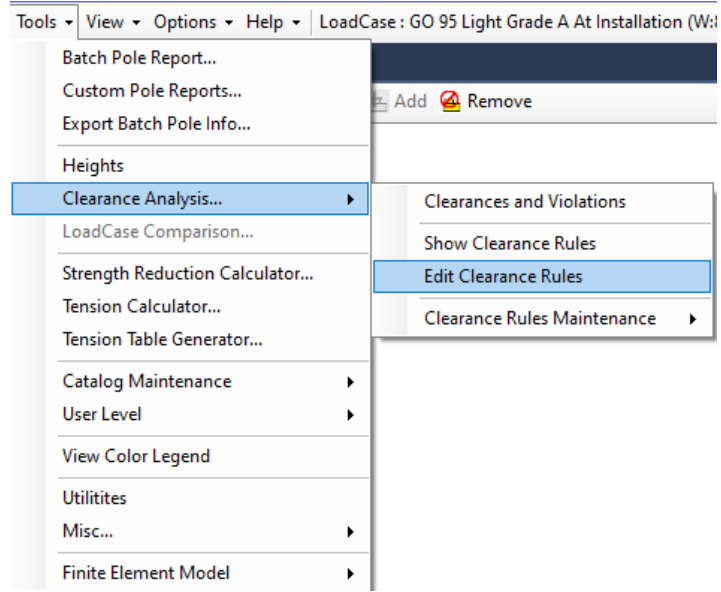
1. Create Clearance Rules and Violations definitions.
2. Using Clearance Group objects on specific spans to identify the category or categories that a span falls into.
3. Recording the actual field conditions surrounding the pole (surfaces, structures and foliage).
4. Running the Clearance Analysis report.

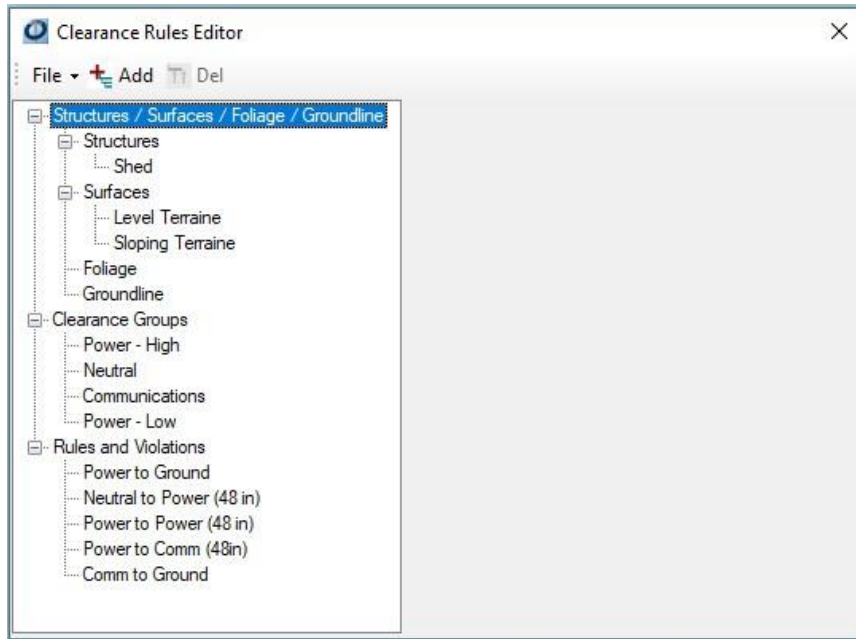
### Create Clearance Rules and Violations


Before any Clearance Analysis can be completed, the Clearance Rules and Violations need to be set-up. Creating these Clearance Rules and Violations should typically only be done once for any power company or division. Once the Clearance Rules or Violations have been established *extreme caution* is advised when removing or editing them after Clearance Analysis is configured. Removing or editing existing Clearance Rules or Violations may invalidate existing clearance elements or rules.

To create Clearance Rules and Violations, complete the following steps:

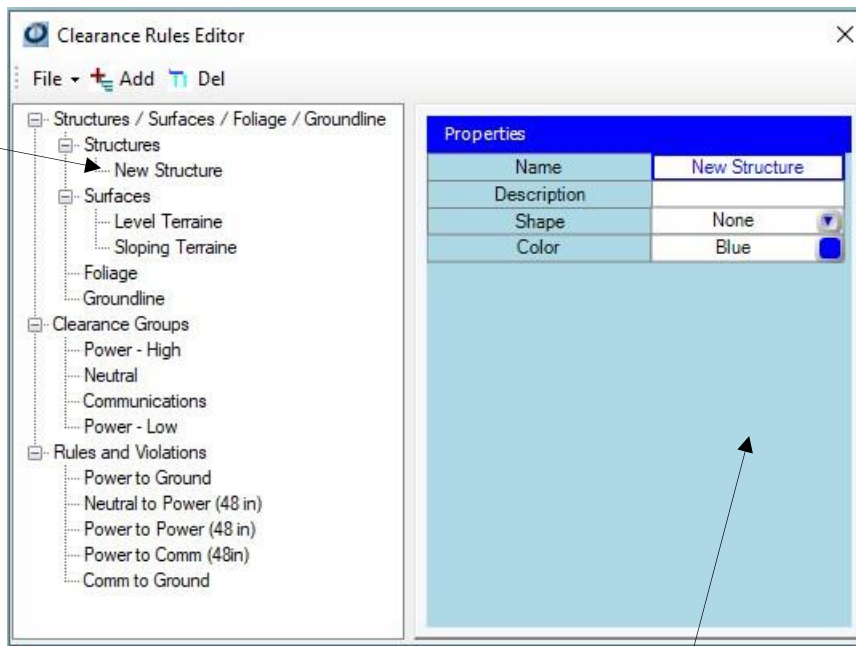
1. Select **Tools > Clearance Analysis > Edit Clearances Rules.**





- To add a **Structure**, **Surface** or **Foliage** element select the area you want to add an element to and either left click and select the Add button  or right click and select **Add** from the popup menu.

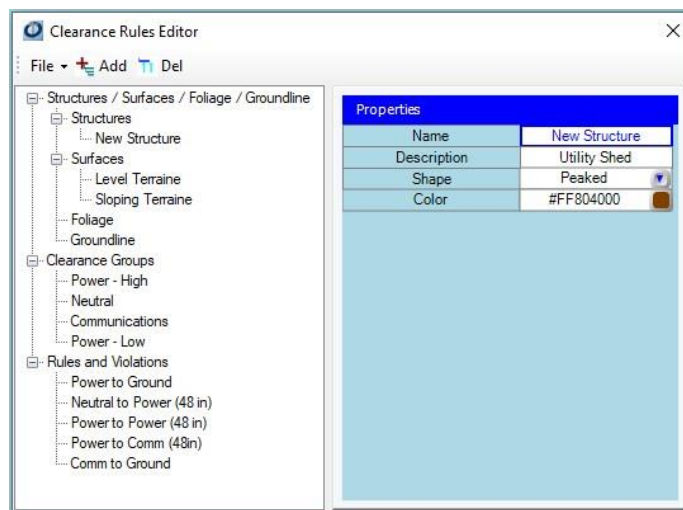
New Structure element is created



or right click and

Define the elements attributes

3. Enter the **new element attributes**.




*Note: Only the Structure area allows you to define a Shape.*

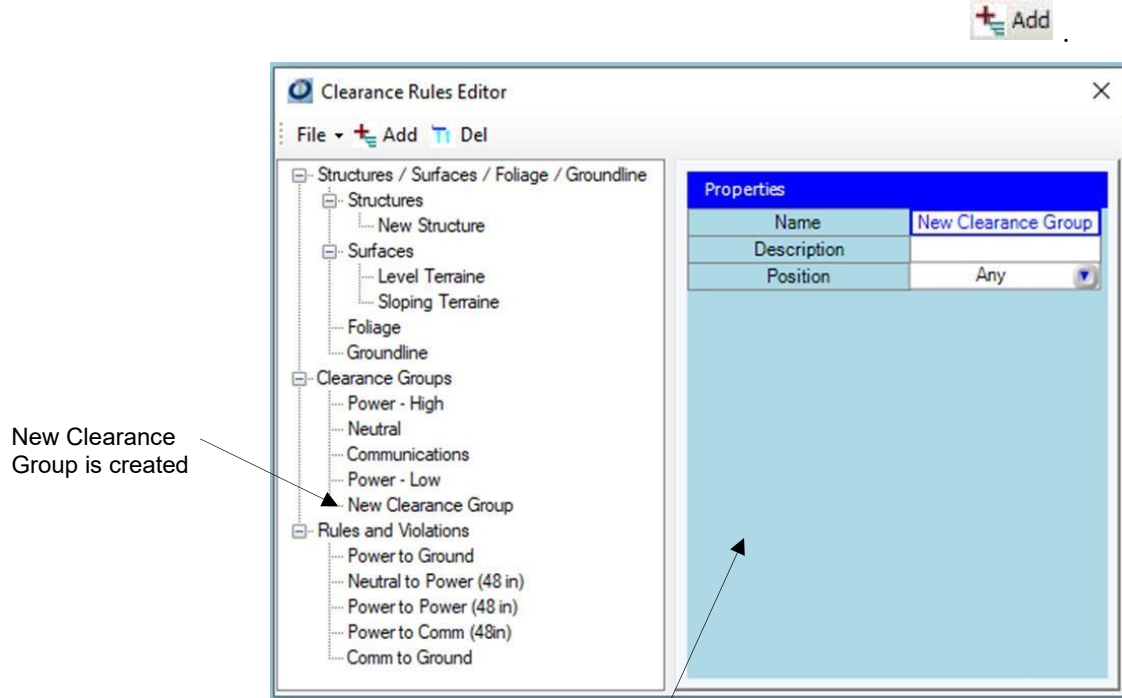
*Note: When adding a Surface element, a **Default** surface attribute is available if you'd like to have a specific surface added by default when creating Clearance Analysis. The default surface area can be changed at any time.*

4. Select **File > Save**.

*Note: Complete steps 2 – 4 to create additional elements for Structures, Surfaces and Foliage.*

*Note: There is no undo for this operation. To remove an element, select the Structure, Surface or Foliage and select the **Delete** button  from the toolbar. The Delete option is also available by right clicking on the element and selecting **Delete**.*

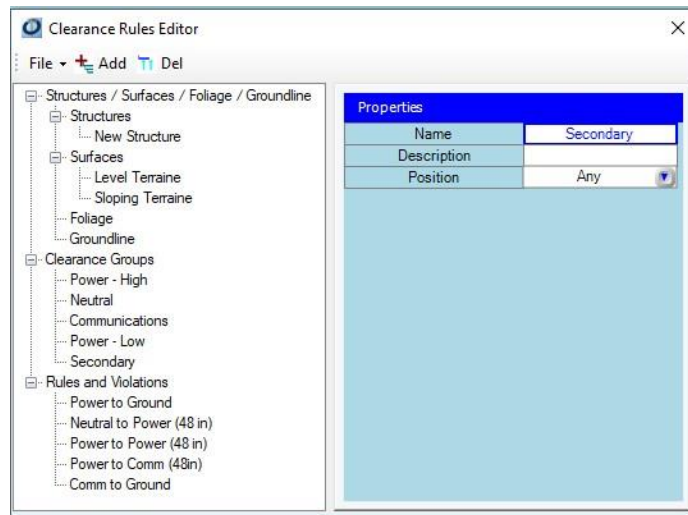
5. Clearance Groups depict what categories spans can be a part of. To add a Clearance Group either right click on **Clearance Groups** and select **Add** from the popup menu



or left click **Clearance Groups** and select the **Add** button

Define the Clearance Group attributes

6. Enter the **new Clearance Group** attributes.

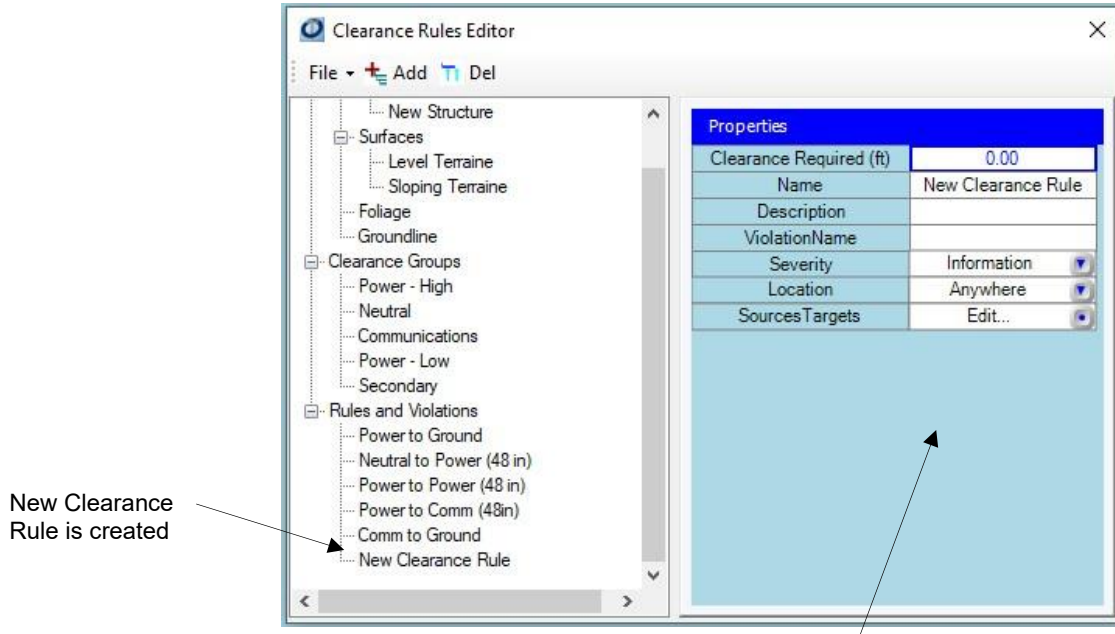


7. Select **File > Save**.

*Note:* Complete steps 5 - 7 to create additional Clearance Group rules.

*Note:* There is no undo for this operation. To remove a Clearance Group rule, select the Clearance Group to be removed and select the **Delete** button  from the toolbar. The Delete option is also available by right clicking on the rule and selecting **Delete**.

8. Rules and Violations define the rules and violations that will be used when completing a Clearance Analysis. To add a Rule or Violation either right click on **Rules and Violations** and select **Add** from the popup menu or left click **Rules and**

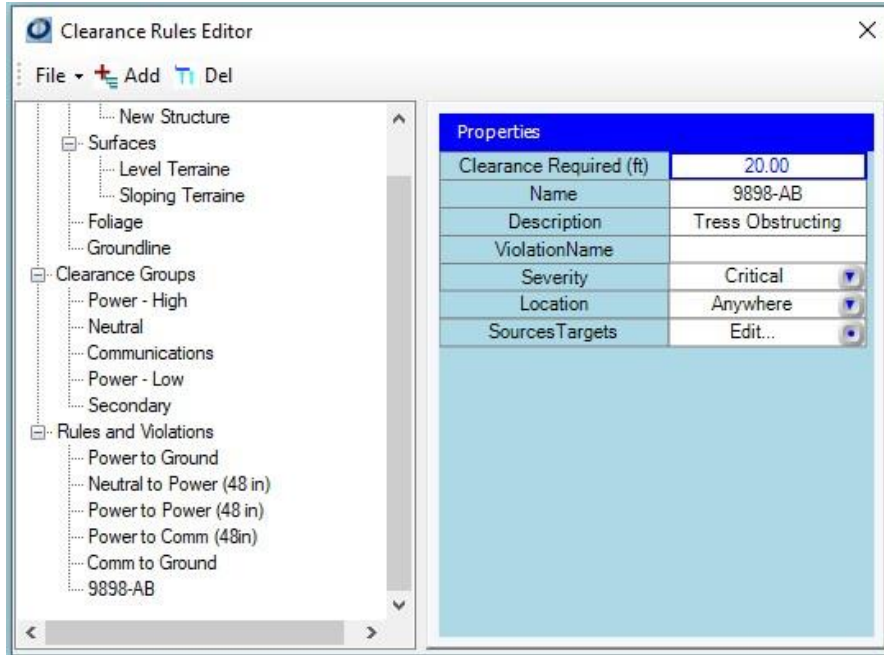


**Violations** and select the **Add** button

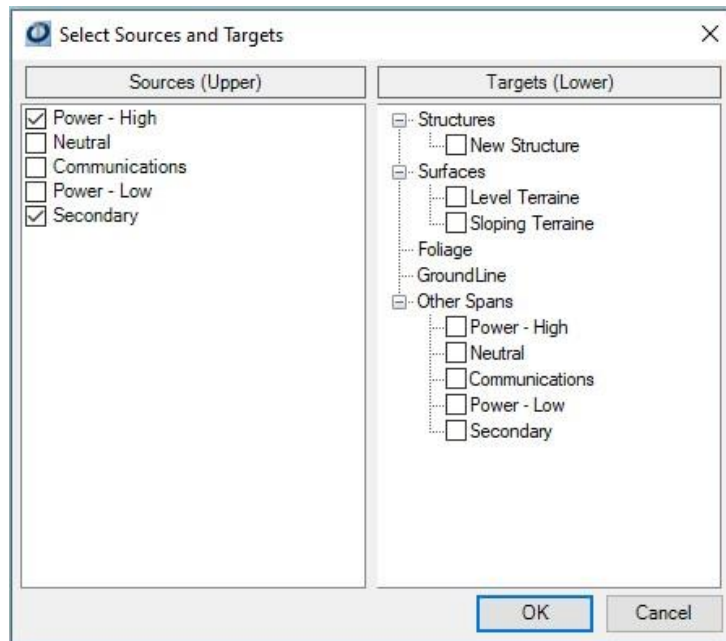
Define the Rule or Violation attributes

9. Enter the **new Rules or Violations attributes**.





10. To set the **Sources Targets** select the **radio** button .



11. Check the **Source(s)** to be used.


12. Check the **Target(s)** to be used.

*Note: Multiple Sources and Targets can be selected. The only exception being that you cannot select the identical Source and Target.*

13. Select **OK**.

14. Select **File > Save**.

*Note: Complete steps 8 – 14 to create additional Rules and Violations.*

*Note:* There is no undo for this operation. To remove a rule, select the Rule and Violation item and select the **Delete** button  from the toolbar. The Delete option is also available by right clicking on the rule and selecting **Delete**.

*Note:* A comprehensive listing of all the current Clearance Rules is available by selecting **File > Show Clearance Rules**. The O-Calc® Pro Clearance Analysis Rules report will display and is available for printing.

### Categorizing Spans

Once the rules are in place you need to categorize the actual spans on the current pole. To identify which spans, go into specific categories you will need to place a Clearance object on each span. To place a Clearance Objects on a span, complete the following steps:

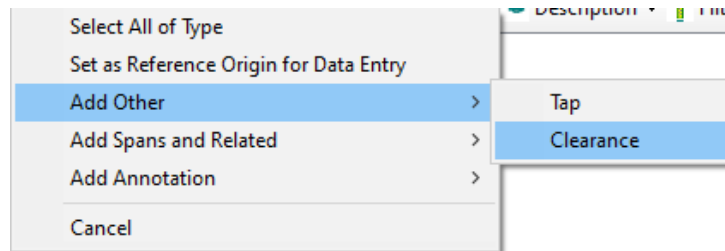
1. Select the **Span** to add a Clearance Object to.

*Note:* Spans can be selected from the Inventory Window, the 3D View or the User Catalog. If a span is selected from the 3D View or the User Catalog use the right click menu to add a clearance object.

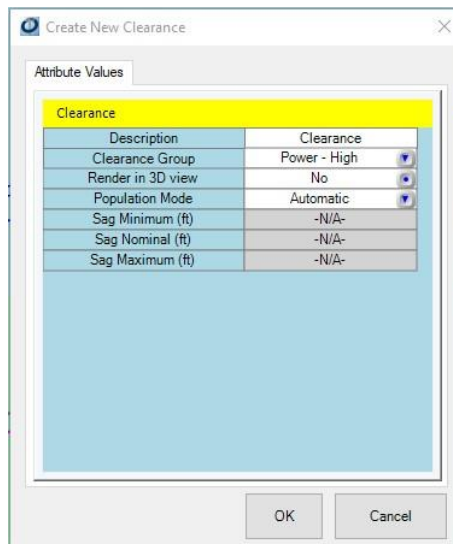
2. Select the **Add** button .

*Note:* The Add Element > Clearance option can also be accessed by right clicking on the span you need to add the Clearance Object to.

3. Select the **Clearance** option.



*Note:* Only one Clearance Object can be added at a time.



*Note:* Available tabs are dependent on corresponding equipment displayed in your Catalogs or Inventory window.

- To add a **Clearance Object** from a catalog or the Inventory, select the clearance object you want to add.

*Note:* For additional information on catalogs or the Inventory Window see [Working With the Catalog Window](#) or [Working With the Inventory Window](#).

- Select the **Attribute Value** tab to modify the clearance object attribute values.

Clearance attributes descriptions:

Description	<b>Description.</b> A general description of the Clearance Object.
Clearance Group	<b>Clearance Group.</b> The name of the Clearance Group.
Render in 3D View	<b>Render in 3D View.</b> A visualization of the vertical clearances.
Population Mode	<b>Population Mode.</b> Determines the method by which the midspan sag values are populated. <i>Manual:</i> Sag values are entered by the operator. <i>Automatic:</i> Sag values are populated automatically. <i>External:</i> An external process populates the values
Sag Minimum	<b>Sag Minimum.</b> Enter the minimum sag allowed at midspan.
Sag Nominal	<b>Sag Nominal.</b> Enter the nominal sag allowed at midspan.
Sag Maximum	<b>Sag Maximum.</b> Enter the maximum sag allowed at midspan.

- Click **OK**.

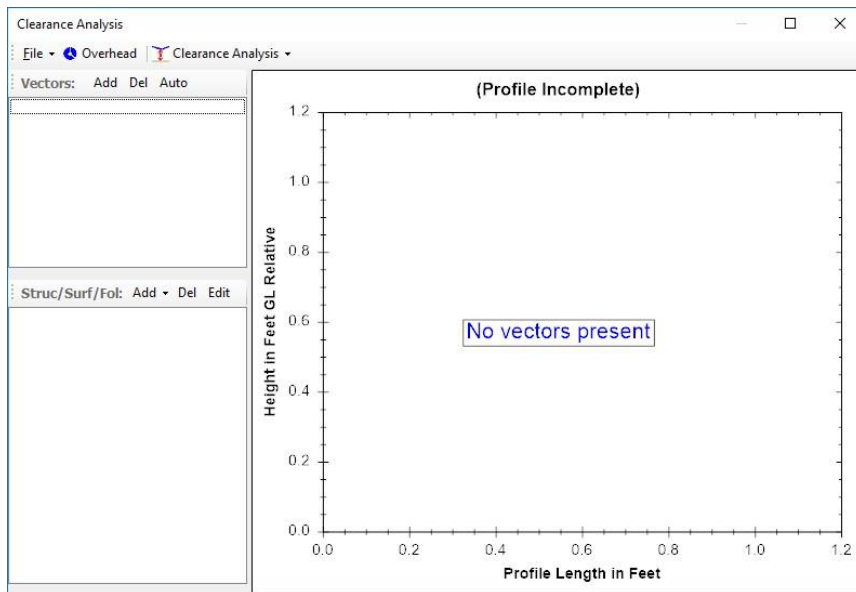
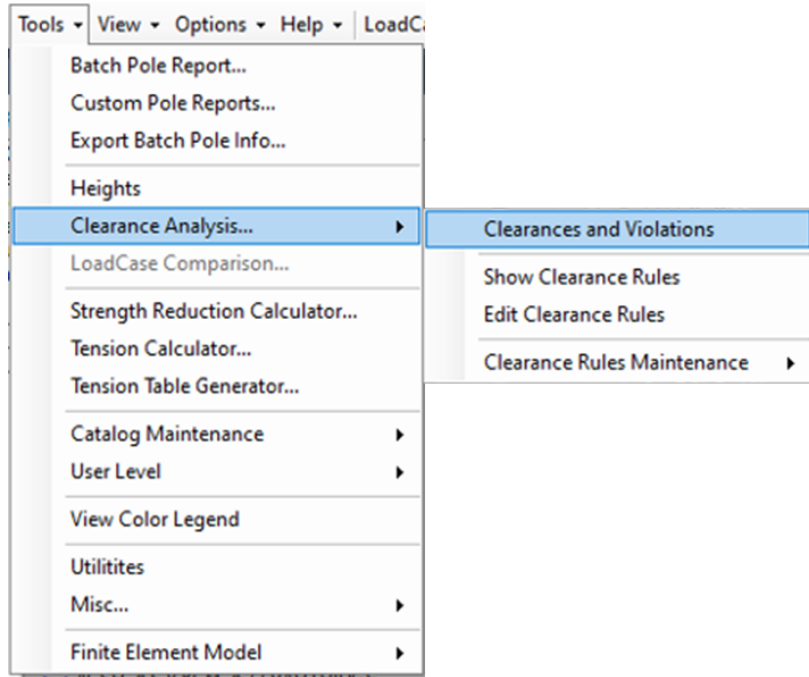


*Note:* To undo the addition of the Clearance Object, select **Edit > Undo**.

### Create a Clearance Analysis Profile

To model the actual field conditions surrounding the pole you need to create a Clearance Analysis Profile. As you are creating the field conditions a 2D representation of the model will be displayed as a visual reference. To create a Clearance Analysis Profile, complete the following steps:

1. Select **Tools > Clearance Analysis > Clearances and Violations**.

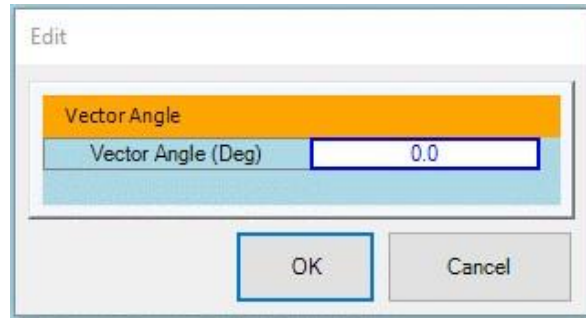


### Setting up Vectors

The first step to modeling the actual field conditions is to set the vectors. Vectors are notional lines that extend outward from the pole at given angles and which describe the type and elevation changes of the surface under the pole. Vectors may contain instances of structures and foliage that fall along that line. Typically, these vectors have a close correspondence with the spans attached to the pole, but this is not a requirement.


2. To set the Vectors select the **Add Vectors** button **Add** from the Vectors toolbar.

**Note:** To automatically create a vector at each span angle select the **Auto** button from the Vector toolbar.




3. Enter a **Vector Angle**.

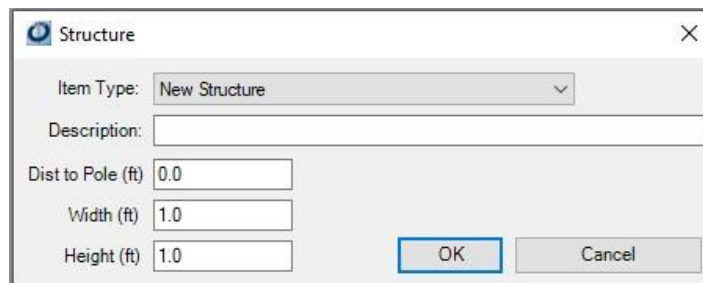
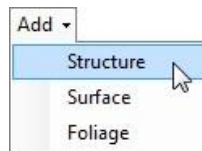
**Note:** An overhead view of the pole with all the span angles is available by selecting the **Overhead** button

 **Overhead**. The Overhead window utilizes some of the same features as the Top View window; see [Top View Display Options](#) for a description of these options

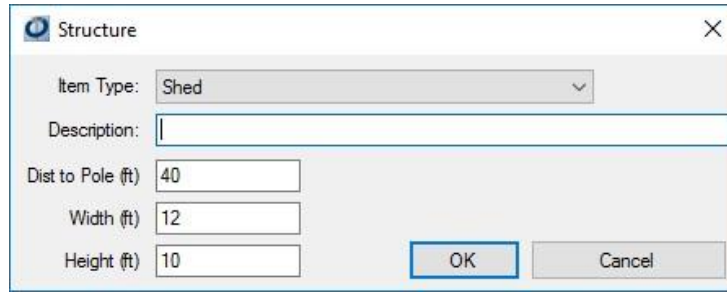
4. Select **OK**.

**Note:** There is no undo or edit for this operation. To remove a Vector Angle, select the Vector Angle to be removed and either select the **Delete** button  from the Vector toolbar or right click the Vector Angle and select **Delete**.

- 5. To create a structure at a specific vector, **select the vector** you want to add a structure object to.
- 6. Select the **Add Structures / Surfaces / Foliage** drop down menu and select **Structure**.



7. Enter the structures attributes.



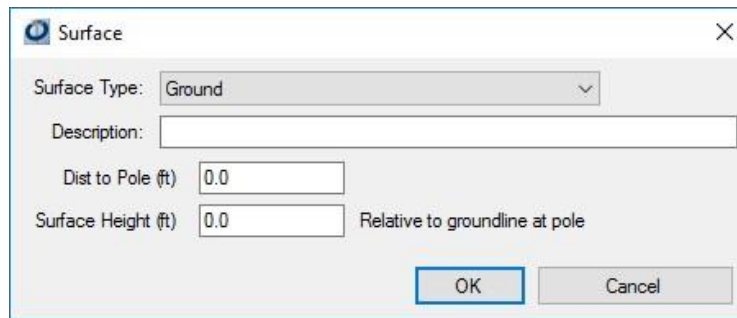
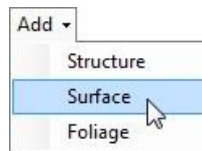
8. Select **OK**.

*Note: Complete steps 5 – 8 to establish additional structures at a specific vector.*

*Note: There is no undo for this operation. To remove a structure select the structure to be removed and either select the **Delete** button **Del** from the toolbar or right click the Structure and select **Delete**.*

9. To set the surface at a specific vector **select the vector** you want to add a surface object to.

10. Select the **Add Structures / Surfaces / Foliage** drop down menu and select **Surface**.



11. Enter the **surface attributes**.

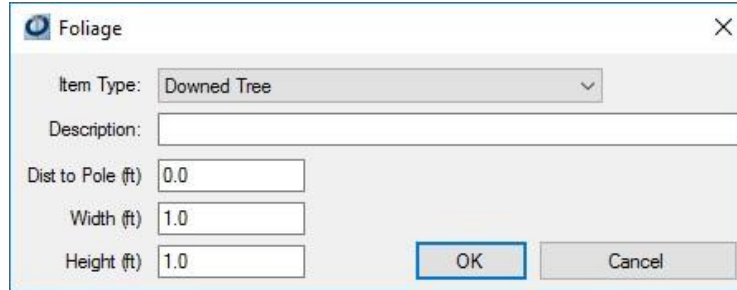
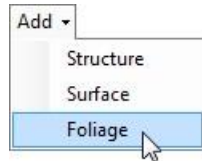
12. Select **OK**.

*Note: Complete steps 9 –12 to establish additional surfaces at a specific vector.*

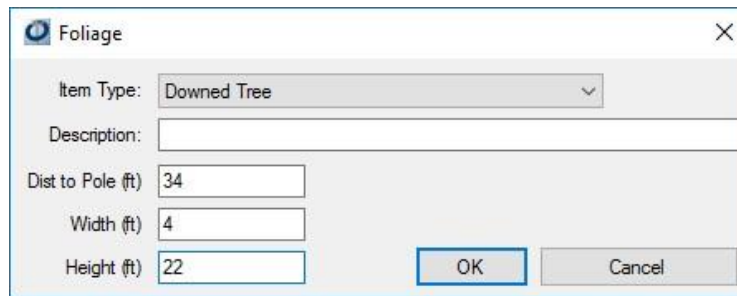
*Note: There is no undo for this operation. To remove a surface, select the surface to be removed and either select the **Delete** button **Del** from the toolbar or right click the Surface and select **Delete**.*

13. To create the foliage at a specific vector, **select the vector** you want to add a foliage object to.

14. Select the **Structures / Surfaces / Foliage Add** drop-down menu and select **Foliage**.



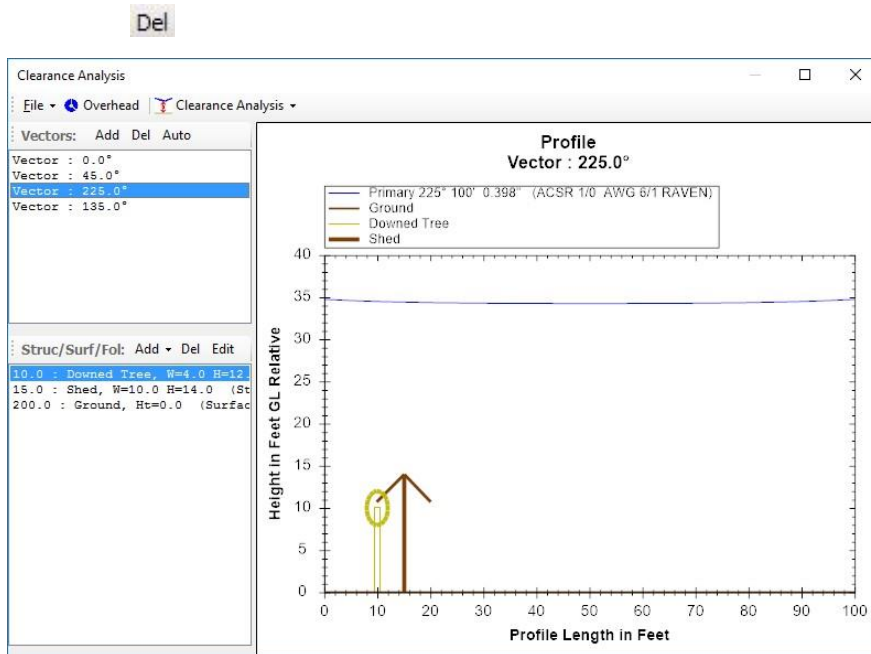
15. Enter the foliage attributes.



16. Select **OK**.

*Note: Complete steps 13–16 to establish additional foliage at a specific vector.*

**Note:**  
There is no undo for this operation. To remove foliage, select the foliage to be removed and either select the **Delete** button from the toolbar or right click the Foliage and select **Delete**.



**Note:** Structures, Surfaces and Foliage can be edited at any time by selecting the object and either selecting the **Edit** button from the toolbar or right clicking on the object and selecting **Edit**.

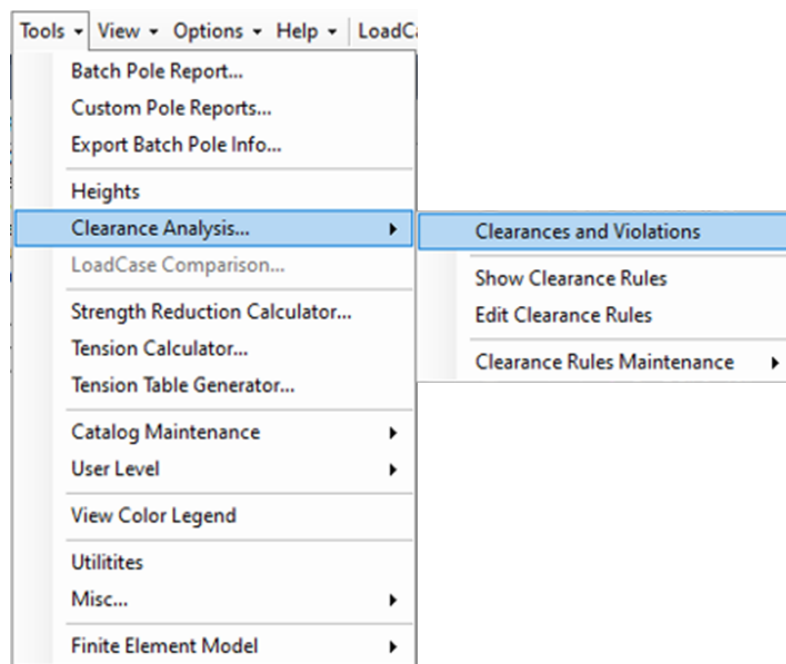
- To Save the Clearance Analysis Profile select **File > Exit**. Then in the O-Calc® Pro main window select **File > Save Pole**.

## Running Clearance Analysis Reports

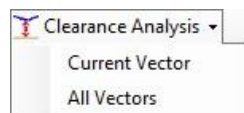
The Clearance Analysis report displays any clearance violations along the spans you modeled. A

Clearance Analysis report can be run against all the vectors you've specified or just one vector. To run the Clearance Analysis report, complete the following steps:

- Select **Tools > Clearance Analysis > Clearances and Violations**.

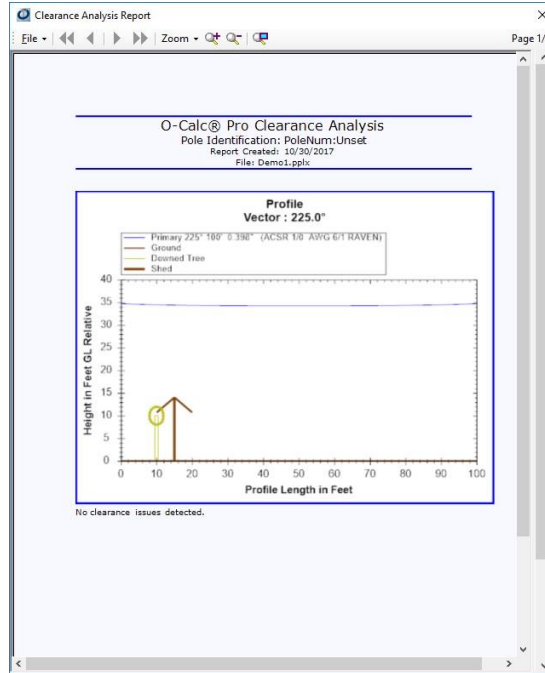


- Select the **Clearance Analysis** drop down menu.



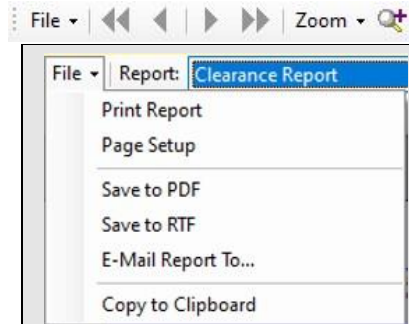
- **Current Vector** – Creates a Clearance Analysis report on the currently select vector in the Clearance Analysis window.
- **All Vectors** – Creates a Clearance Analysis report on all the currently listed vectors in the Clearance Analysis window.







### Clearance Analysis Reports Toolbar Options

Once the Clearance Analysis report is displayed the toolbar menu provides you with a variety of options. The following options are available from the **File** menu:

	<p><b>Print Report.</b> Select the Print Report option to print the Clearance Analysis.</p> <p><b>Page Setup.</b> Select the Page Setup option to configure how the Clearance Analysis will be printed.</p> <p><b>Save to PDF.</b> Select the Save to PDF option to save the Clearance Analysis as a PDF file.</p> <p><b>Save to RTF.</b> Select the Save to RTF option to save the Clearance Analysis as a RTF file.</p> <p><b>E-Mail Report To.</b> Select the EMail Report To option to E-Mail the Clearance Analysis.</p> <p><b>Copy to Clipboard.</b> Select the Copy to Clipboard option to copy the Clearance Analysis to the clipboard so that it can be pasted directly into other applications.</p>
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<p>Navigation Controls</p> 	<p><b>Navigation Controls.</b> Click the arrow buttons to easily navigate through the document pages.</p>
<p>Zoom Controls</p> 	<p><b>Zoom Controls.</b> Use to change the documents magnification level.</p>

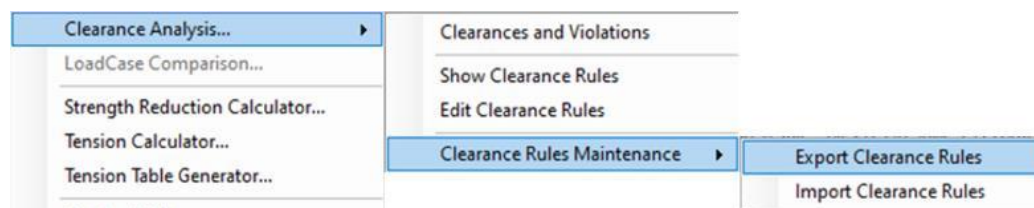
### Clearance Rules Maintenance

The Clearance Analysis rules can be exported for use by other O-Calc® Pro users, preventing the need to develop a new set of Clearance Analysis rules. The export process makes a copy of the current Clearance Analysis rules and saves them in a location you specify. The saved Clearance Analysis rules can then be imported into another users O-Calc® Pro application and be modified as needed.

#### Export Clearance Rules

To export your Clearance Rules, complete the following steps:

1. Select **Tools > Clearance Analysis > Clearance Rules Maintenance > Export Clearance Rules.**

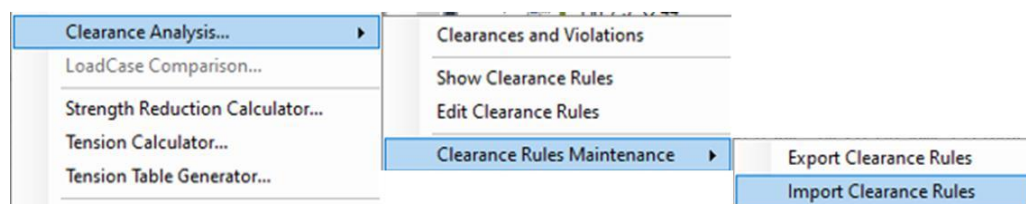


2. Browse to the location where you will save the Clearance Rules and click **Save.**
3. Select **OK** to the export confirmation message.

#### Import Clearance Rules

To import Clearance Rules, complete the following steps:

1. Select **Tools > Clearance Analysis > Clearance Rules Maintenance > Import Clearance Rules.**



2. Browse to the location of the Clearance Rules file you want to import and select the (Clearance Rules name).crx file and click **Open.**
3. Select **OK** to the import confirmation message.

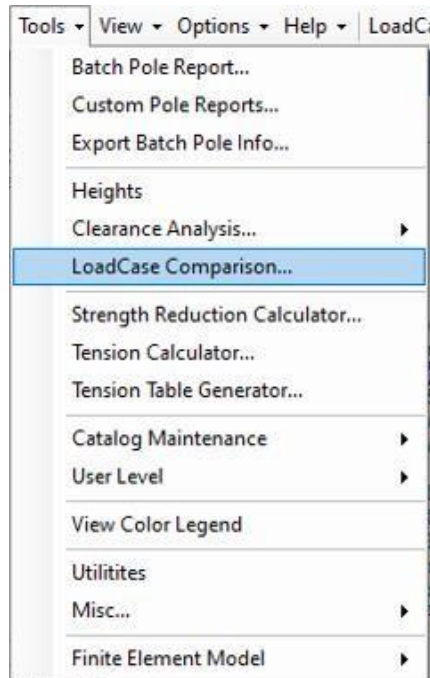
## Viewing the LoadCase Comparison

When several LoadCases are attached to a pole in the Inventory Window O-Calc® Pro provides a LoadCase Comparison summary. The LoadCase Comparison provides detailed calculations for each LoadCase and identifies and displays the worst LoadCase in the comparison.

## Create a LoadCase Comparison

To create a LoadCase Comparison, complete the following steps:

1. Select **Tools > LoadCase Comparison**.



***Note:** A pole with more than one LoadCase needs to be displayed in the Inventory Window to enable the LoadCase Comparison option. The pole should also have the latest calculations displaying in the Capacity Window. If the Auto Capacity Summary is disabled and calculations need to be performed the LoadCase Comparison option will be disabled. See [Manually Updating the Capacity Window](#) to manually update the calculations.*

**O-Calc® Pro LoadCase Comparison**  
 Pole Identification: Demo 1 - Tangent  
 Report Created: 12/28/2021  
 File: Demo User Guide.pplx

LoadCase NESC 17 (250B) Grade C , Light (W:9psf)				
Moment	Groundline	57,336 ft-lb	Maximum	57,336 ft-lb
	Percent	at Height	Wind Angle	Load Angle
Max	85.4	0.0 ft	93.4°	92.9°
GL	85.4	0.0 ft	93.4°	92.9°
Buckling	9.4	20.3 ft	93.4°	
Unguyed				

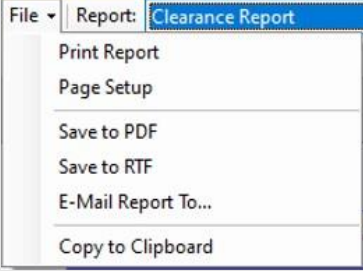


LoadCase NESC 17 (250B) Grade C , Medium (I:0.25in W:4psf)				
Moment	Groundline	49,205 ft-lb	Maximum	49,205 ft-lb
	Percent	at Height	Wind Angle	Load Angle
Max	73.4	0.0 ft	92.7°	92.6°
GL	73.4	0.0 ft	92.7°	92.6°
Buckling	13.2	21.6 ft	92.7°	
Unguyed				

Worst LoadCase:NESC 17 (250B) Grade C , Light (W:9psf)

**LoadCase Comparison Toolbar Options**

Once the LoadCase Comparison is displayed the toolbar menu provides you with a variety of options.



	<p><b>File.</b> The following options are available from the File menu:</p> <p><b>Print Report.</b> Select the Print Report option to print the LoadCase Comparison.</p> <p><b>Page Setup.</b> Select the Page Setup option to configure how the LoadCase Comparison will be printed.</p> <p><b>Save to PDF.</b> Select the Save to PDF option to save the LoadCase Comparison as a PDF file.</p> <p><b>Save to RTF.</b> Select the Save to RTF option to save the LoadCase Comparison in RTF format.</p> <p><b>E-Mail Report To.</b> Select the E-Mail Report To option to EMail the LoadCase Comparison.</p> <p><b>Copy to Clipboard.</b> Select the Copy to Clipboard option to copy the LoadCase Comparison to the clipboard so that it can be pasted directly into other applications.</p>
<p>Navigation Controls</p> 	<p><b>Navigation Controls.</b> Click the arrow buttons to easily navigate through the document pages.</p>
<p>Zoom Controls</p> 	<p><b>Zoom Controls.</b> Use to change the documents magnification level.</p>

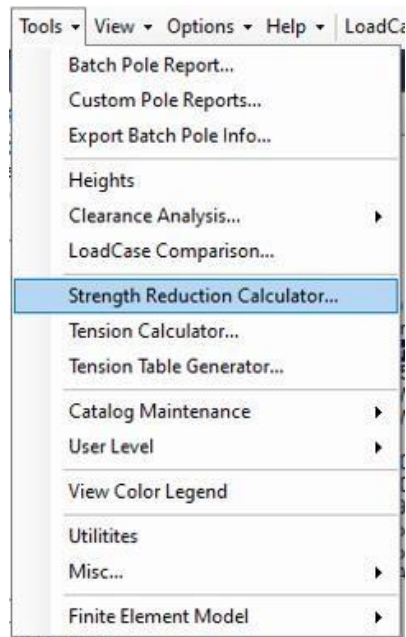
## Working with the Strength Reduction Calculator

The Strength Reduction Calculator allows you to calculate and apply the effective groundline circumference using the Osmose industry accepted strength calculations.

### Create a Strength Reduction Calculation

To create a Strength Reduction Calculation, complete the following steps:

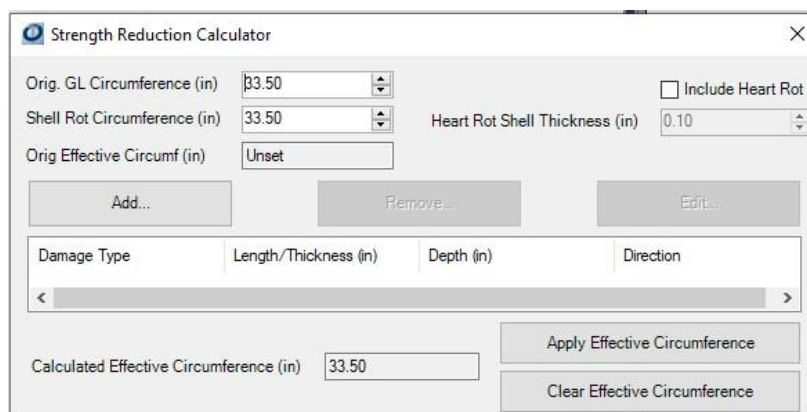
1. Select **Tools > Strength Reduction Calculator.**



*Note:* When the Strength Reduction Calculator is initially opened some of the fields will already be prepopulated with information from the pole.

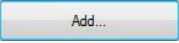
Select any attributes you want to modify in the Strength Reduction Calculator window.

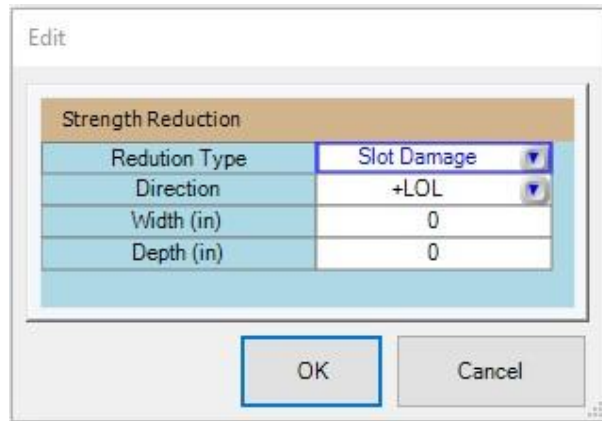
1. Adjust the Orig. GL Circumference (if necessary).
2. Adjust the Shell Rot Circumference (if necessary).



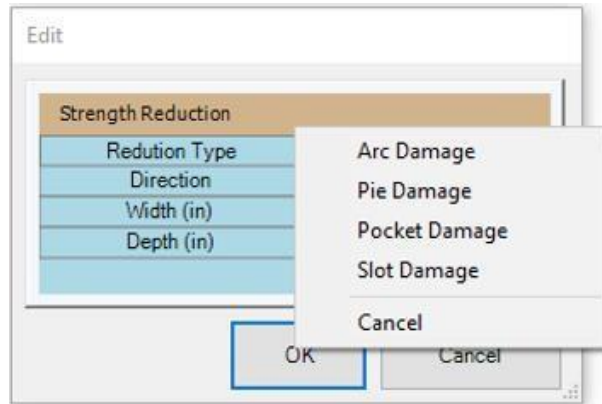
3. To include heart rot, check the **Include Heart Rot** box.
4. Enter a value to adjust the **Heart Rot Shell Thickness** if Include Heart Rot is checked.
5. For each instance of decay or damage perform steps 6 – 10:

To add a Strength Reduction due to a particular type of damage, complete the following steps:

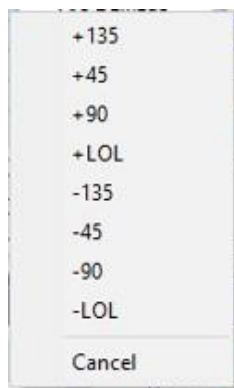
1. Select the **Add** button .



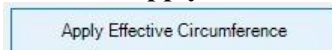
2. Select the **Reduction Type** from the drop-down list.



3. Enter the **Width or Thickness** value.
4. Enter the **Depth** value.
5. Select the **Direction** from the drop-down list.



6. Select **OK**.
7. Select the **Apply Effective Circumference** button.



Updated Effective Circumference

*Note:* Once a Strength Reduction Calculation has been added the Calculated Effective Circumference will automatically be updated. This is the value that will be used in calculating the groundline capacity.

*Note:* The Orig. Effective Circumf field is automatically updated to reflect the Applied Effective Circumference. To set the Applied Effective Circumference back to the default value select the **Clear Effective Circumference** button



8. Select **Yes** to apply the effective circumference.

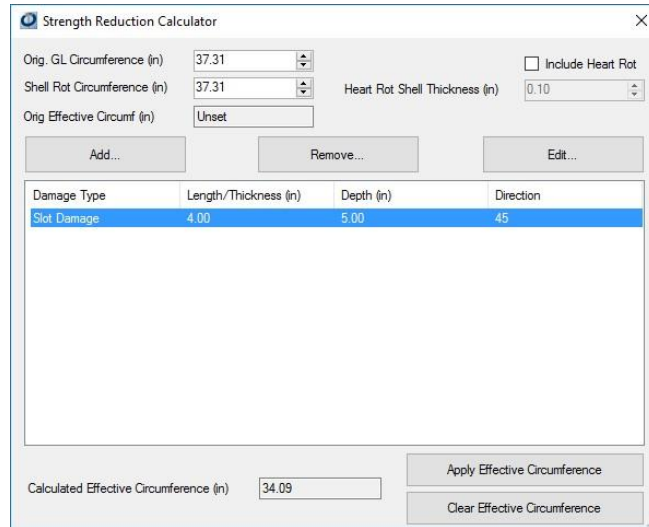
### **Edit a Damage Record in Strength Reduction Calculator**

To edit a damage record in the Strength Reduction Calculation, complete the following steps:

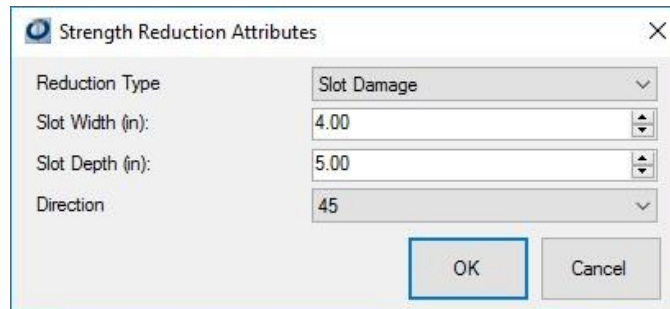
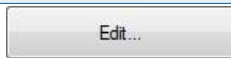
1. Select the **damage record** to be edited.

*Note:* Double clicking on the damage record will also open the damage record in edit mode.

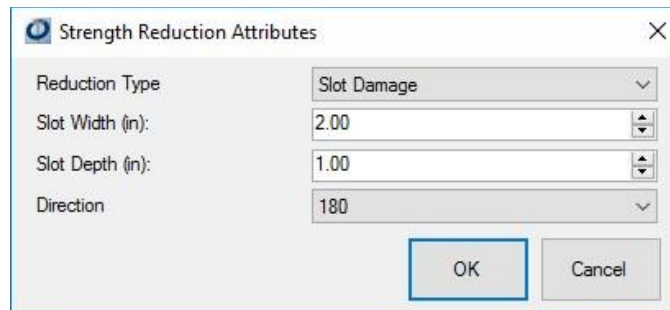




2. Select the **Edit** button



3. Complete any **edits** that need to be made.



4. Select **OK**.

Strength Reduction Calculator

Orig. GL Circumference (in) 37.31  Include Heart Rot

Shell Rot Circumference (in) 37.31 Heart Rot Shell Thickness (in) 0.10

Orig Effective Circumf (in) Unset

Add... Remove... Edit...

Damage Type	Length/Thickness (in)	Depth (in)	Direction
Slot Damage	2.00	1.00	180

Calculated Effective Circumference (in) 37.31

Apply Effective Circumference

Clear Effective Circumference

### Remove a Damage Record in Strength Reduction Calculator

To remove a damage record from the Strength Reduction Calculation, complete the following steps:

1. Select the **damage record** to be removed.

Strength Reduction Calculator

Orig. GL Circumference (in) 37.31  Include Heart Rot

Shell Rot Circumference (in) 37.31 Heart Rot Shell Thickness (in) 0.10

Orig Effective Circumf (in) Unset

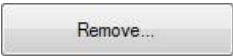
Add... Remove... Edit...

Damage Type	Length/Thickness (in)	Depth (in)	Direction
Slot Damage	2.00	1.00	180

Calculated Effective Circumference (in) 37.31

Apply Effective Circumference

Clear Effective Circumference

2. Select the **Remove** button .

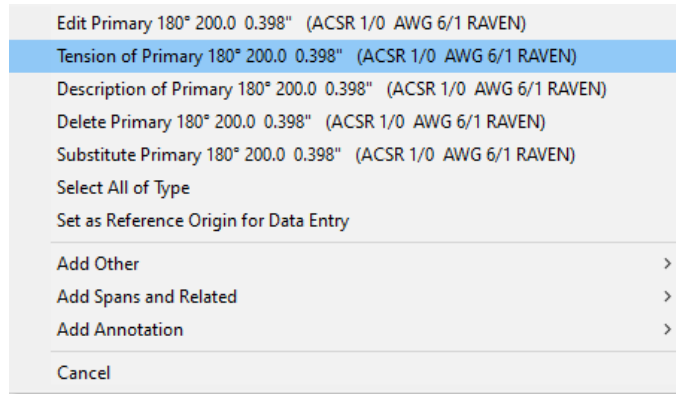
## Working with the Sag Tension Calculator

The Sag Tension Calculator allows you to calculate and apply a Sag Tension to a span whose Tension Type is set to Static. The Sag Tension Calculator can also be used for reference purposes without applying a sag tension calculation.

### Create and Apply a Sag Tension Calculation

When working with a span that has a Tension Type of Static, complete the following steps to set the sag tension using the Sag Tension Calculator:

1. Right click on the **span** you would like to set the sag tension for.
2. Select the **Tension of** (*span display name*) option.



**Note:** To use the Sag Tension Calculator as a visual tool to alter the calculations but not apply them to the currently selected span.

Mode to apply calculation

Sag to Tension or Tension to Sag mode

Reference Options

Chart Auto Scaled

Status Bar

Initial Sag Measurement

Apply the current calculation options

Sag in feet or Tension in pounds display

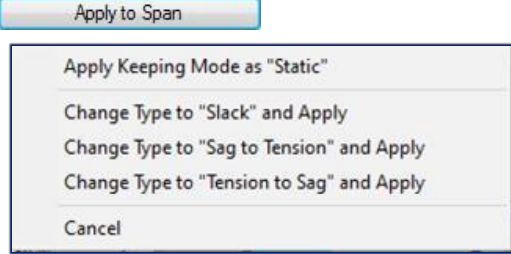
*Note:* When the Sag Tension Calculator is initially opened some of the fields will already pre-populated with information from the pole.

*Note:* When opening the Sag Tension Calculator by selecting **Tools > Tension Calculator** the **Apply to Span** button is not displayed, you must right click on a span to have this option.

### Sag Tension Calculator Options

The Sag Tension Calculator provides you with a variety of operations and options. The following options are available from the Reference menu:

<p><b>Reference</b></p> <ul style="list-style-type: none"> <li>Reload References</li> <li>Select Alternate Reference LoadCase</li> <li>Load Default Values</li> <li>Cancel</li> </ul>	<p><b>Reload References.</b> Select the Reload References option to reload the pertinent values from the selected LC.</p> <p><b>Select Alternate Reference LoadCase.</b> Select this option to select a different loadcase to reference.</p>
---	--

	<p><b>Load Default Values.</b> Select this option to load a set of nominal load parameters.</p> <p><b>Cancel.</b> Select this option to close the Reference menu option pop-up without taking any action.</p>
	<p><b>Apply to Span.</b> The Apply to Span options transfers selected attributes back to the original span and optionally changes the tension mode. The menu items will reflect the tension mode of the original seed span</p> <p><b>Cancel.</b> Select the Cancel option to close without taking any action.</p>

3. Complete any **attribute modifications**.
4. Enter the **Initial Sag** measurement.
5. Click **Apply to Span** to transfer selected attributes back to the original span and optionally change the tension mode.

*Note: For reference purposes the Modulus of Elasticity Calculator and the AWG to Diameter Conversions can also be accessed from the O-Calc ® Pro **Tools> Misc** toolbar menu. For additional information see [Working with the Modulus of Elasticity Calculator](#) or [Viewing the AWG to Diameter Conversions](#).*

### Working with Tension Tables

To create a custom table with tension values for a specified span length, complete the following:

1. Select the span for which you are creating a custom tension table.
2. In the **Data Entry** window, change the filter to **Tension Sag**.

SpanBundle		Tension Sag
Span Sag (ft)		-N/A-
Tension Type		Static
Tension (lbs)		2000.00
Tension Table		-N/A-
Sag Table		-N/A-
Slack Tension (lbs)		-N/A-
Msgr Rated Strength (lbs)		10000.00
Ice Accum. Factor		1.00
WindTensionFactor		Auto
Wind Drag Coef.		Auto

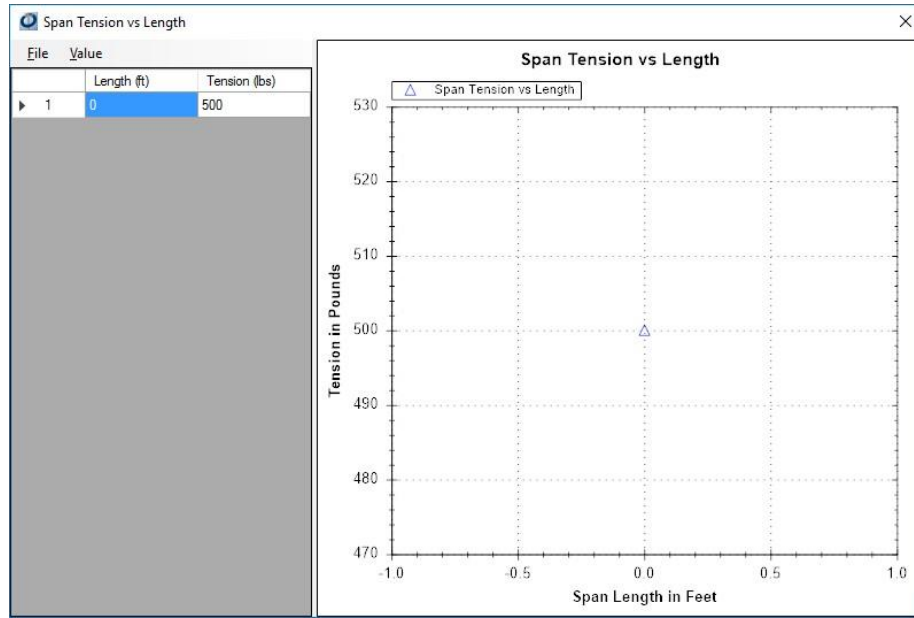
- Under the **Tension Type** attribute, change the value to **Table**.

Sag Table ( The tension is calculated based on the sag at a given length, weight, and LoadCase )  
 Sag to Tension ( The tension is calculated based on the values entered for sag, weight, and LoadCase )  
 Slack ( The tension is a static slack constant supplied by the operator or other data source )  
 Static ( The tension is a static normal constant supplied by the operator or other data source )  
**Table ( The tension is a table supplied by the operator or other data source )**  
 Tens to Sag Table ( The tension is based on supplied table and LoadCase )  
 Tension to Sag ( The tension is based on initial stringing tension and LoadCase )  
 Cancel

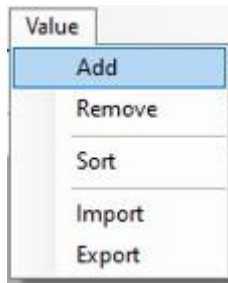
- Under the **Tension Table** attribute, select the radio button 

SpanBundle		Tension Sag
Span Sag (ft)		-N/A-
Tension Type		Table
Tension (lbs)		-N/A-
Tension Table		Tension <input checked="" type="radio"/>
Sag Table		-N/A-
Slack Tension (lbs)		-N/A-
Msgr Rated Strength (lbs)		10000.00
Ice Accum. Factor		1.00
WindTensionFactor		Auto
Wind Drag Coef.		Auto

- In the **Span Tension vs Length** window, a graph is shown with a list of values, where additional length values can be associated with an applied tension at a specified length along the span.



- Use the **Value** menu to Add or Remove values. Additionally, values can be Sorted Imported or Exported, for use by other users or when imported from another source.

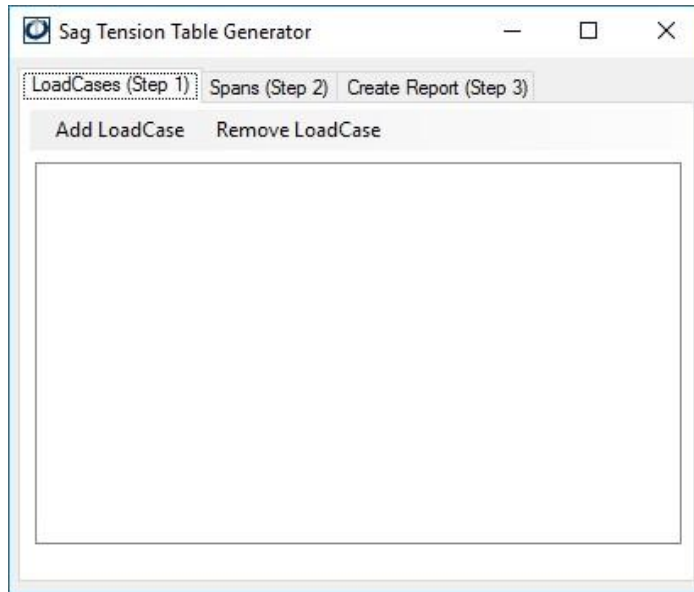


- Once a list of lengths is created and the tension values are set, the table can be saved using the save feature under the file dropdown list. Tension tables must be saved each time they are adjusted to apply changes in tension.

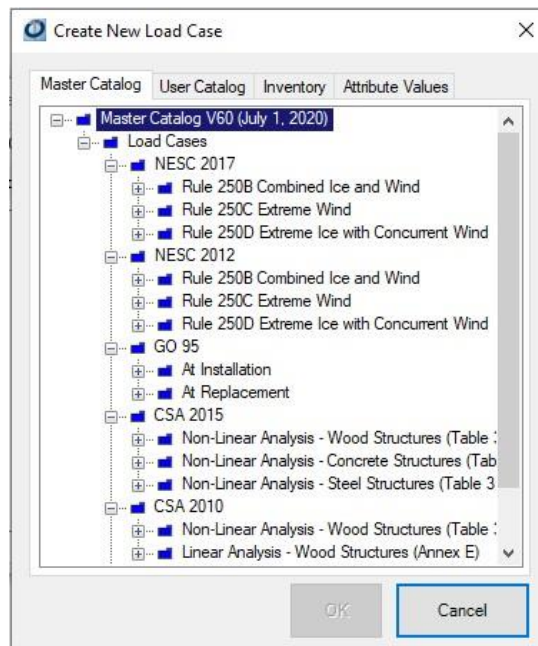
### Working with Sag Tension Table Generator

To generate a Sag Tension Table, complete the following steps:

- Select the **Tools** drop-down list
- Select **Tension Table Generator** from the list to open the **Sag Tension Table Generator** window.
- In **Step 1**, Select the loadcase or loadcases to be considered in the generated tables using the **Add Loadcase** button

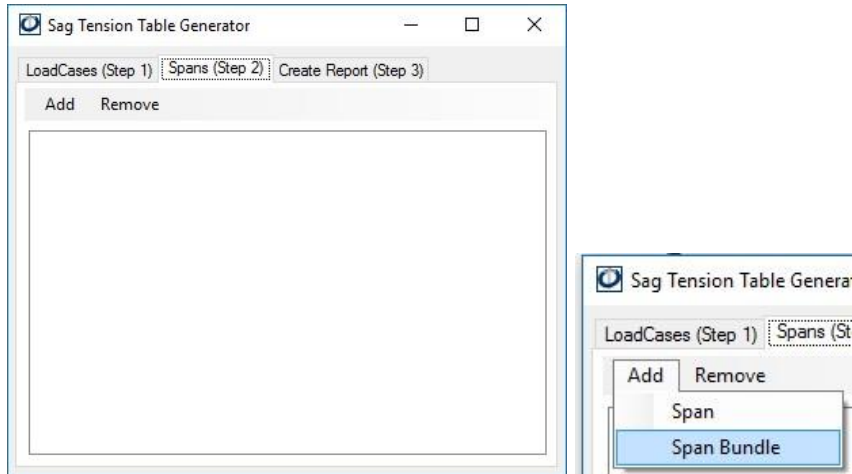


*Note: Only one Loadcase can be added at a time.*



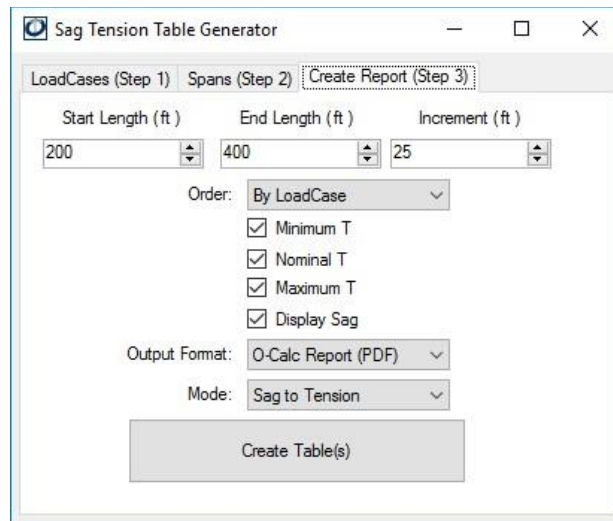
11. In **Step 2**, select the span or spans or span bundles to be considered in the generated table.





12. In **Step 3**, create the report by modifying the settings displayed:

- Set a **Start Length** or starting increment.
- Set an **End Length** or ending increment.
- Set the **Increment** to be used.
- Set the **Order** method to either order by loadcase or span type.
- Select the temperature and sag values to display.
- Select the **Output Format**.
- Select the **Mode** to be used to calculate the tables.



13. Select **Create Tables** to generate an output report.

14. Close the tool when finished.

## Appendix A – Installing Osmose O-Calc® Pro

### System Requirements

System requirements for Osmose O-Calc® Pro include the following:

- Supported Operating Systems: Windows 7 - Windows 10 (64-bit version)
- 16 GB System memory
- 1-2 GB min. available Storage Space
- DirectX11 compatible Graphics Subsystem, hardware accelerated 3D graphics (dedicated/separate)
- Microsoft .Net Framework version 4.7.1 or later
- PDF Reader Software

*Note: Surface laptop with integrated graphics card not recommended.*

### Installing Osmose O-Calc® Pro

This page; <http://www.o-calcpro.com/LineDesign/> allows registered users of O-Calc Pro to install and run their software. You will need the following items:

1. A valid and up-to-date O-Calc Pro license key.
2. An Expiration Token.

If you need a key or token contact Osmose email [ocalcsupport@osmose.com](mailto:ocalcsupport@osmose.com) before proceeding. To install/download the software at <https://O-CalcPro/LineDesign/setup.exe> and run it.

*Note: It is strongly recommended that you uninstall previous versions of O-Calc before proceeding.* You may receive a message that windows has prevented the application from running.

If this happens simply click "Advanced" or "More Info" and select "Run Anyway". This software is fully vetted and digitally signed.

Use the following procedure to install O-Calc® Pro:

1. Double-click on OCalcPro\_(version)\_Setup.MSI to run the installation application.



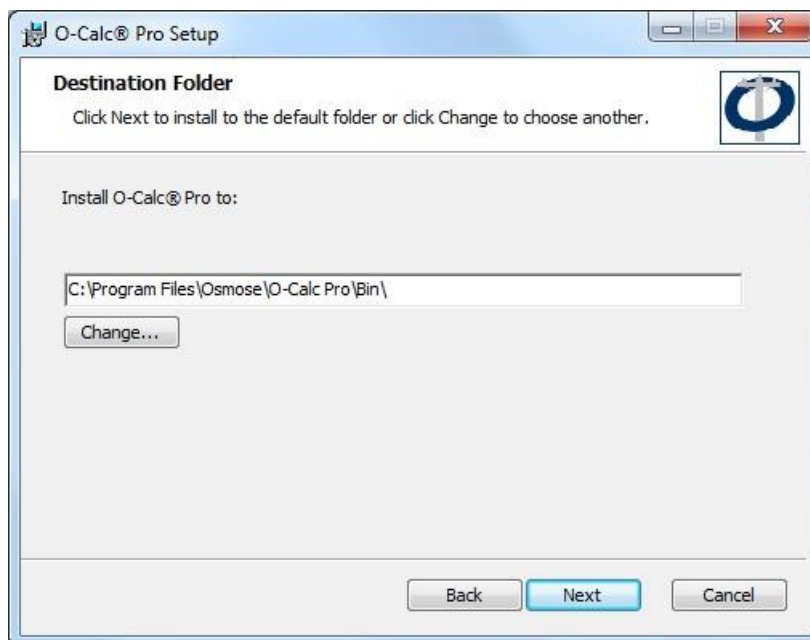
2. When the installer **Welcome** screen appears, click **Next**.



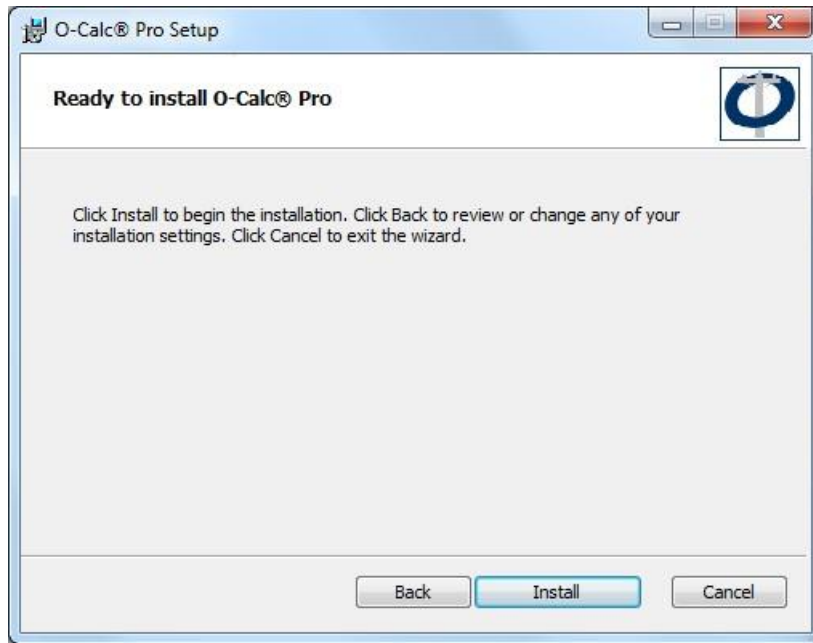
3. **Review and check** the “I accept the terms in the License Agreement”.



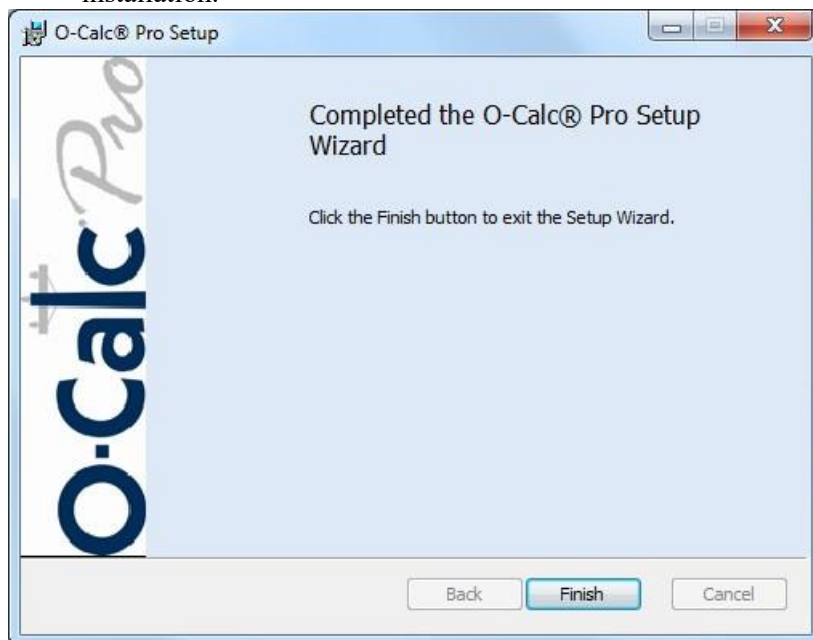
4. Click **Next** to use the default Destination Folder or click **Change...** to browse to a different Destination Folder then click **Next**.



5. Click **Install** to begin the installation process.



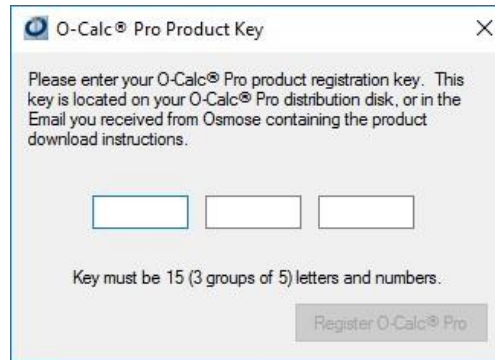
6. When the installation is complete, click **Finish** to acknowledge the completed installation.



### Registering Osмосе O-Calc® Pro

Once you have installed the Osмосе O-Calc® Pro application you will need to enter a Product Registration Key to register the application and accept the License Agreement. To register the Osмосе O-Calc® Pro application, complete the following steps:

1. Open O-Calc ® Pro. The O-Calc® Pro Product Key window is displayed.



2. Enter the **Registration Key Code** that was provided in the email you received from Osmose. *Note: The Registration Key Code is not case sensitive.*



*Note: If you have questions about the type of Product key needed for your installation, contact O-Calc product and sales support at [ocalcsupport@osmose.com](mailto:ocalcsupport@osmose.com).*

3. Click the **Register O-Calc® Pro** button.

*Note: You can cancel out of the registration by clicking the X in the upper right corner. However, you will not be able to use the Osmose O-Calc® Pro application until it has been successfully registered.*

*Note: The Demo Version of O-Calc® Pro restricts you from using the save, email, print or DMT options.*

4. When the O-Calc® Pro License Agreement window displays, scroll to the bottom of the license agreement while reading it carefully and check the **“I have read and accept all of the terms of this agreement”**.

*Note: You must scroll to the bottom of the license text window to make the check box and the Accept button active.*

5. Click the I accept the terms in the licensing agreement box.

## O-Calc® Pro Security Administration

O-Calc® Pro limits what user levels are available based on the Windows User Group a person is in. The following table lists what user levels are available to each Windows User Group. Users can select any User level with a ✓ in it. The default level is also indicated.

	Access Level	Windows User Groups		
		O-Calc Administrators	All Others	O-Calc Limited
O-Calc® Pro User Levels	Limited	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> (default)
	Normal	<input type="checkbox"/> (default)	<input type="checkbox"/> (default)	<input type="checkbox"/>
	Administrative	<input type="checkbox"/>		

O-Calc Administrators and O-Calc Limited are the names of the actual Windows User Groups that need to be created to grant or limit privileges. When placing users into specific security groups they need to log off and then log back onto their computers to ensure the proper security group settings are enabled.

### O-Calc® Pro User Level Definitions

O-Calc® Pro offers three different user levels: normal, limited and administrative. These levels allow companies to grant or restrict access to individual features within O-Calc® Pro. Below is a brief description of each user level.

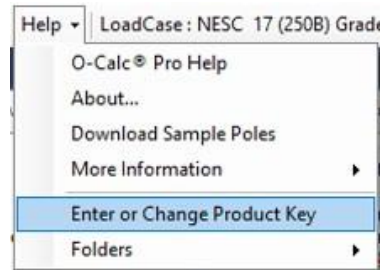
- **Limited** – Restricts access to certain attributes and operations that if changed could gravely affect the data within O-Calc® Pro. Placing a user at the Limited level is intended to support training, inexperienced users and untrained data entry personnel.
- **Normal** – This is the default user level. All attributes except those in sealed LoadCases can be edited at this level. At this level the user can also unseal LoadCases and manipulate the Catalog items. The user will not be able to manipulate the Master Catalog directly.
- **Administrative** – Users at this level have access to all the features within O-Calc® Pro including the option to manipulate Catalogs, re-seal LoadCases and edit read only attributes.

*Note: If a user is in both O-Calc Administrators and O-Calc Limited groups, they will be considered a member of the O-Calc Administrators group.*

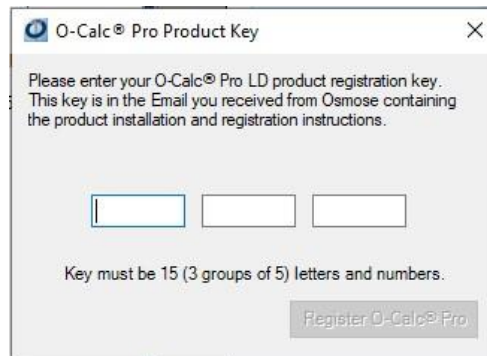
### Change the Product Registration Key

To change the initial Product Registration Key entry, complete the following steps:

1. Open O-Calc® Pro.
2. Select **Help > Enter or Change Product Key**.



The O-Calc® Pro Product Key window is displayed.



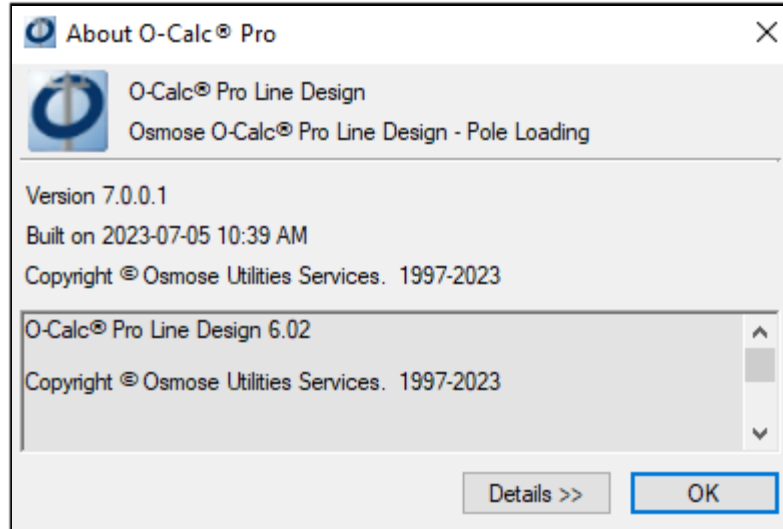
3. Enter or change the **Registration Key Code**. *Note: The Registration Key Code is not case sensitive.* Click the **Register O-Calc® Pro** button.



To verify the O-Calc Pro software version and key information installed on your device, follow these steps:

1. Click to open the **Help** menu drop-down list.
2. Select **Help** > click the **About** option.





3. Click the **Details >>** button to view the user details or **System Info**.
4. Click **OK** to close the **About O-Calc Pro** window.

## Additional Resources

Various resources contain additional information about O-Calc Pro. These resources can be easily accessed by following these steps:

1. Click to open the **Help** menu drop-down list.



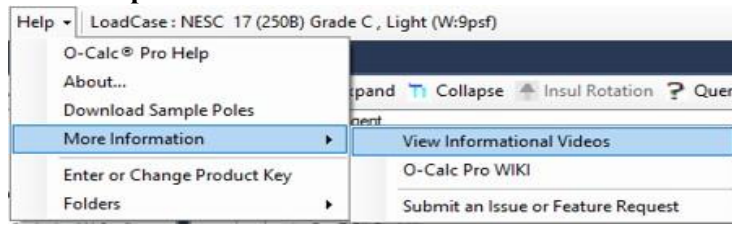
2. Select **O-Calc Pro Help** to be automatically navigated to various User Manuals at [osmose.com/o-calc/help](https://osmose.com/o-calc/help)

Help Resources available at the site are:

- **O-Calc Pro 7.0.1 Line Design User Guide** (contains features and functionality only found in Line Design)
- **O-Calc Pro Command Bar** (step by step guide to the Command features)
- **O-Calc Pro 7.0.1 User Guide** (contains all O-Calc Pro features and functionality, excluding Line Design)
- **Intro to Custom Reports with Excel** ( a guide to creating custom reports with Excel)
- **Html Tags Chart** (contains a list of Html tags with examples)

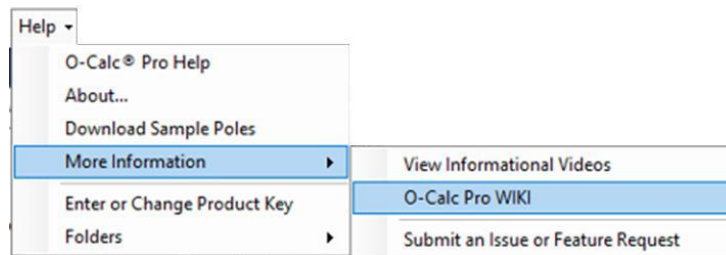
To navigate to ‘topic specific’ instructional YouTube videos on [osmose.com/o-calc/video](https://osmose.com/o-calc/video), follow these steps:

3. Select **Help > More Information > View Informational Videos.**



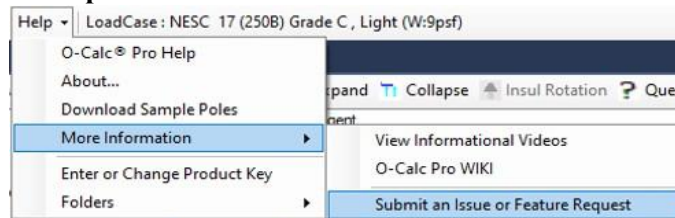
To navigate to ‘topic specific’ instructional articles on [osmose.com/o-calc/wiki](https://osmose.com/o-calc/wiki), follow these steps:

4. Select **Help > More Information > O-Calc Pro WIKI.**



For help with submitting an issue or feature request, follow these steps:

5. Select **Help > More Information > Submit an Issue or Feature Request.**



6. Complete the online form and click the Submit Request button. Be sure to enter all the applicable information and attach any images, screen shots, and files.



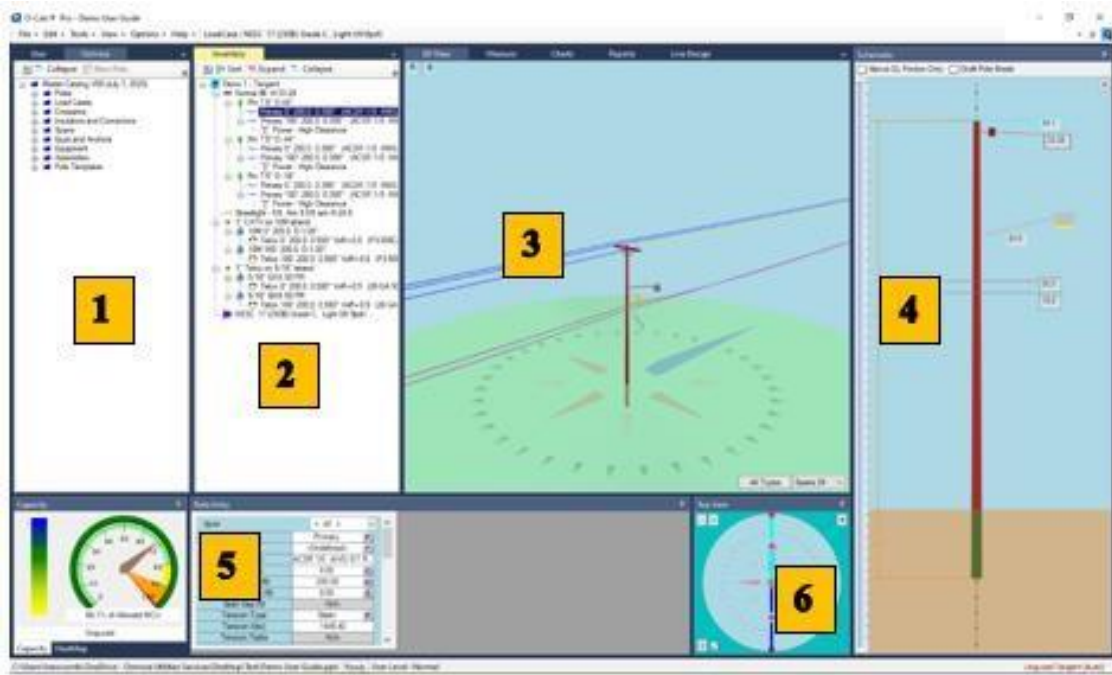
## Appendix B – Creating a Customized View

## Understanding the Default View

Within O-Calc® Pro the default location of the windows can be changed at any time. This allows users to create unlimited screen layouts, which can be saved for future use in the

**Named View** dropdown list  in the right corner of the Tool Bar menu.

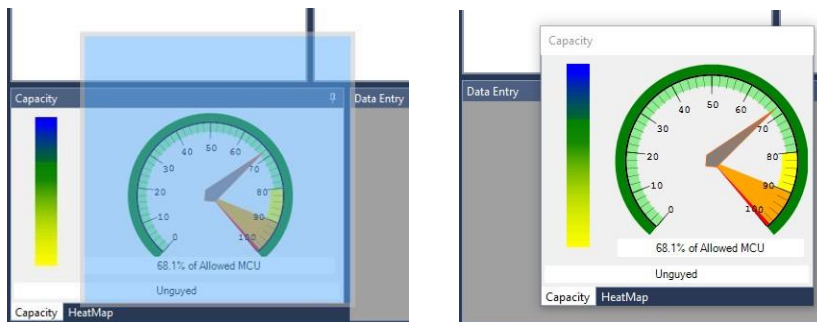
The O-Calc® Pro home page is broken into six panels. Any of the windows within O-Calc® Pro can be moved into any of the six panels based upon user preference. See the six panels below:



## Repositioning a Window

To create a separate window, complete the following steps:

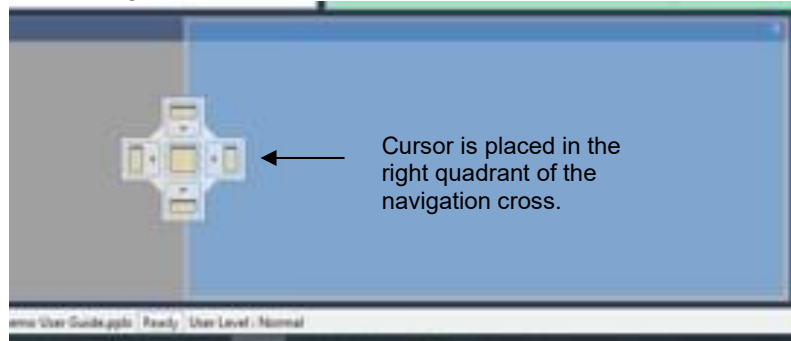
1. Left click on the windows heading, hold and drag the overlaid blue window to its the new location or release it, to create a separate window.



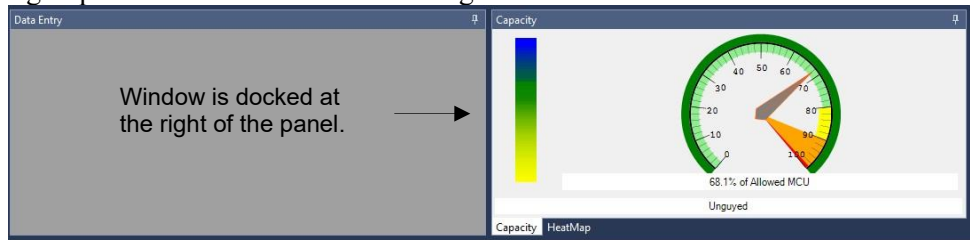
**Note:** The separate window can be dragged and dropped on to a second monitor if desired.

To change the location of a window to a different panel, complete the following steps:

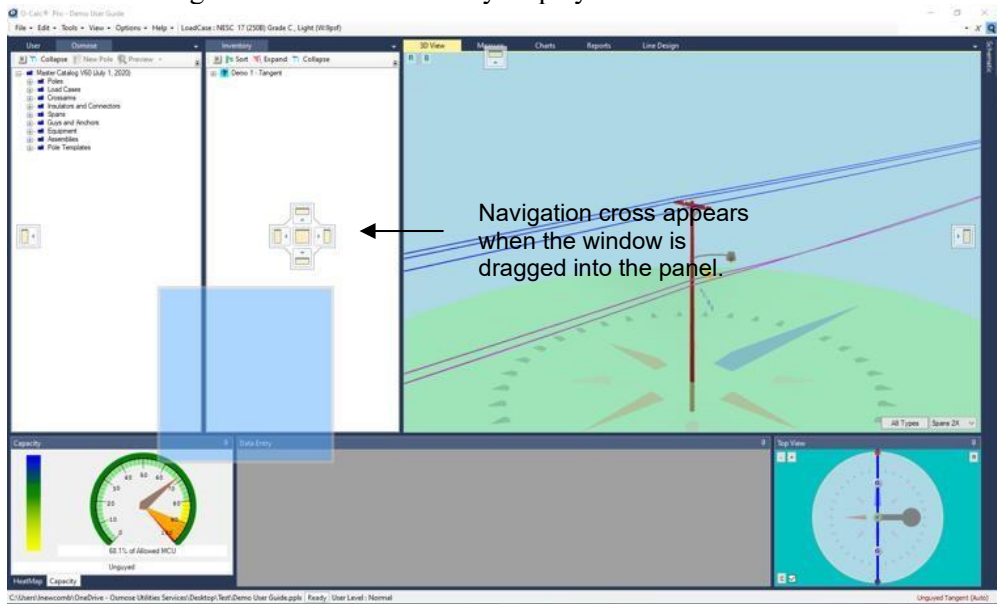
1. Left click on the windows heading, hold and drag the window, an overlaid blue window appears, hold and drag to its the new location.
2. Place your mouse cursor in the desired docking location within the yellow and white navigation cross, and release.



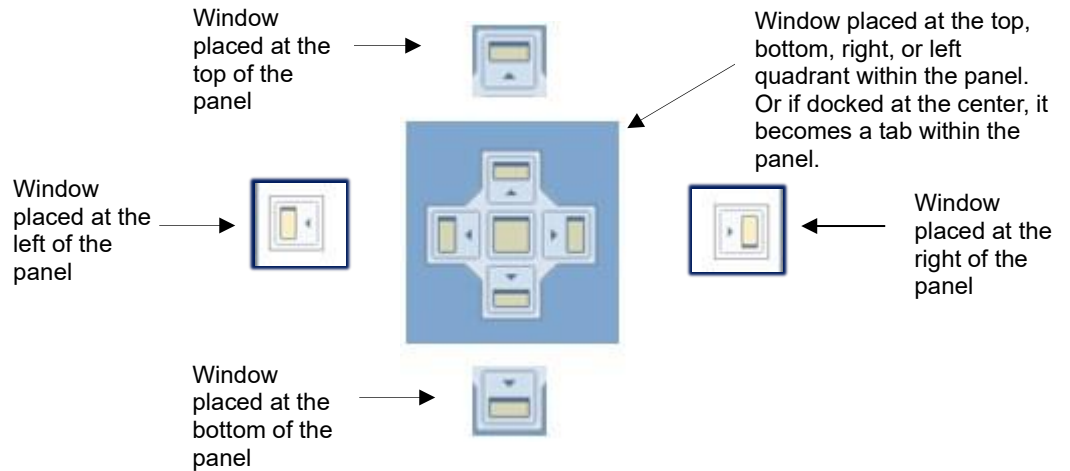
3. Below is the resulting the docking placement within the panel based on the right quadrant location within the navigation cross:



Once the blue overlay window is near the center of a panel or the edge of a panel, the yellow and white navigation cross automatically displays.



The docking placement options using the navigational cross for all quadrants and center are:



Drag the blue overlay window over the navigational cross quadrant that best interprets where you would like the window docked.

When dragging a window over a navigational cross quadrant or center, the blue overlay window will display where the window is be docked within the panel.

*Note: Undo is not available.*

### Save a Named View

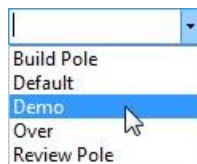
To save the view that you’ve created and add it to the Named View list, complete the following steps:

1. Click in the Named View box.
2. Enter a **name**.
3. Press the **Enter** key to save your Named View.
4. The view is automatically added to the list, viewable in the drop-down list.

### Delete a Named View

To delete a Named View, complete the following steps:

1. Select the view to be deleted from the **Named View** drop-down list.



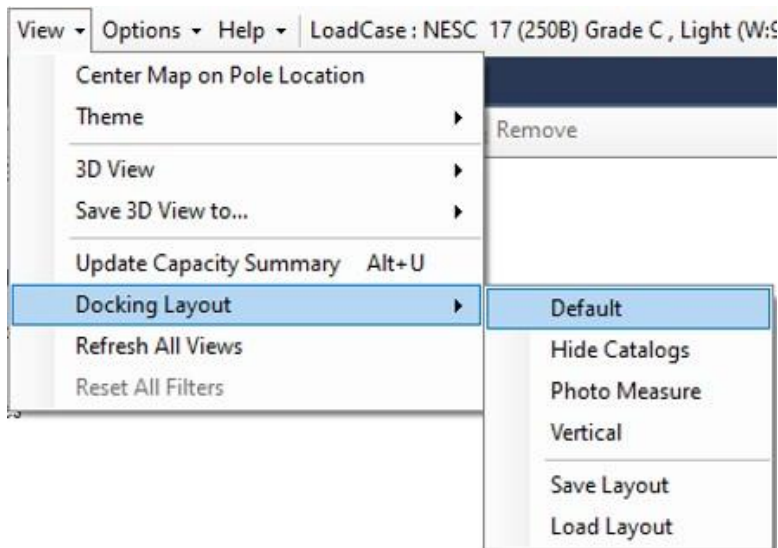
2. Select the **Delete** button  next to the **Named View** box.
3. Select **Yes** to the **Delete?** confirmation message.

*Note: Undo is not available for this operation.*

### Return to the Default Docking Layout

To return to the default docking layout, complete the following steps:

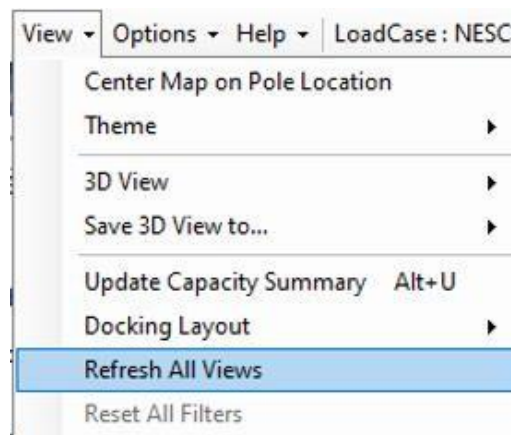
1. Select **View > Docking Layout > Default**.



### Refresh All Views

To refresh all views, complete the following steps:

1. Select **View > Refresh All Views**.



## Appendix C – Other Tools & Functions

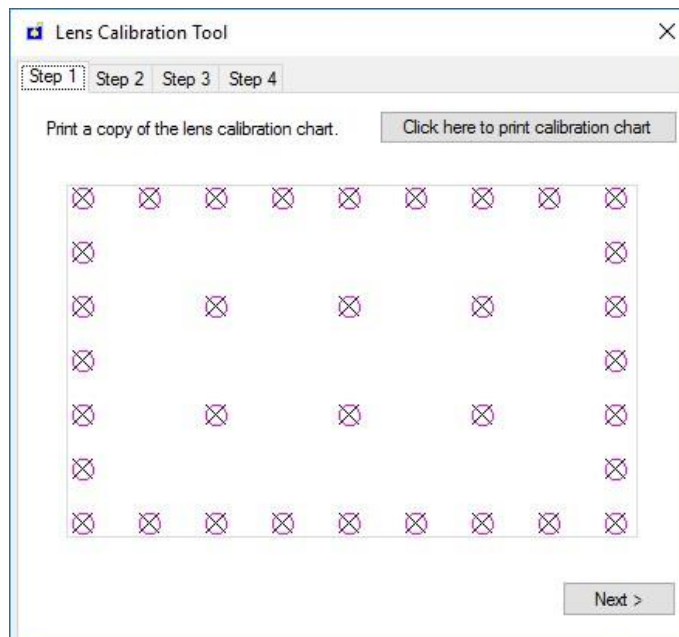
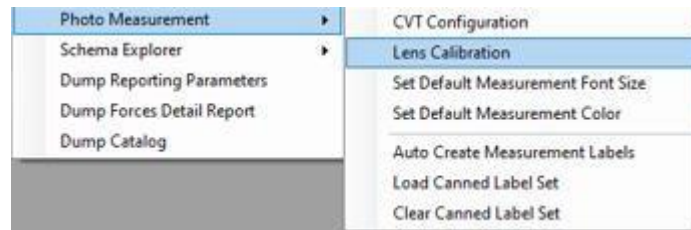
### Working with the Lens Calibration Tool

The Lens Calibration Tool is used to determine the barrel / pin cushion distortion present for a particular brand of camera prior to its use in the Digital Measurement Technology (DMT) process.

### Enabling the Lens Calibration Tool

To properly calibrate your camera lens, follow the 4-step process outlined in the Lens Calibration Tool. To enable the Lens Calibration Tool, complete the following steps:

1. Select **Tools > Misc > Photo Measurement > Lens Calibration**.



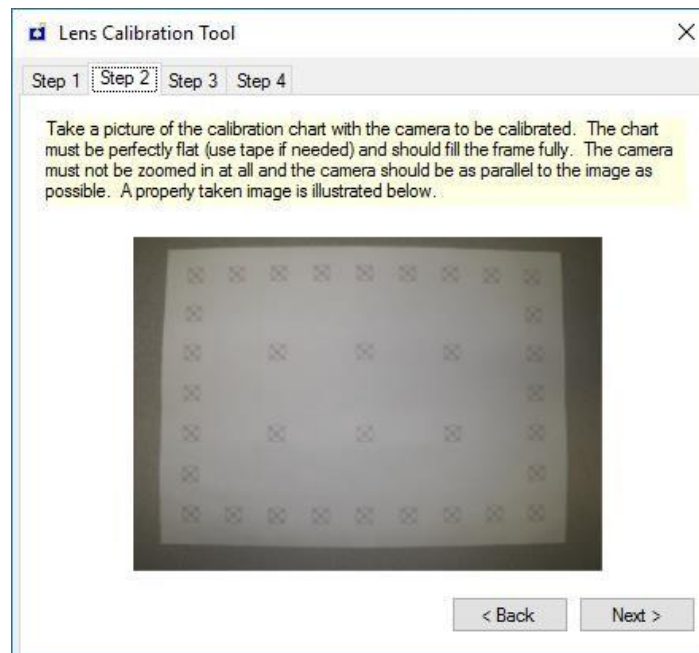
### Lens Calibration Tool 4-Step Process

To complete the Lens Calibration process, complete the following steps:

1. Select the **Step 1** tab.
2. Click the **Click here to print calibration chart** button and print the calibration chart.

*Note: You will need a printer, calibration chart, and camera whose lens you plan to calibrate to proceed to the next step.*

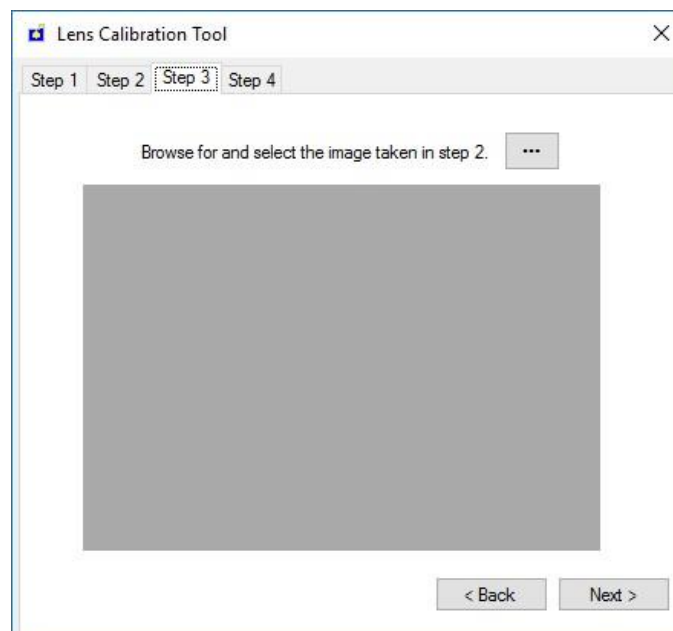
3. Click the **Next** button or select the **Step 2** tab.



- Using the camera that needs to be calibrated **take a picture** of the calibration chart that you printed out on the Step 1 tab.

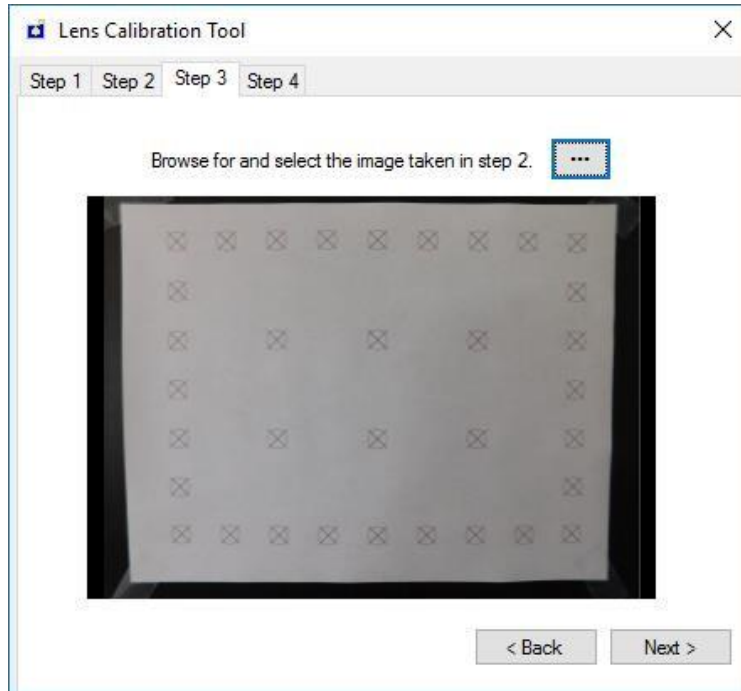
***Note:** Make sure document is lying flat, tape the corners down. Use the detailed directions provided on the Step 2 tab to get the best possible image. Incorrectly taken images of the calibration chart will result in an incorrect lens calibration.*

- Save the image you took of calibration chart.
- Click the **Next** button or select the **Step 3** tab.



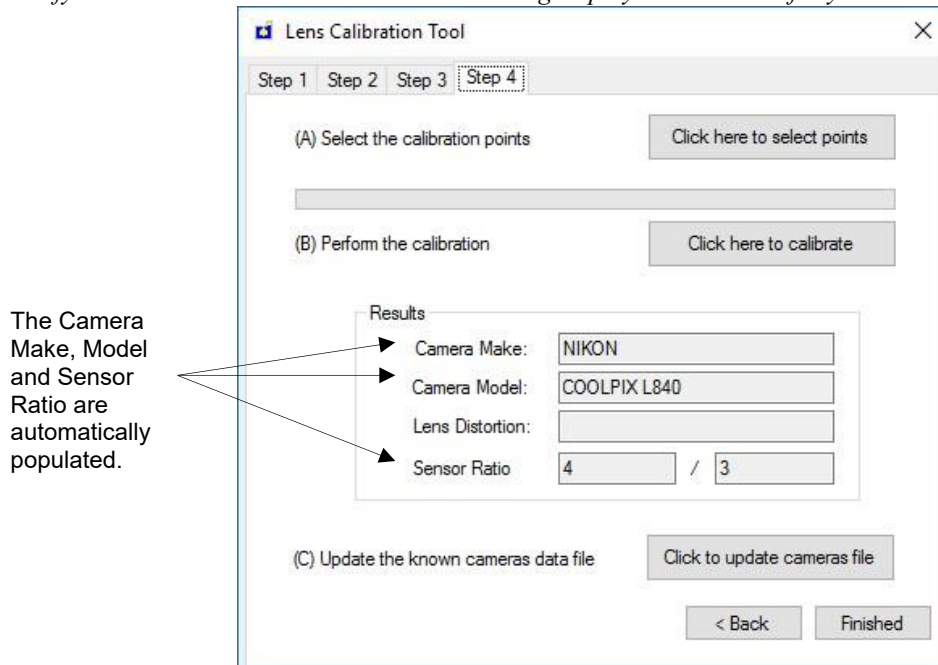
- Click the **browse button** **...** and navigate to and select the image you took of the calibration chart and click **Open**.
- Your image should display in the Step 3 tab.



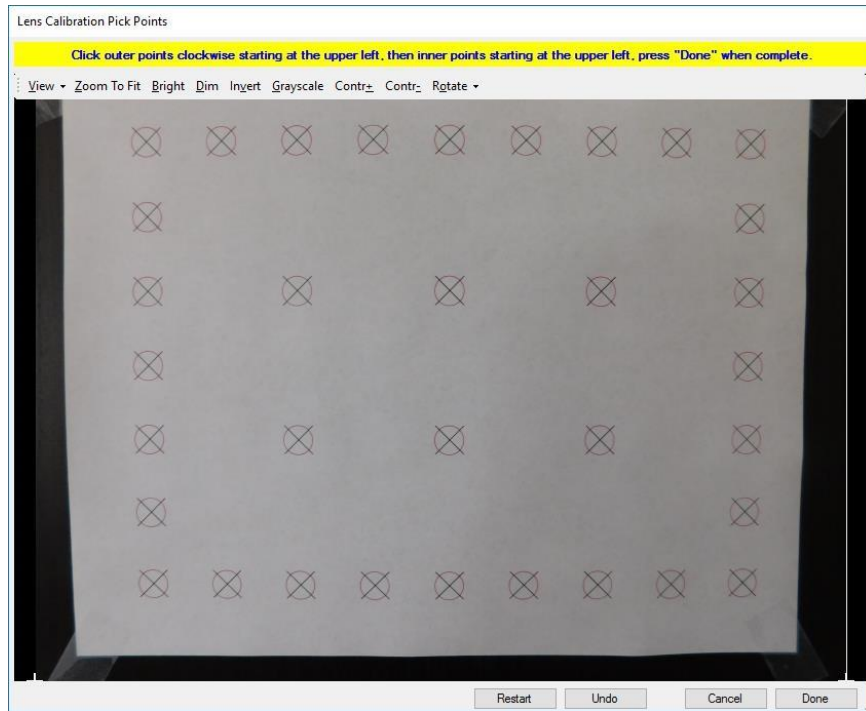


9. Click the **Next** button or select the **Step 4** tab.

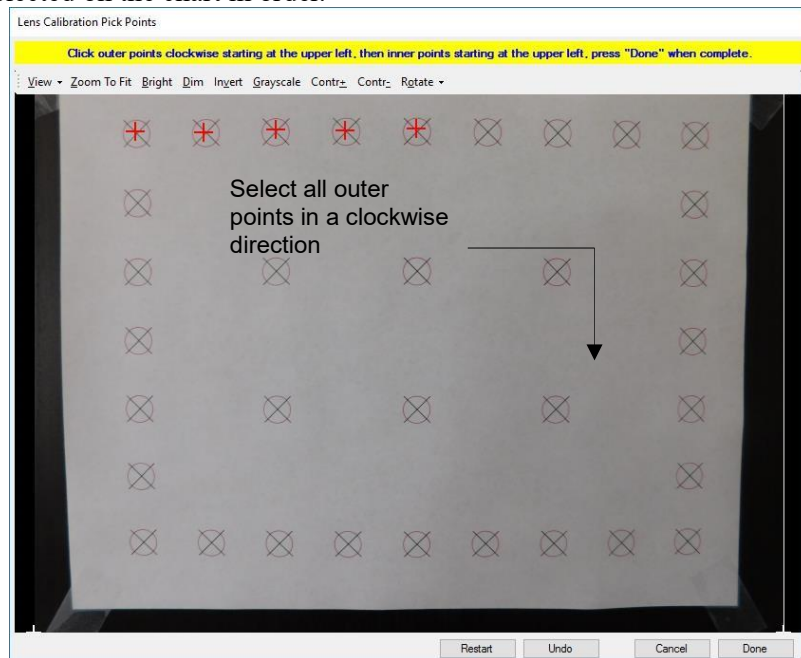
*Note: Verify the Camera Make and Camera Model being displayed are correct for your camera.*

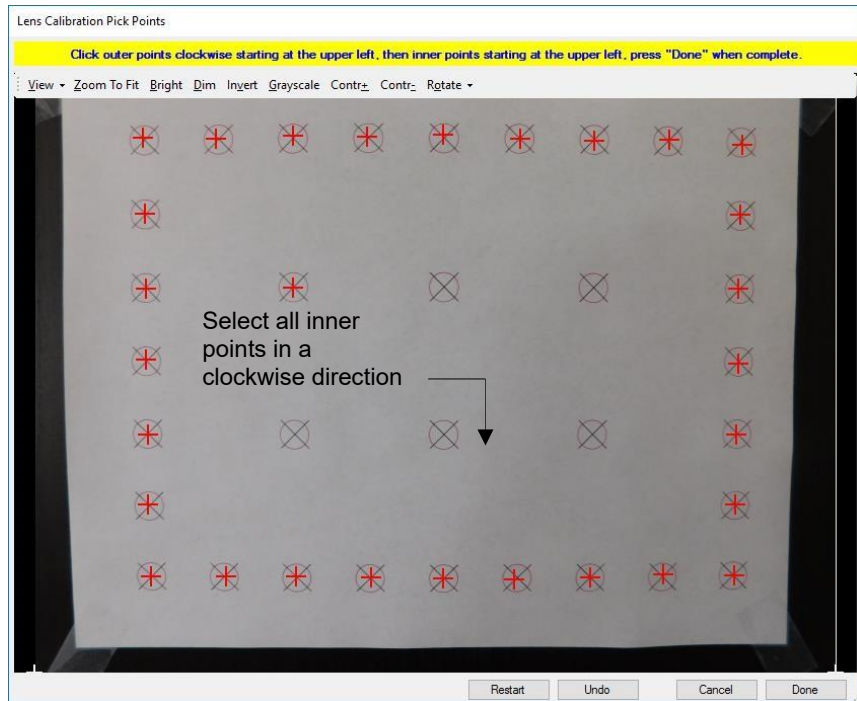


10. Click the **Click here to select points** button. The Lens Calibration Pick Points window displays.



Begin with the outside row of points in a clockwise direction, zooming in close to place each pick point precisely. Using the detailed directions provided **select each point until all** points are selected on the chart in order.

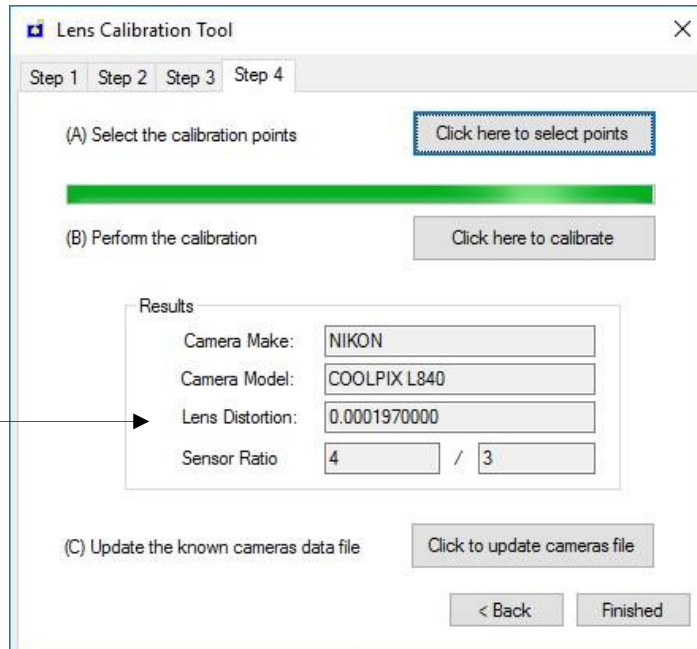




11. When all points are selected, click the **Done** button.
12. Click the **Click here to calibrate** button. The calibration status bar displays the lens calibration progress.

When the lens calibration is complete the Lens Distortion field will automatically be populated.

Lens Distortion is automatically populated once the calibration is completed.



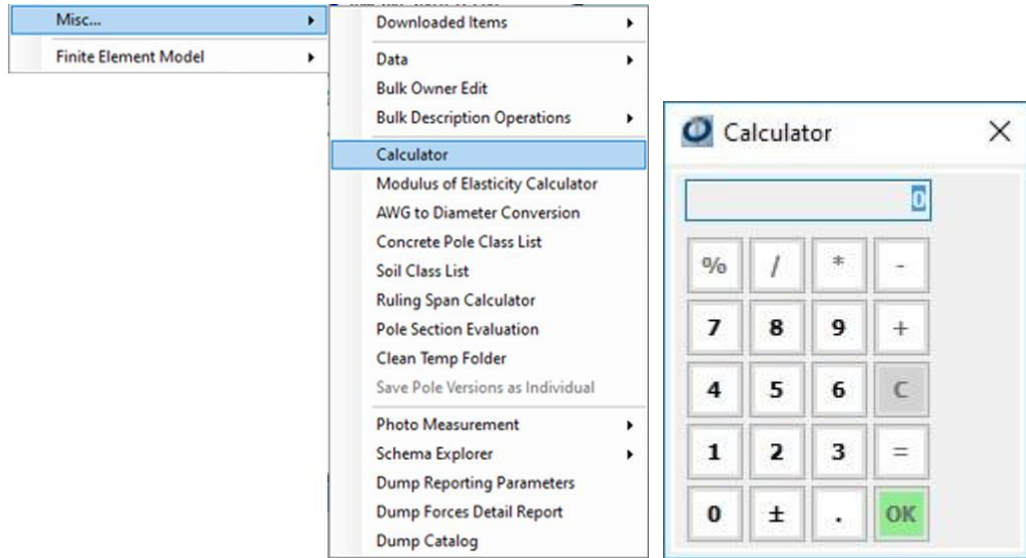
13. Click the **Click to update cameras file** button.

- 14. Select **OK** to the verification message that the camera has been added to the supported camera database.
- 15. Select **Finished** to close the Lens Calibration Tool.

### Working with the Calculator

A basic calculator is provided to help with simple calculation or conversions. To access the calculator, complete the following steps:

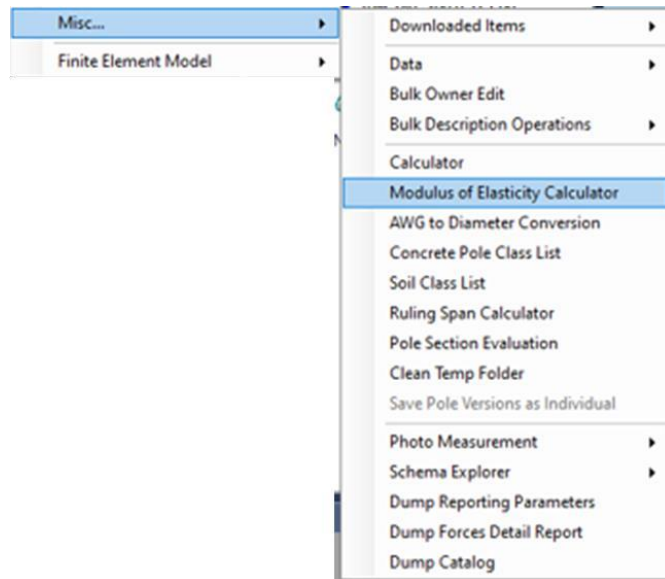
- 1. Select **Tools > Misc. > Calculator**.



### Working with the Modulus of Elasticity Calculator

To create a Modulus of Elasticity (MOE) calculation for reference only, complete the following steps:

- 1. Select **Tools > Misc. > Modulus of Elasticity Calculator**.



*Note: A pole does not need to be loaded in the Inventory Window in order to use the Modulus of Elasticity Calculator.*

2. In the **Main Material** Tab, Select the **Material** from the drop-down list.

Enter a value for % Solid, Diameter, and Young’s

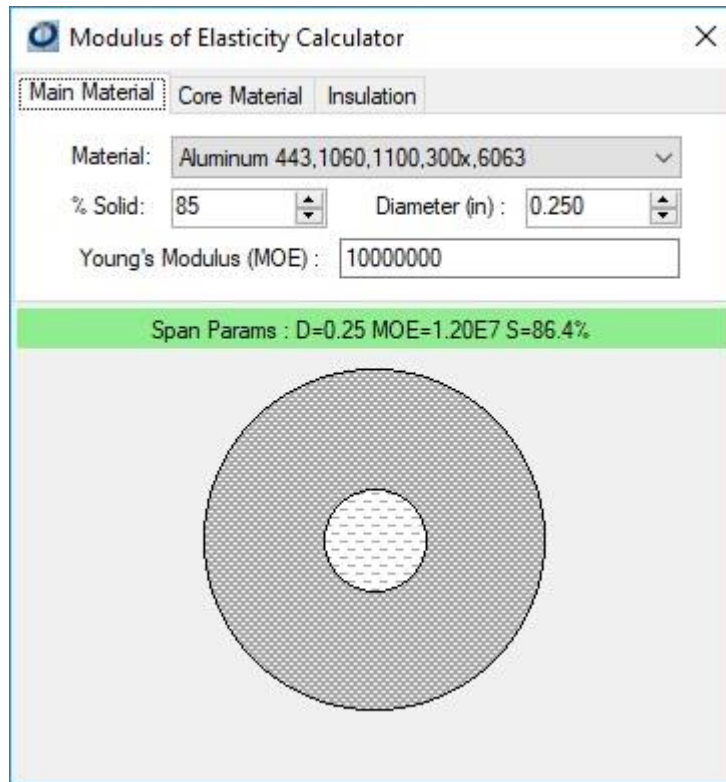
Modulus 3. In the **Core Material** Tab, Select the **Material** from the drop-down list.

Enter a value for % Solid, Diameter, and Young’s Modulus

4. In the **Insulation** Tab, Select the **Material** from the drop-down list.

Enter a value for Thickness, Young’s Modulus, and check the box if Insulation is present.

The Modulus of Elasticity (MOE) is automatically calculated.



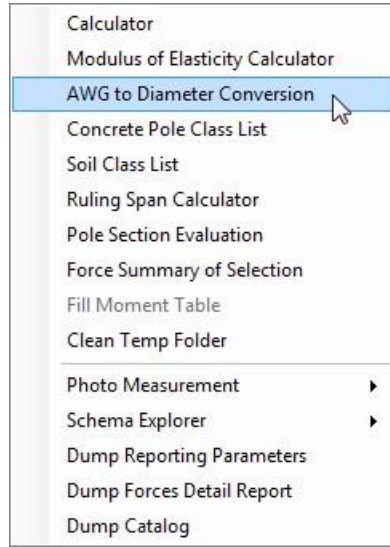
5. Select the **X** in the upper right corner to close the window.

*Note: The Modulus of Elasticity Calculation cannot be applied to a currently loaded pole. This calculation is for reference only.*

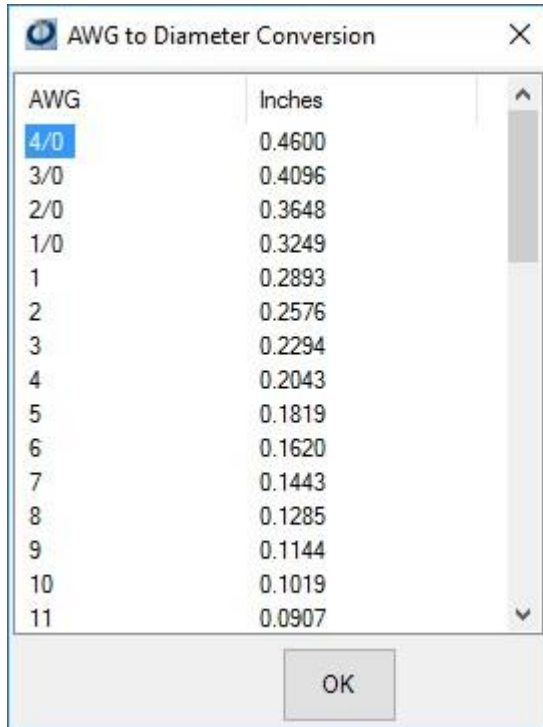
### Viewing the AWG to Diameter Conversions

To display the AWG to Diameter conversions, complete the following steps:

1. Select **Tools > Misc. > AWG to Diameter Conversion**.



*Note:* A pole does not need to be loaded in the Inventory Window in order to display the AWG to Diameter Conversion window.

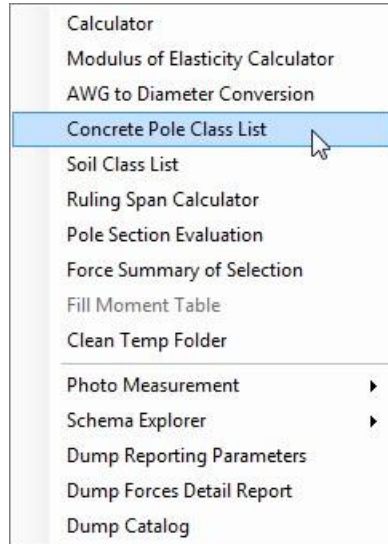


2. Select **OK** to close the window.

### Viewing the Concrete Pole Class List

To view the list of Concrete Pole Classes, for reference only, complete the following steps:

1. Select **Tools > Misc. > Concrete Pole Class List**.



*Note: A pole does not need to be loaded in the Inventory Window in order to display the Concrete Pole Class List window.*

Pole Class	Transverse* (lbs)	Torque (ft-lbs)	Strength (psi)
AA	450	250	7000
AL	600	300	7000
A	600	1100	7000
B	900	1100	7000
C	1200	2750	7000
D	1500	2750	7000
E	1900	2750	7000
F	2400	2750	7000
G	3000	5160	7000
H	3700	5160	7000
J	4500	5160	7000
K	5400	8300	7000
L	6400	8300	7000
M	7500	8300	7000
N	8700	12160	7000
O	10000	12160	7000

\* Maximum load 2 feet from pole tip in pounds

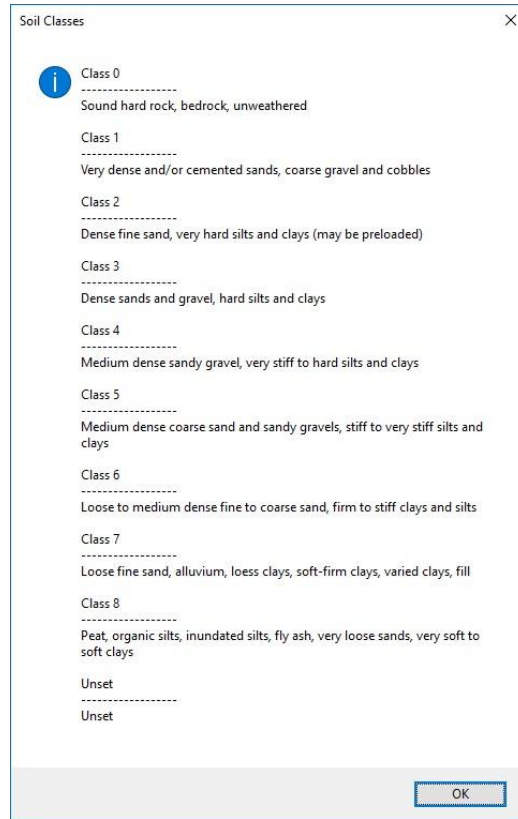
Strength Factor:

2. Adjust the **Strength Factor**.
3. Select **OK** to close the window.

## Viewing the Soil Class List

To view the list of Soil Classes, for reference only, complete the following steps:

1. Select **Tools> Misc>Soil Class List**. Select **OK** to close.



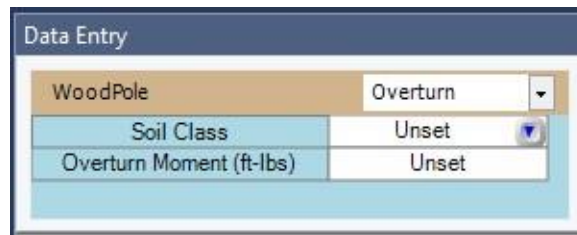
## RUS-based Overturn Moment Calculation

The RUS method (RUS Bulletin 1724E-200) will take into consideration pole length, setting depth, and soil type. The user will have the option to change the soil classification based on local known conditions and/or field data. The tool will automatically fill in the overturn moment value and the O-Calc Pro calculation engine will flag the pole if overturn is a limiting factor for the pole model. This functionality is in support of the CPUC GO95 Rule 94.11 (pole overturning calculation).

## Activating RUS-based Overturn Moment

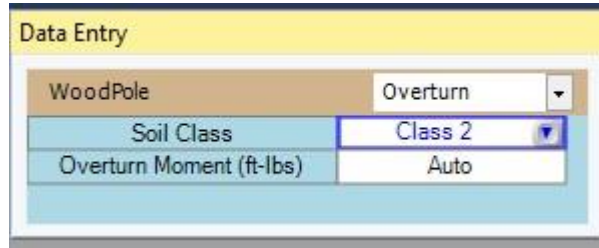
To enable the RUS-based overturn moment feature, complete the following steps:

1. Select the pole from your 3D view or Inventory Window.
2. In the **Data Entry** window, change the filter to the **Overturn** option.





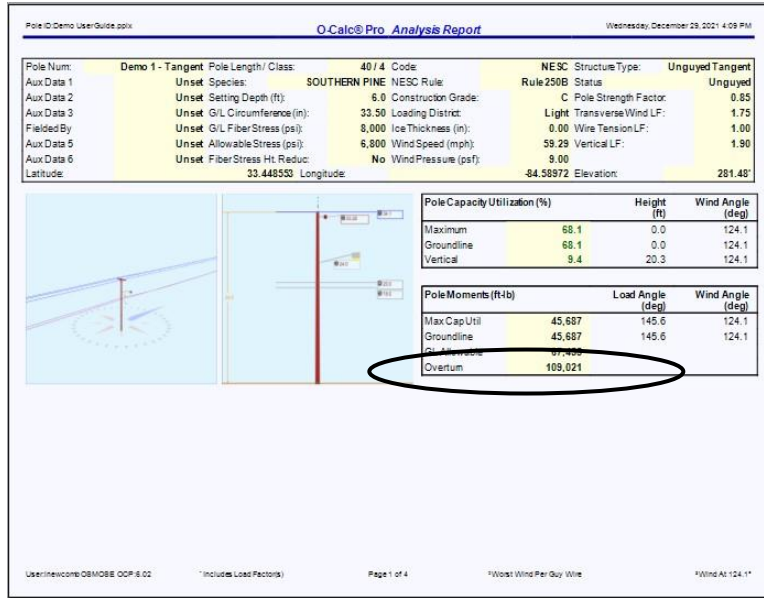
3. Select a **Soil Class** from the list; the **Overturn Moment** sets to **Auto**.



*Note: The soil class number corresponds to a value for the Overturn Moment, referenced in the table below.*

<b>Class</b>	<b>Description</b>	<b>Soil Constant</b>
Class 0	Sound hard rock; bedrock; un weathered	Soil Constant 140
Class 1	Very dense and/or cemented sands; coarse gravel and cobbles	Soil Constant 140
Class 2	Dense fine sand; very hard silts and clays (may be preloaded)	Soil Constant 140
Class 3	Dense sands and gravel; hard silts and clays	Soil Constant 70
Class 4	Medium dense sandy gravel; very stiff to hard silts and clays	Soil Constant 70
Class 5	Medium dense coarse sand and sandy gravels; stiff to very stiff silts and clays	Soil Constant 70
Class 6	Loose to medium dense fine to coarse sand; firm to stiff clays and silts	Soil Constant 35
Class 7	Loose fine sand; alluvium; loess clays; soft-firm clays; varied clays; fill	Soil Constant 35
Class 8	Peat; organic silts; inundated silts; fly ash; very loose sands; very soft to soft clays	Soil Constant 35

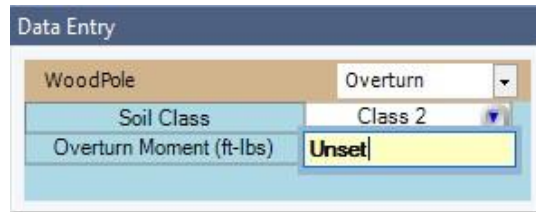
4. Verify that the Overturn Moment displays in the **Analysis Report**.



### Deactivating RUS-based Overturm Moment

To enable the RUS-based overturm moment feature, complete the following steps:

1. Select the pole from your 3D view or Inventory Window.
2. In the data entry window, set the filter to **Overturm Moment**.
3. In the **Overturm Moment (ft-lbs)** attribute box, double-click within the box that says **Auto**, and type in the word **Unset**.

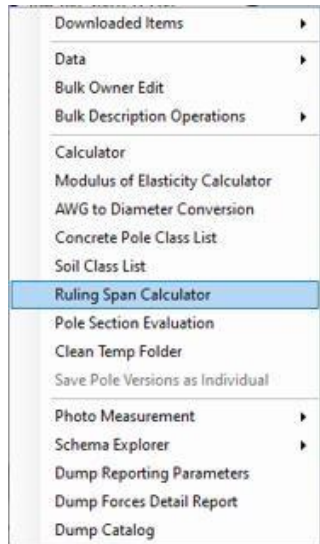


4. Press Enter to deactivate RUS-based overturm moment calculations.

### Working with the Ruling Span Calculator

To calculate the ruling span for reference only, complete the following steps:

1. Select more than one span in the Inventory Window or 3D View.
2. Select **Tools > Misc. > Ruling Span Calculator**.



*Note: The Ruling Span Calculation cannot be applied to the currently loaded pole. This calculation is for reference only.*

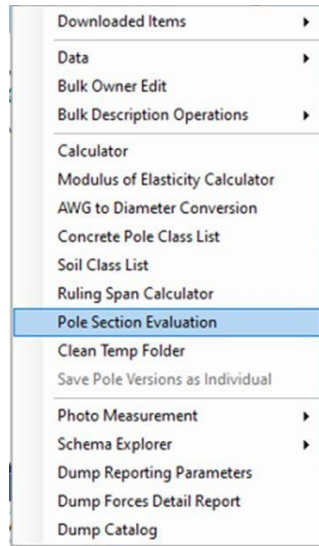


3. Select **OK** to close the window.

## Working with the Pole Section Evaluation

To evaluate damage and decay on the pole for reference only, complete the following steps:

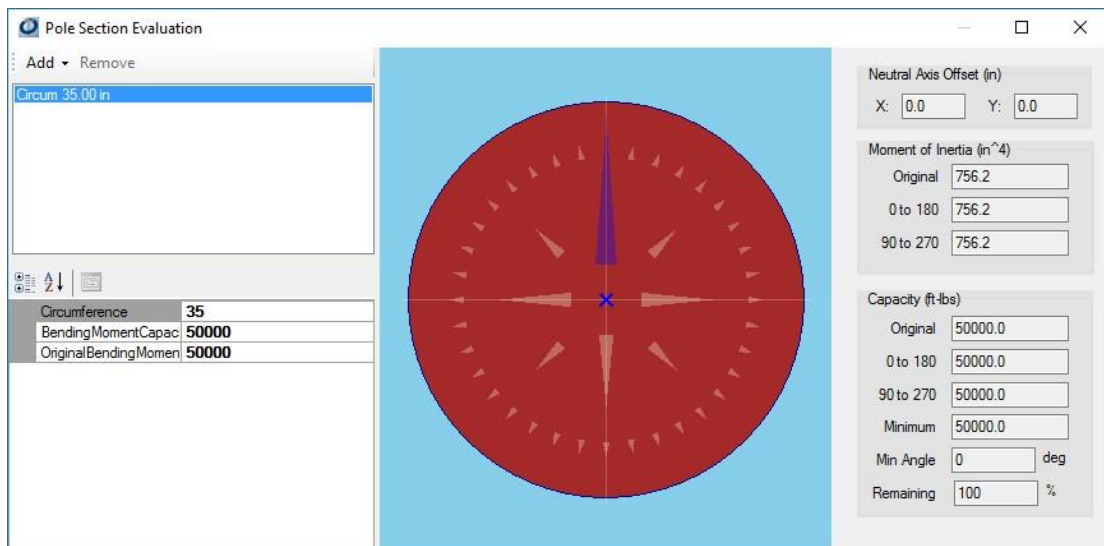
1. Select **Tools > Misc. > Pole Section Evaluation**.



2. Select **Add** and select a damage or decay item from drop down list.

*Note: To remove a damage or decay item from your list select the item to be removed and select **Remove** from the toolbar.*

3. Modify the damage or decay **attributes**.

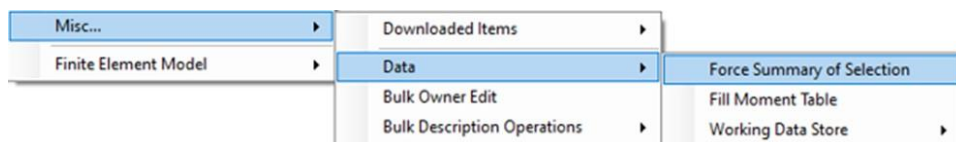


*Note: The calculations are updated automatically and are not editable.*

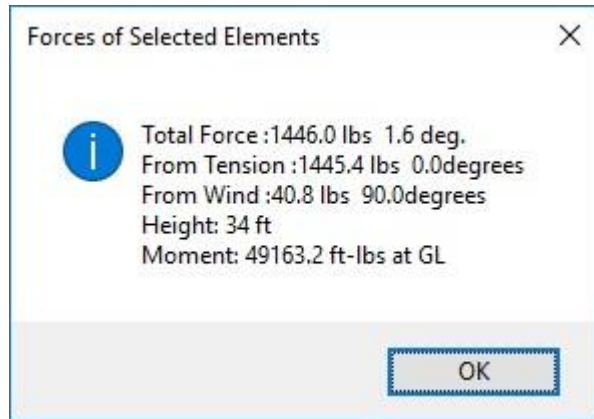
### Working with the Force Summary of Selection

To display the force summary of the selected object(s) in the Inventory Window, complete the following steps:

1. Select **Tools > Misc. > Data > Force Summary of Selection**.



*Note: At least one object needs to be selected in the Inventory Window in order to display the Force Summary of Selection window.*

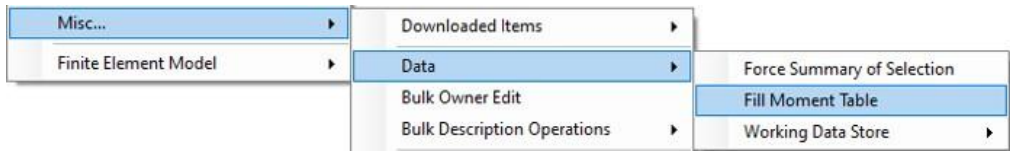


2. Select **OK** to close the window.

### Working with the Fill Moment Table

To display the Fill Moment Table for the pole currently displayed in the Inventory Window, complete the following steps:

1. Select the Pole in the Inventory Window.
2. Select **Tools > Misc. > Data > Fill Moment Table**.



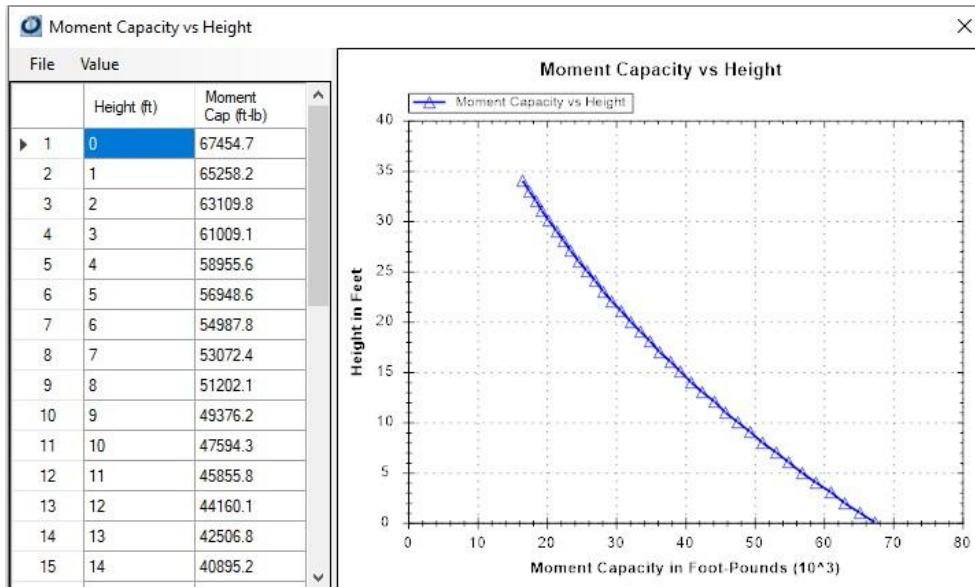
3. Click **OK** to the confirmation message.



4. In the Data Entry select the **Phys. Consts** filter.
5. Change the Override Moment Cap radio button to **Yes**.

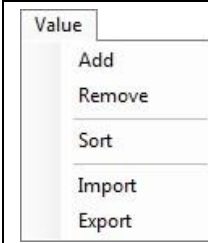
Data Entry	
WoodPole	Phys. Consts
Modulus of Rupture (psi)	8000.0
Modulus of Elasticity (psi)	1.60E+6
Poisson's Ratio	0.3
Wind Drag Coef.	Auto
Thermal Coef ((in/in)/°f)	2.70E-6
Density (lb/ft <sup>3</sup> )	6.00E+1
Pole Mfg Length (ft)	40.00
Table No	ANSI8
Buckling Constant	Auto
Override Moment Cap	Yes <input checked="" type="radio"/>
Moment Cap (ft-lb)	Moment <input checked="" type="radio"/>

6. Select the Moment Cap radio button to display the populated table.



Once the Moment Capacity vs Height table is displayed the toolbar menu provides a variety of options:

<div style="border: 1px solid black; padding: 5px;"> <p>File</p> <ul style="list-style-type: none"> <li>Save</li> <li>Cancel</li> </ul> </div>	<p>The following options are available from the <b>File</b> menu:</p> <p><b>Save.</b> Select the Save option to save any modifications.</p> <p><b>Cancel.</b> Select the Cancel option to exit the table without saving any changes.</p>
--	--

	<p>The following options are available from the <b>Value</b> menu:</p> <p><b>Add.</b> Select the Add option to add a new row to the table.</p> <p><b>Remove.</b> Select the Remove option to remove a selected row from the table.</p> <p><b>Sort.</b> Select the Sort option to sort the table by height.</p> <p><b>Import.</b> Select the Import option to import a CSV file.</p> <p><b>Export.</b> Select the Export option to export the current table values to a CSV file.</p>
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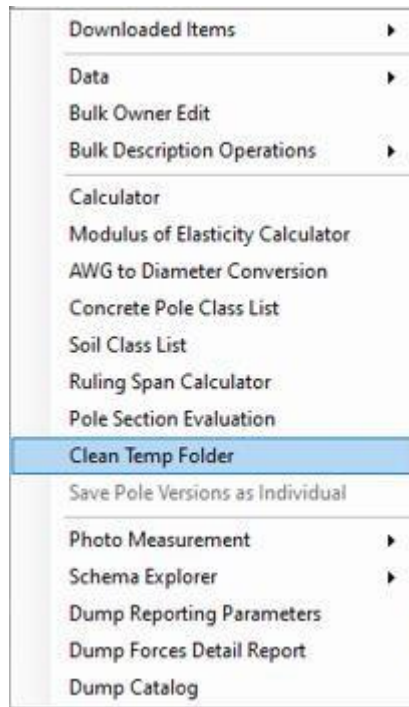
7. Select the **Height or Moment Cap** you would like to change and enter the new value you would like to use.
8. Select **File > Save**.

*Note: Select **File > Cancel** to close the Moment Capacity vs Height table without saving any modifications.*

### Clean Temp Folder

To clean the temp folder, complete the following steps:

1. Select **Tools > Misc > Clean Temp Folder**.

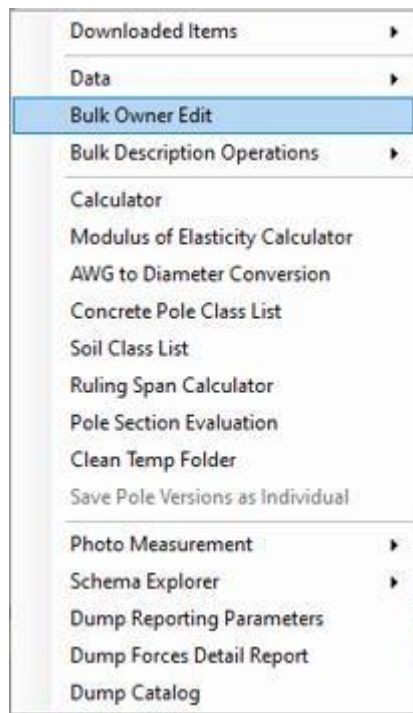


2. Select **OK** to the confirmation message.

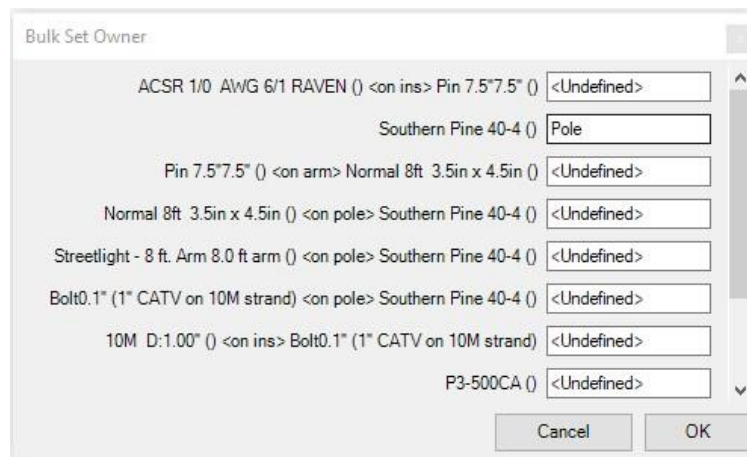
## Bulk Owner Edit

To initiate bulk owner edits, complete the following steps:

1. Select **Tools > Misc. > Bulk Owner Edit**.

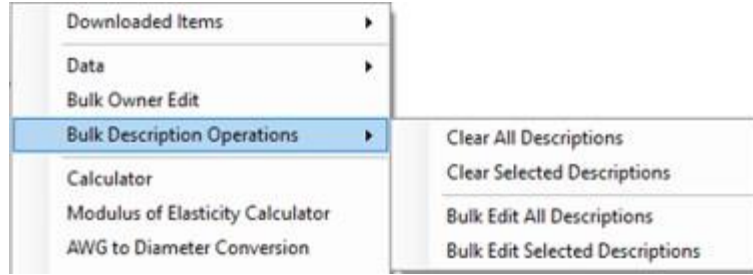


2. In the **Bulk Set Owner** window, enter the needed changes. Click **OK**.



3. To make edits to **Description** entries, use the **Bulk Description Operations** option.

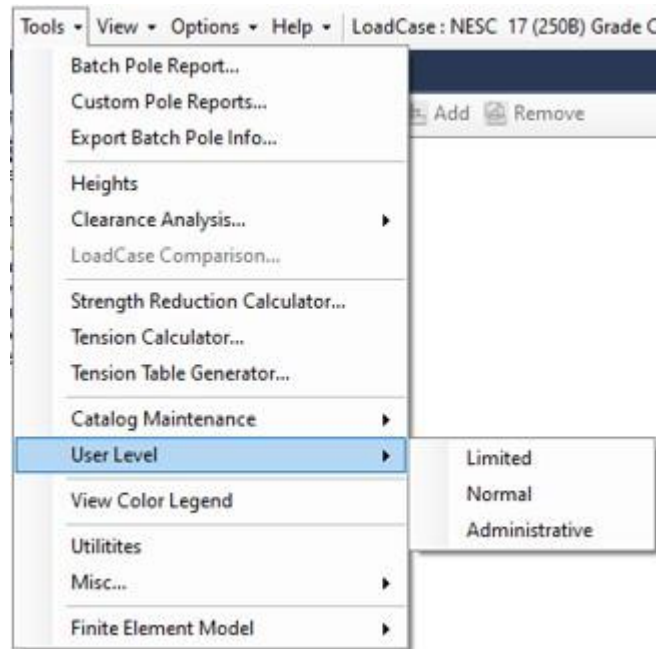




### Change the Access Permission

To change your access permission, complete the following steps:

Select **Tools > User Level**.



*Note:* The User Level can also be updated by left clicking on the User Level in the Status Bar and selected the preferred User Level.

1. Select the desired User Level.
2. Select **OK** to the confirmation message.

*Note:* The current User Level will automatically be updated at the bottom of the Status Bar.

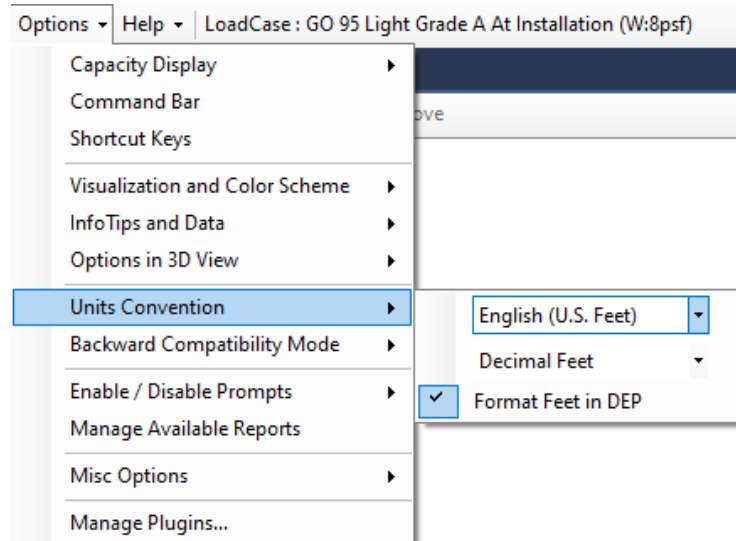
*Note:* Changes to the User Level are per O-Calc® Pro session. Any changes to the User Level are not permanent. For additional information on O-Calc® Pro Security Level, see [O-Calc® Pro Security Administration](#).

## Misc. Options

### Changing the Unit Convention

To change the unit convention, complete the following steps:

1. Select **Options > Unit Convention**.

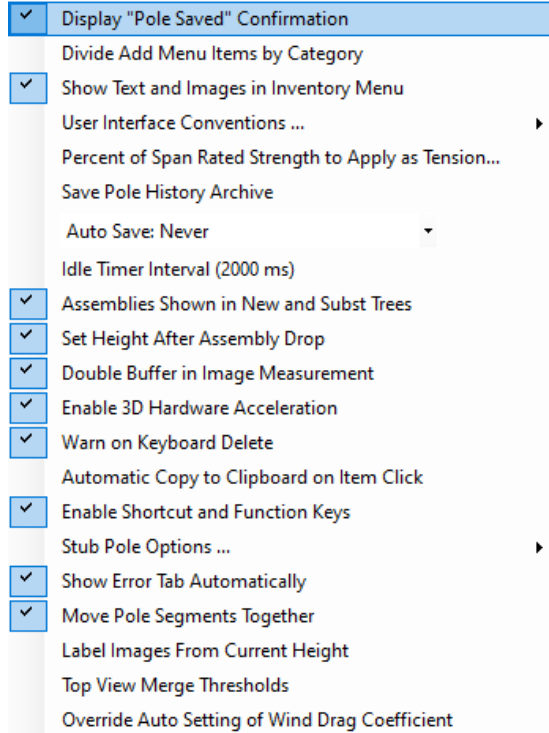


*Note: English is the default unit convention when the application is initially installed.*

### Changing Pole Saved Confirmation Message

To change if the “Pole Saved” confirmation message displays, complete the following steps:

1. To enable/disable the Pole Saved confirmation message option, select **Options > Misc. Options > Display “Pole Saved” Confirmation**.



*Note: The Display “Pole Saved” Confirmation option is enabled by default.*

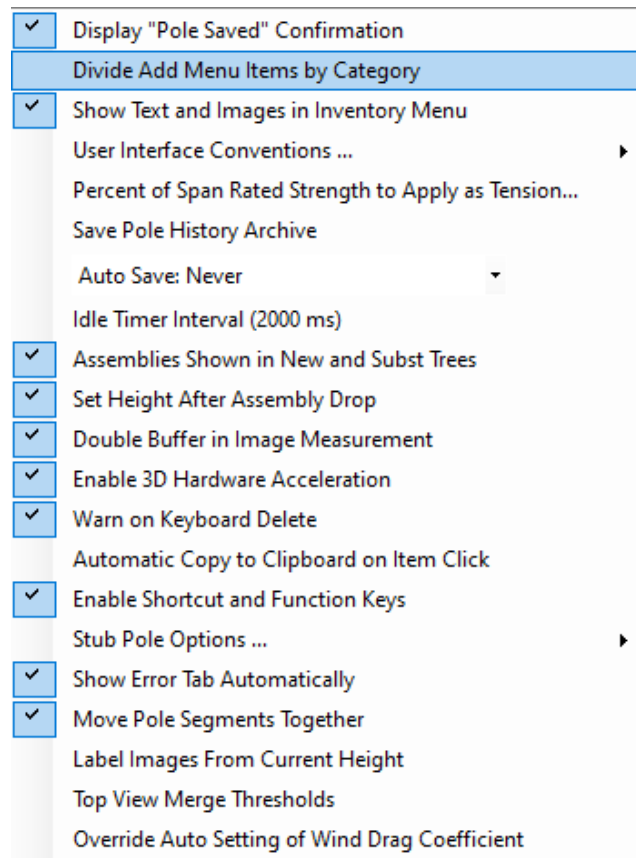
*Note: When the Display “Pole Saved” Confirmation option is enabled a check mark will display next to the menu option. When the option is disabled the checkmark is not displayed.*

**Dividing Add Menu Items by Category**

To change how the “Add Element” menu is displayed, complete the following steps:

1. To enable/disable the Divide Add Menu Items by category option, select **Options > Misc. Options > Divide Add Menu Items by Category**

*Note: Disabling the divide add menu option displays all elements to be added to an item in one list.*

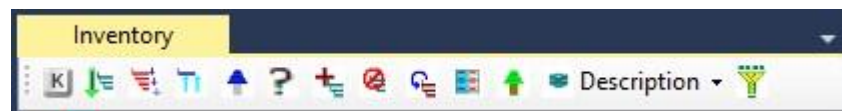


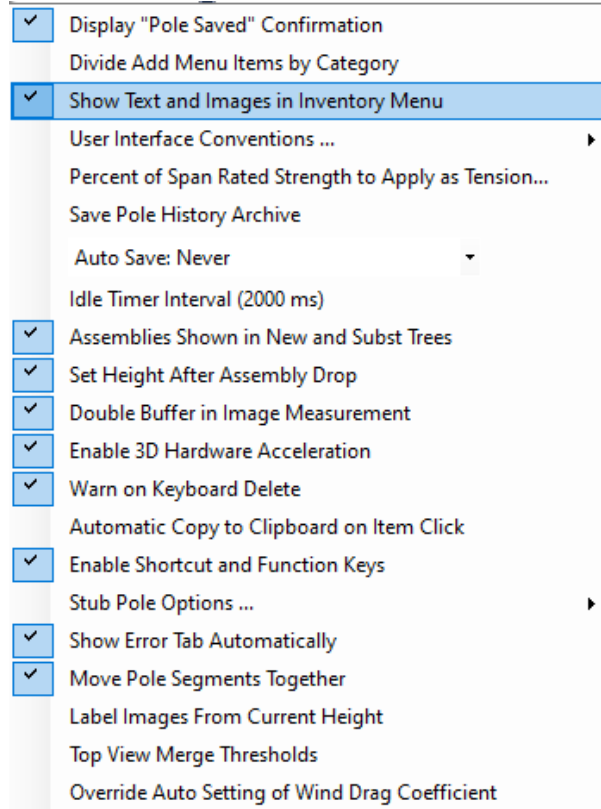
### Changing the Inventory Window Tool Bar Display

To change if the Inventory Window toolbar displays text next to each image, complete the following steps:



1. To enable/disable the text that displays next to each image in the Inventory Window toolbar, select **Options > Misc. Options > Show Text and Images in Inventory Menu**.



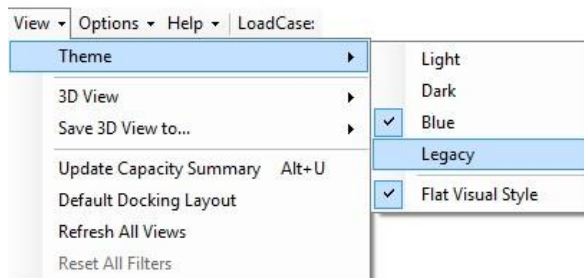


*Note:* When the Show Text and Images in Inventory Menu option is enabled a check mark will display next to the menu option. When the option is disabled the checkmark is not displayed.

### Changing the Visual Style

The O-Calc Pro interface displays in a blue, flat visual style by default. To change to a different display style, complete the following steps:

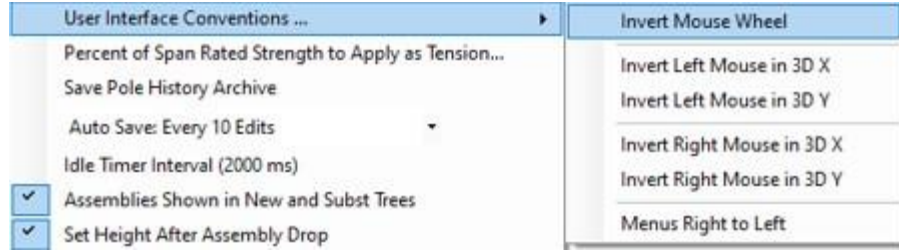
1. Select **View > Theme >** make your desired selection from the available options.



### Changing the Mouse Wheel Functionality

To reverse the mouse wheel direction, complete the following steps:

1. Select **Options > Misc. Options > User Interface Conventions > Invert Mouse Wheel.**

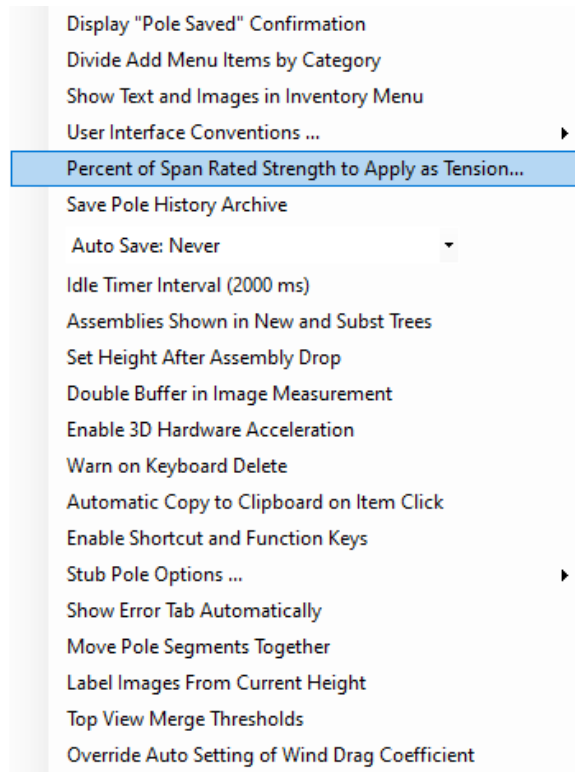


*Note: The Invert Mouse Wheel function affects the 3D View, Bird's Eye View, Perspective Camera and Top View only.*


### Modifying the Spans Default Rated Strength Percentage

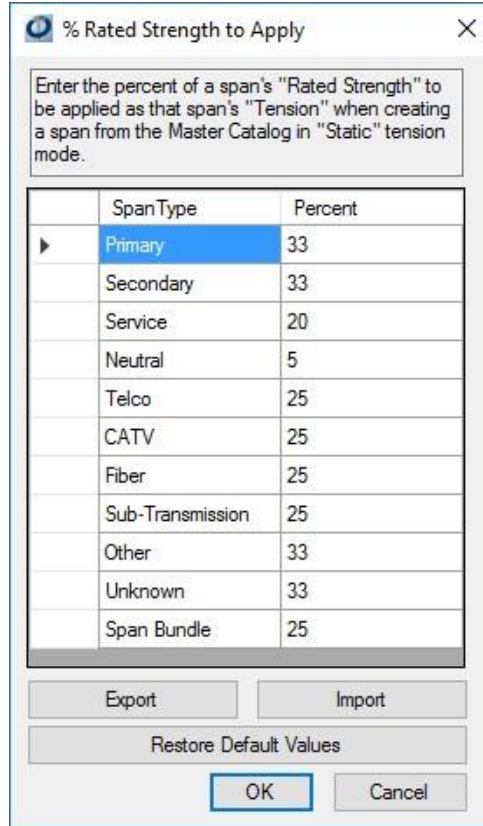
When a span is added from the Master Catalog where the tension mode is “Static” or “Manual” a default percentage of a spans rated strength is used to calculate the span’s tension. The default percentage for each type of span can be changed at any time by completing the following steps:

1. Select **Options > Misc. Options > Percent of Span Rated Strength to Apply as Tension.**

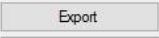


2. Select the **Span’s Percent** you would like to change and enter the new default percentage you would like to use for the selected span.

*Note: To load a previously saved Percent of Tension set select the **Import** button  and browse to the location of the file.*



*Note:* This value will not be applied if the span is a subcomponent of complex assembly.

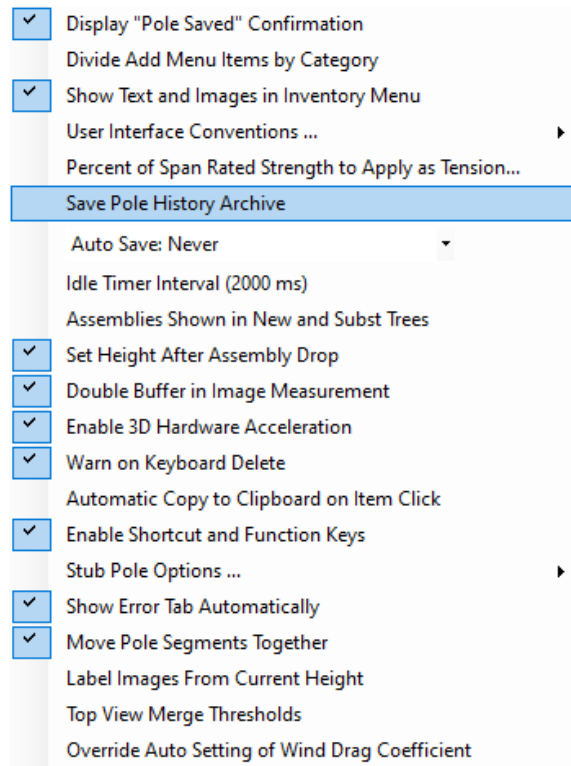
3. Select the **Export** button  to save the currently displayed set of percent of tensions value to a file.
4. Select **OK**.

*Note:* To revert the entire listing of span percentages of Rated Strength back to their default values select Restore Default Values.

### Working with the Pole Archive History

The Pole History Archive provides an audit trail of the changes made at each save point. When the Pole History Archive option is enabled, each time you save changes to a pole a snapshot of that pole is created and stored as a history record. Each history entry records who made the changes and when they were made. By retaining a history of each time, a pole has been saved, you are able to review previous revisions to a pole and even revert to a pole's previous revision. To enable the Pole History Archive, complete the following steps:

1. Select **Options > Misc. Options > Save Pole History Archive**.



*Note: When the Save Pole History Archive option is enabled a check mark will display next to the menu option. When the option is disabled the check mark is not displayed.*

2. Create a new pole in the Inventory Window and save the pole using the **File > Save Pole** option.



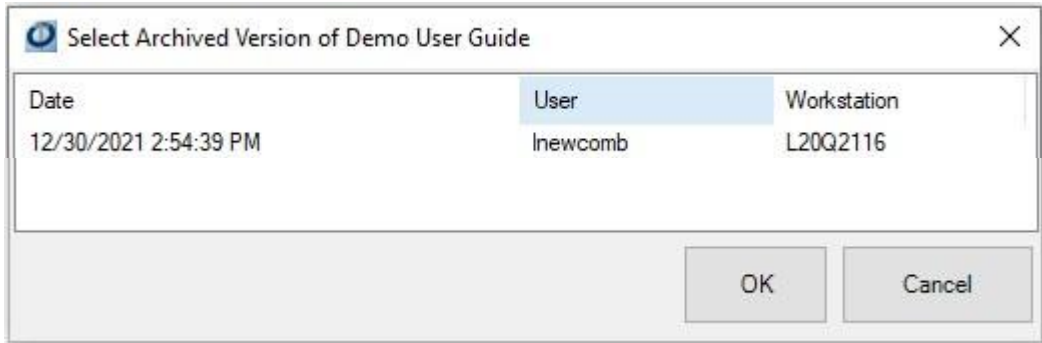
The first time the pole is saved a Pole History Archive file is created.

3. To review the pole’s history archive, select **File > More Options > Open Archived Pole**. Browse to the location of the saved pole and select the (pole name).pplx file.

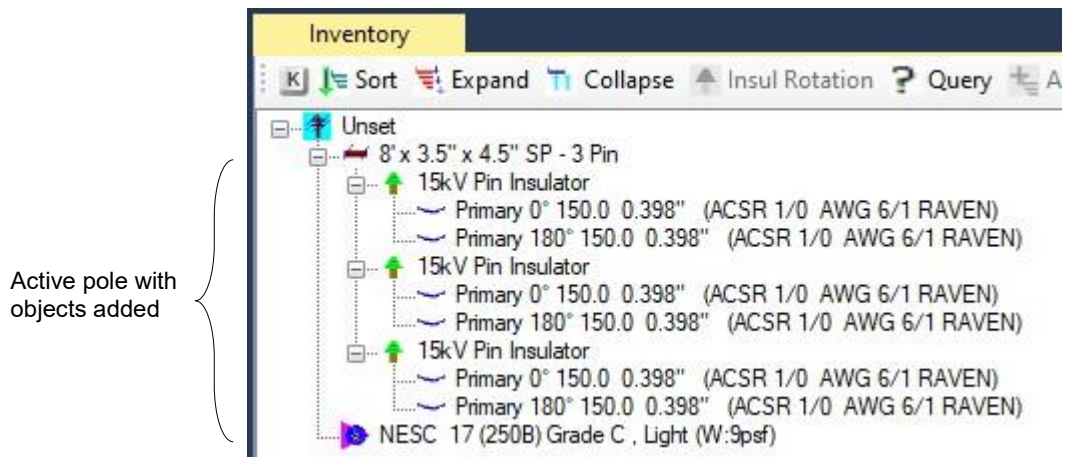
*Note: The Open Archived Pole option is only visible when the Save Pole History Archive option is enabled.*



Saved pole's initial Revision History entry

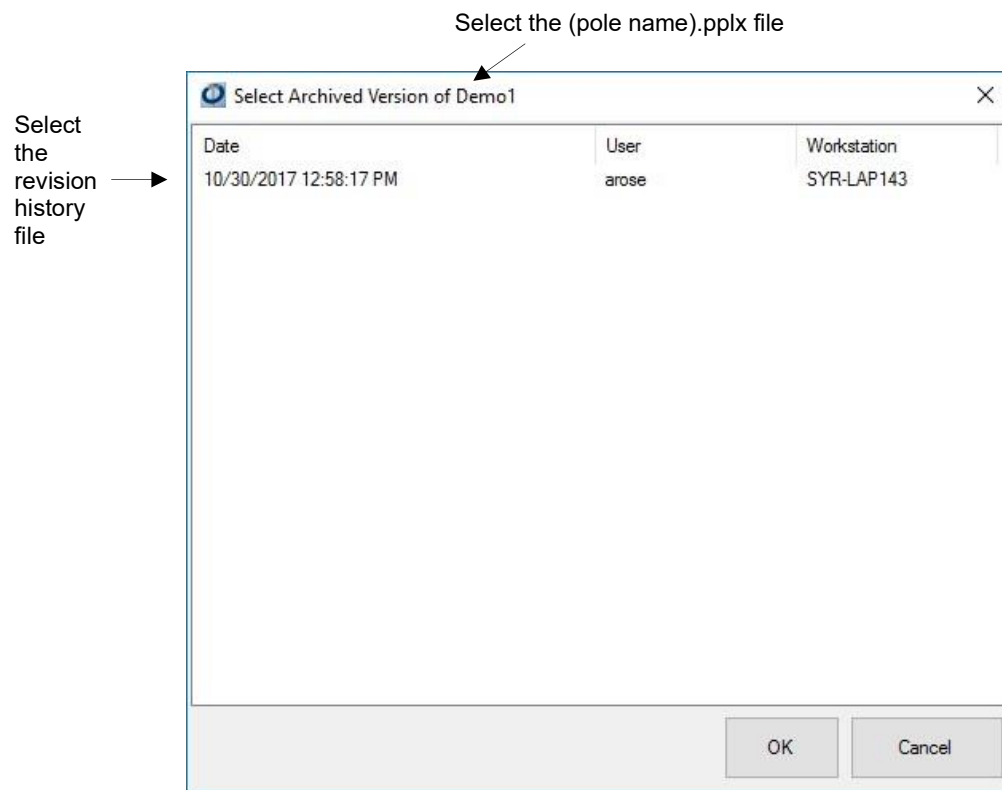


4. Complete modifications to the current pole in the Inventory Window and save the pole using the **File > Save Pole** option.

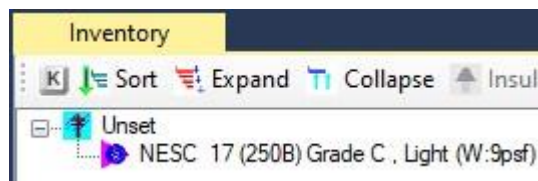


The Revision History area is automatically updated.

5. To review previous revision to a pole or to revert a pole to a previous version, select **File > Open Archived Pole**. Browse to the location of the pole you wish to work with and select the (pole name) .pplx file. Select the Revision History record you would like work with.



6. Select **Open Archived Version**.

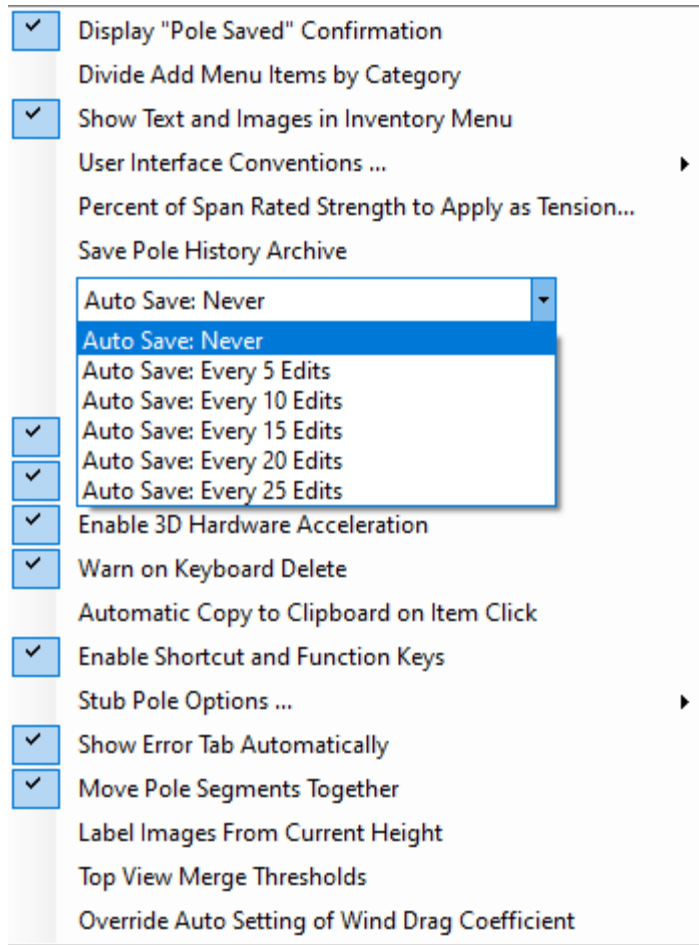


The selected Revision History snapshot is loaded in the Inventory Window and can be reviewed. The pole is completely editable at this time and it can be modified and saved. If the revision is saved, it will then become the **active version** of that pole and replace the .pplx file. For safety, a new revision history record will be added at that time that stores a snapshot of the previously saved version of the pole.

**Changing the Auto Save**

By default, the Auto Save option is set to Never, to select an auto save interval based on the number of edits made, complete the following steps:

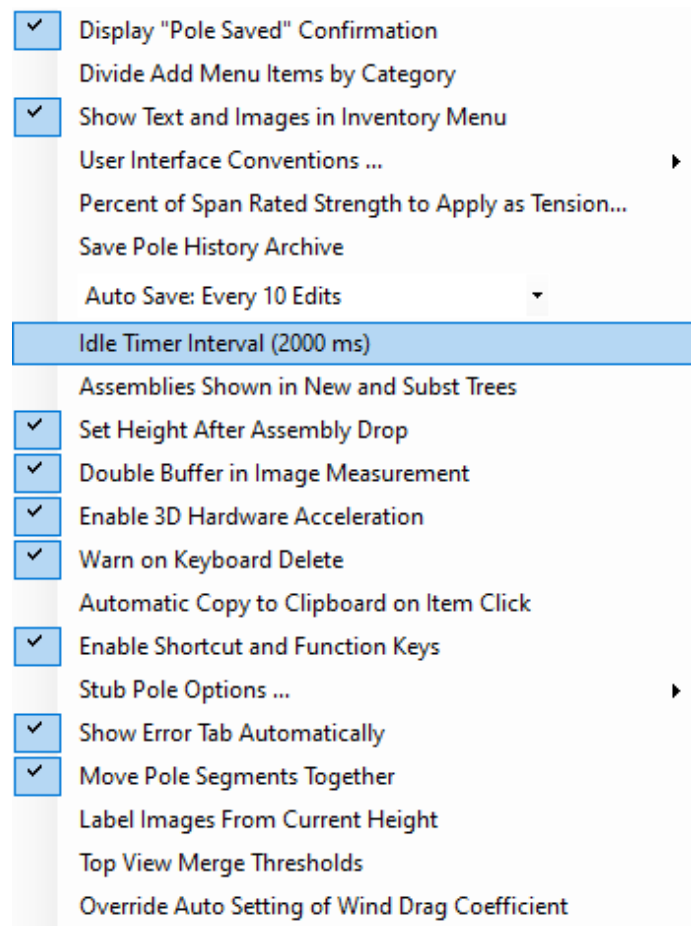
1. Select **Options > Misc. Options > Auto Save: Never** > open the drop-down and select an available option from the menu.



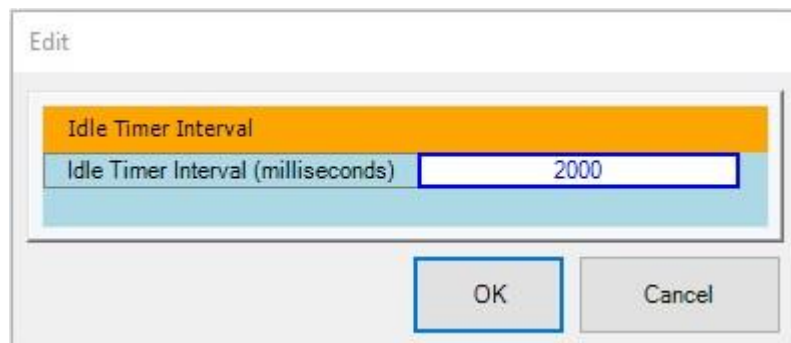
### Setting the Idle Time Interval

To set the idle time before calculations are calculated, complete the following steps:

2. Select **Options > Misc. Options > Idle Timer Interval** (*currently set time*).



3. Enter the **Idle Timer Interval** in milliseconds.



**Note:** The Idle Time Interval can be set to a minimum 1000 milliseconds and a maximum of 5000 milliseconds.

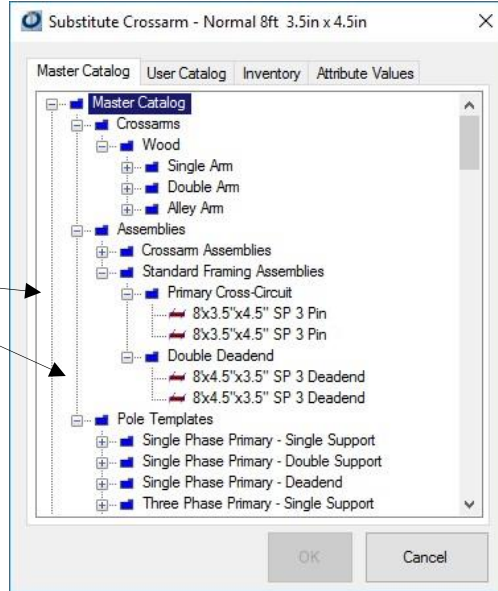
**Note:** The Auto Capacity Summary option needs to be enabled for the Idle Timer to activate.

4. Select **OK**.

### Displaying Assemblies in the Tree View

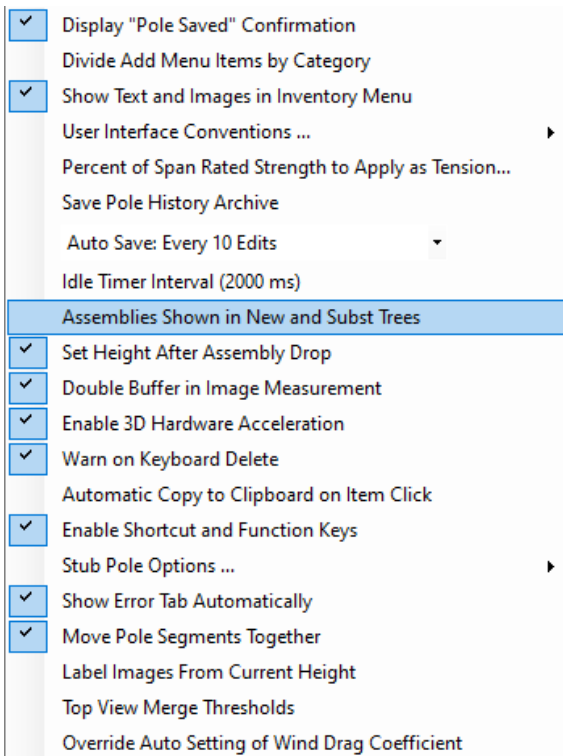
In the Catalog by default, equipment assemblies are not displayed in the tree view, unless they are directly under a folder.

With the option disabled the equipment needs to be directly under a folder to display in the tree view.



To display assemblies without regard to where they display in the tree view, complete the following steps:

1. Select **Options > Misc. Options > Assemblies Shown in New and Subst Trees**.

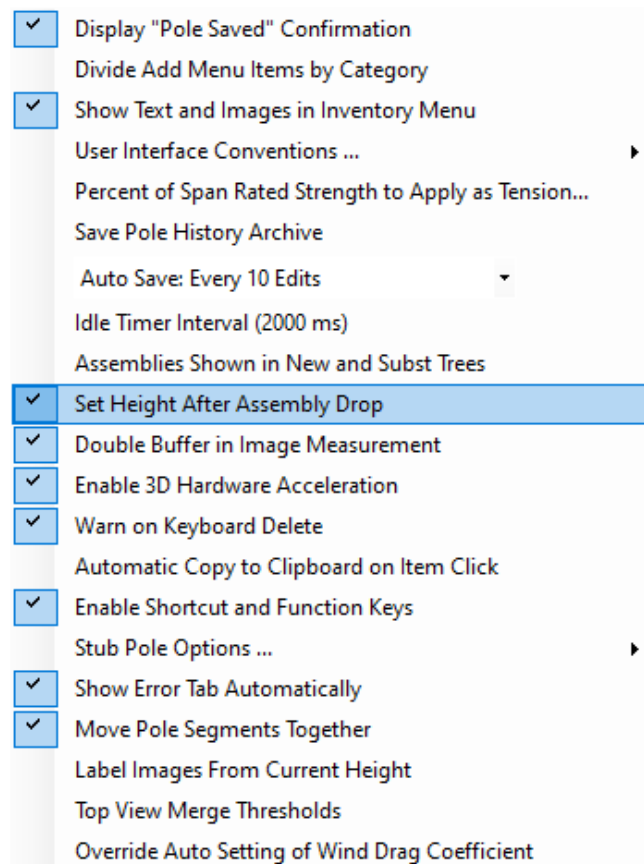


*Note: When the Assemblies Shown in New and Subst Trees option is enabled a check mark will display next to the menu option. When the option is disabled the check mark is not displayed.*

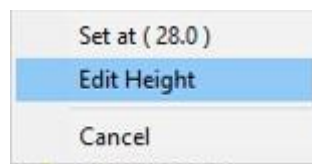
### Setting Height After Assembly Drop

To set the height of equipment or an assembly being dragged onto the current pole from a catalog, complete the following steps:

1. Select **Options > Misc. Options > Set Height After Assembly Drop**.



2. Select the **Set at** automatic height recommendation.



3. Or select the **Edit Height** option, and in the **Edit** window enter a **Height** value. Click **OK**.

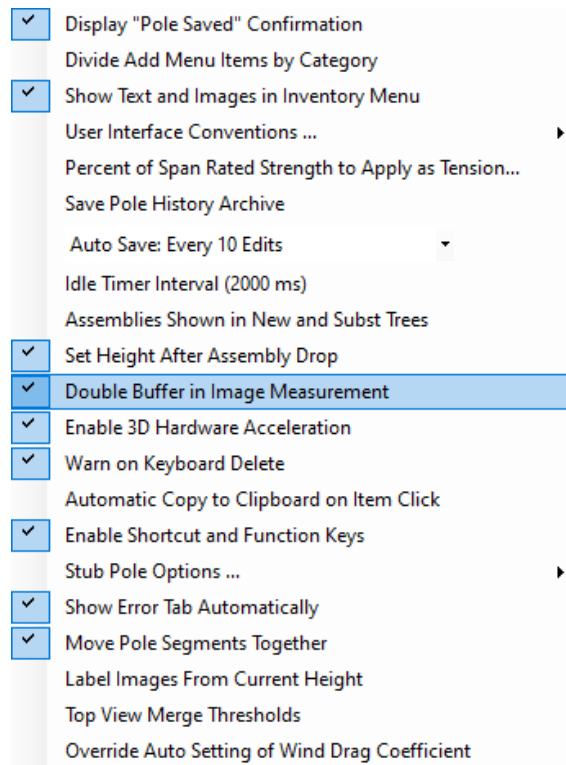


**Note:** When the Set Height After Assembly Drop is selected the height adjustment window will display each time a drag-and-drop operation occurs from a catalog. The height value displayed is the pole attachment height of the topmost item of the assembly. All other items will be adjusted relative to the topmost attachment height.

### Buffering in Image Measurement

O-Calc ® Pro uses an off-screen bitmap buffer to reduce redraws flicker of the photo measurement screen. This option requires a large amount of system memory. On computers where memory levels or CPU performance do not meet the stated O-Calc ® Pro requirements this option may be enabled in an attempt to reduce memory consumption and increase performance at the expense of increased image flickering. To enable double buffering in the Measurement Window, complete the following steps:

1. Select **Options > Misc. Options > Double Buffer in Image Measurement.**



**Note:** When the Double Buffer in Image Measurement option is enabled a check mark will display next to the menu option. When the option is disabled the check mark is not displayed.

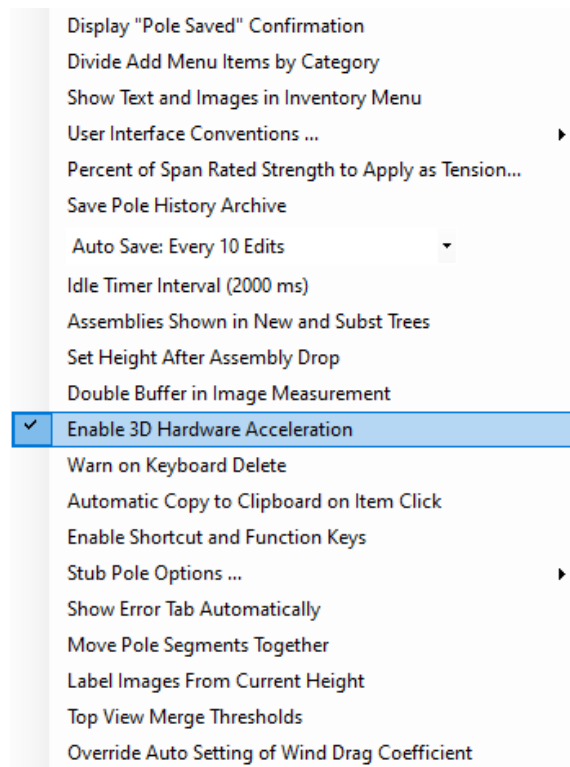
*Note:* To review a complete list of O-Calc ® Pro system requirements, see [System Requirements](#).

### Enabling 3D Hardware Acceleration

O-Calc ® Pro uses the advanced graphical processing unit of the graphics card to accelerate 3D rendering and processing. This feature requires that the graphics card meet WDDM 1.0 or higher and be fully Direct 3D compliant. If your graphics card does not meet those requirements you may disable the use of 3D hardware acceleration. This will result in severely reduced 3D rendering performance.

This feature is enabled by default. To disable the 3D Hardware Acceleration, complete the following steps:

1. Select **Options > Misc. Options >** deselect the **Enable 3D Hardware Acceleration** option, to disable it.



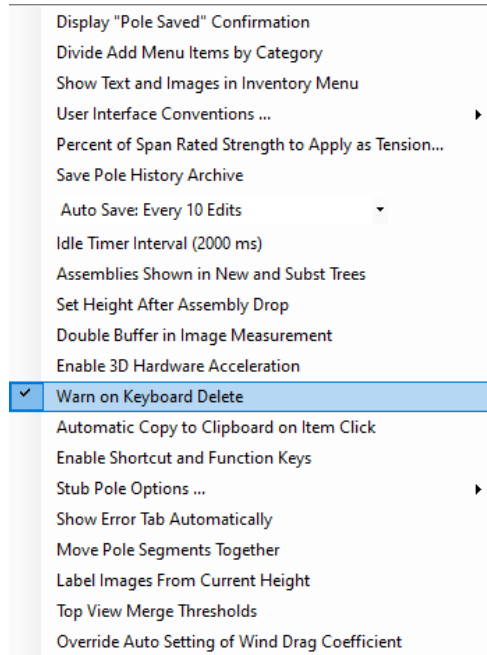
*Note:* When the Enable 3D Hardware Acceleration option is enabled a check mark will display next to the menu option. When the option is disabled the check mark is not displayed.

### Changing the Keyboard Delete Confirmation Message

When deleting objects in the Inventory Window using the delete button on your keyboard a delete confirmation message is displayed. This message is enabled by default. To change if the delete confirmation message displays, complete the following steps:

1. To disable the Delete confirmation message select **Options > Misc. Options > Warn on Keyboard Delete**.



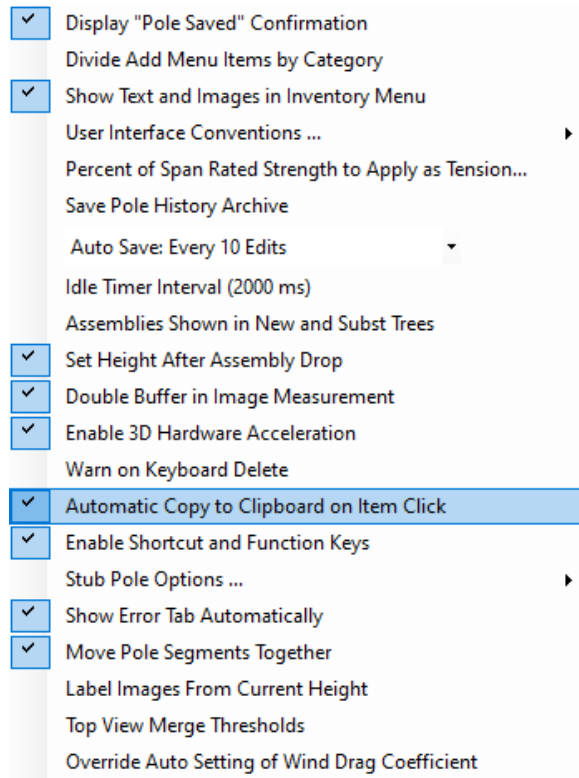


*Note:* When the Warn on Keyboard Delete option is enabled a check mark will display next to the menu option. When the option is disabled the check mark is not displayed.

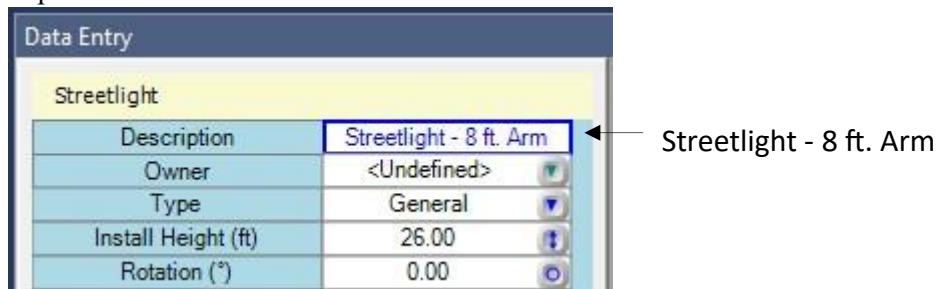
### Copying Values from the Data Entry Window

The copy value feature allows you to easily copy values or value sets from the Data Entry Window onto the clipboard. To use this feature, complete the following steps:

1. To enable/disable the copy to clipboard on item click option select **Options > Misc. Options > Automatic Copy to Clipboard on Item Click**.



- 2. In the **Data Entry** select any attribute value to copy, right click to paste to clipboard.



*Note: Only one attribute per copy. To copy both the header and attribute, select the header.*

- 3. If the **Automatic Copy to Clipboard on Item Chick** is disabled, you can use the **Ctrl + C** to copy any attribute value or data entry header, **Ctrl + V** to paste to clipboard.

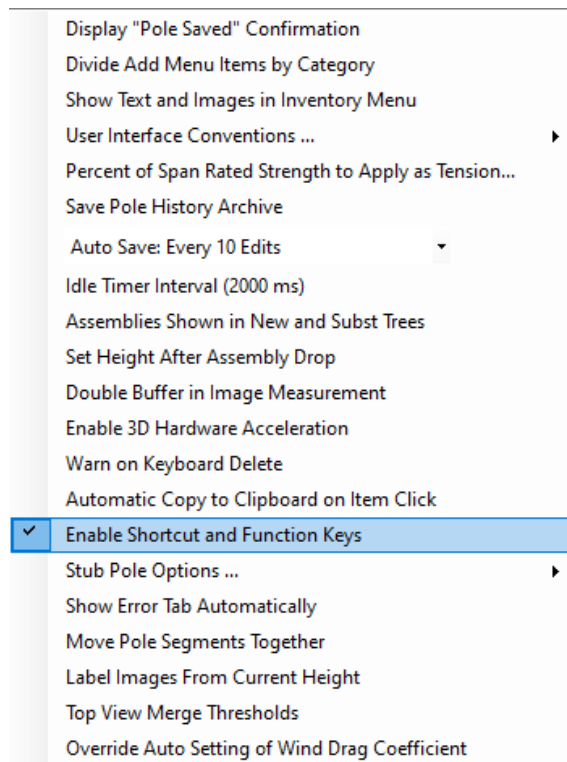
Data Entry Header	Selecting the Data Entry Header then selecting Ctrl + C will copy all the objects and attribute values within the <i>selected category</i> to the clipboard.
-------------------	--

Object	Selecting an object then selecting Ctrl + C will copy the object value and the objects attribute value to the clipboard.
Attribute	Selecting an attribute then selecting Ctrl + C will copy the attribute value to the clipboard.

### Switching Views Using Function Keys

To easily switch between the O-Calc ® Pro views keyboard shortcuts and function keys have been enabled. To work with these features, complete the following steps:

1. To enable/disable the Enable Shortcut and Function Keys option select **Options > Misc. Options > Enable Shortcut and Function Keys.**



***Note:** When the Enable Shortcut and Function Keys option is enabled a check mark will display next to the menu option. When the option is disabled the check mark is not displayed.*

Shortcut and Function Keys capabilities are:

F1	Press F1 to switch to the 3D View.
F2	Press F2 to switch to the Charts View.
F3	Press F3 to switch to the Data Entry Window.
F4	Press F4 to switch to the Measure Window.
F5	Press F5 to switch to the Reports Window.
F6	Press F6 to switch to the Inventory Window.
F7	Press F7 to switch to the Heat Map Window.
CTRL + F7	Press CTRL + F7 to switch to the Capacity Window.
F8	Press F8 to switch to the Schematic Window.
F9	Press F9 to switch to the Top View Window.
F11	Press F11 to save the current changes.
F12	Press F12 to switch the 3D View to the Bird's Eye View.
Insert	Pressing the Insert button while an object is selected in the Inventory window will display a shortened list of convenient features.  (Example: Add objects, select multiple objects and add notes)
CTRL + Insert	Press CTRL + Insert to modify an insert.
CTRL + ?	Press CTRL + ? to switch to the Find Menu Item Window.
Delete	Press the Delete button to delete objects in the Inventory Window.

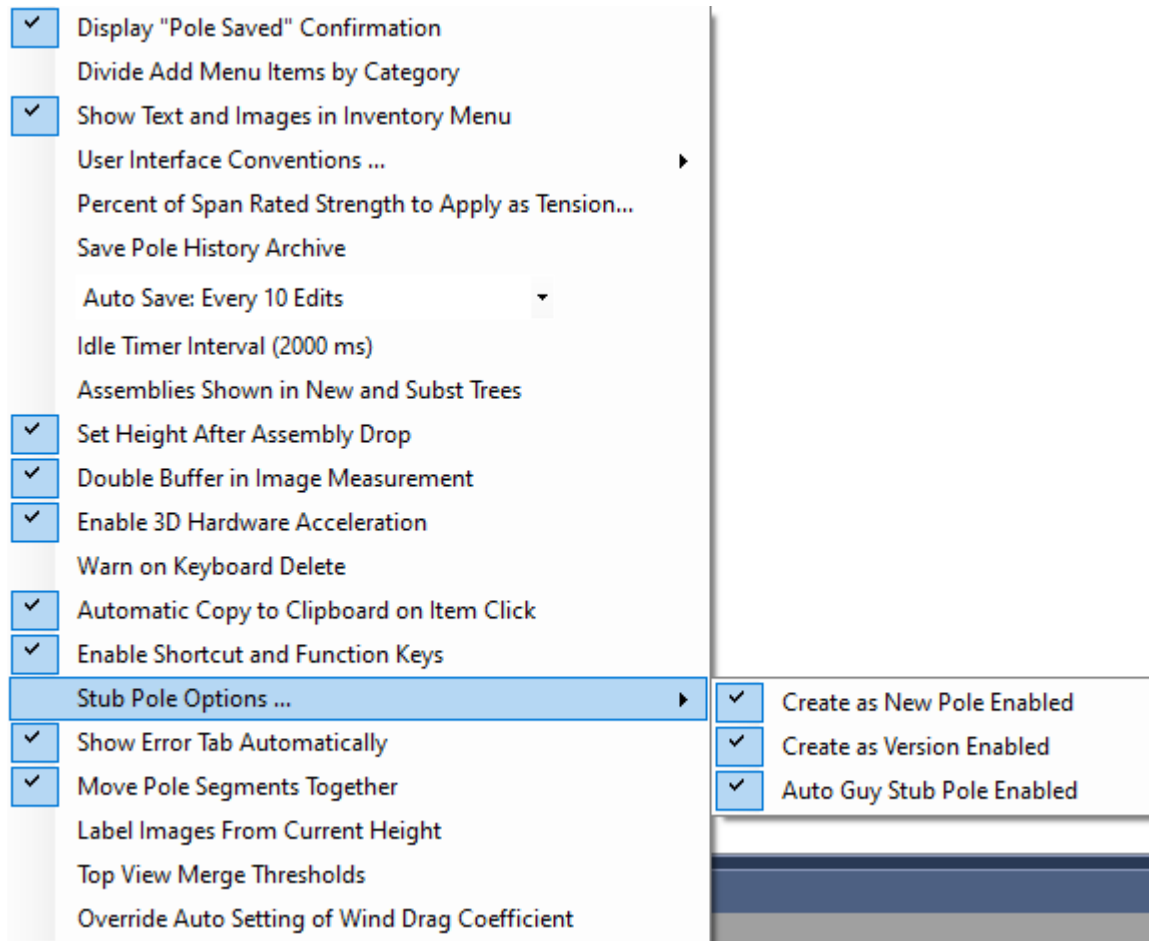
### Working with the Stub Pole Menu Options

While performing analysis on stub poles several options are automatically enabled. O-Calc ® Pro allows you to adjust which of these options you would like enabled or disabled.

**Enabling Create as New Pole for Stub Pole**

To enable/disable the right click menu options to create a new stub pole as a new pole analysis, complete the following steps:

1. To enable/disable the Create as New Pole option select **Options > Misc. Options > Stub Pole Options > Create as New Pole Enabled.**



*Note: When the Create as New Pole Enabled option is enabled a check mark will display next to the menu option. When the option is disabled the check mark is not displayed.*

*Note: At least one of the Stub Pole "Create" options needs to be enabled.*

**Enabling Create as New Version for Stub Pole**

To enable/disable the right click menu option to create a new version of the existing stub pole, complete the following steps:

1. To enable/disable the Create as Version Enabled option select **Options > Misc. Options > Stub Pole Options > Create as Version Enabled.**

*Note: At least one of the Stub Pole “Create” options needs to be enabled.*

### Enabling the Auto-Guy for Stub Pole

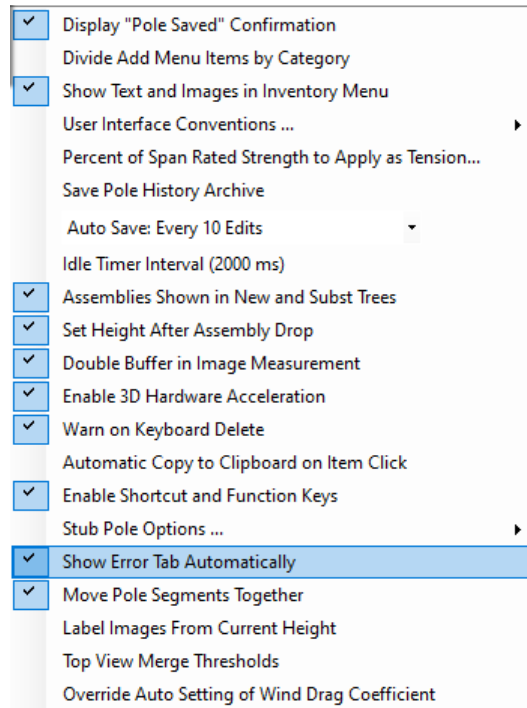
To enable/disable the right click menu option to automatically auto guy a new stub pole, complete the following steps:

1. To enable/disable the Auto Guy Stub Pole option select **Options > Misc. Options > Stub Pole Options > Auto Guy Stub Pole Enabled.**

### Automatically Display Error Tab

To display any error(s) in a separate tab, that causes the calculation engine not to complete, complete the following steps:

1. Select **Options > Misc. Options > Show Error Tab Automatically.**

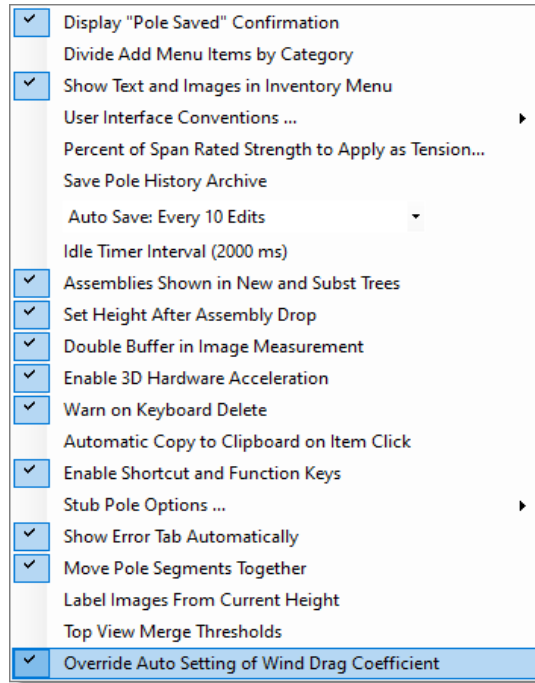


### Override Auto Setting of Wind Drag Coefficient

Override Auto Setting of Wind Drag Coefficient enables users to override wind drag coefficient values. By default, the override setting is off, and the O-Calc Pro application will automatically adjust the Wind Drag Coefficient based on the shape of the equipment to value of 1 for cylindrical objects and a value of 1.6 for cubic objects.

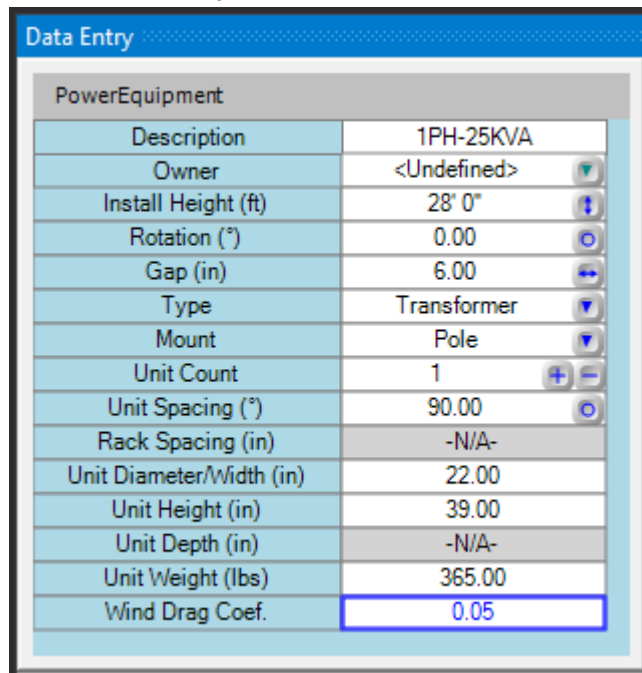
To override the default wind, drag coefficient, complete the following steps:

1. Select **Options > Misc. Options > Override Auto Setting of Wind Drag Coefficient.**



*Note: When the 'Override Auto Setting of Wind Drag Coefficient' option is enabled a check mark is displayed next to the menu option. Entering a value of zero in the Data Entry returns the option to the default mode of 'Auto'.*

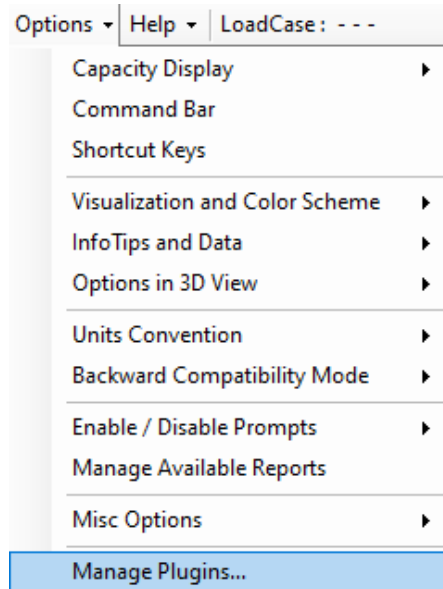
2. Select an object and in Data Entry change the Wind Drag Coef. Value to a number between 0 and 1.



## Managing Plugins

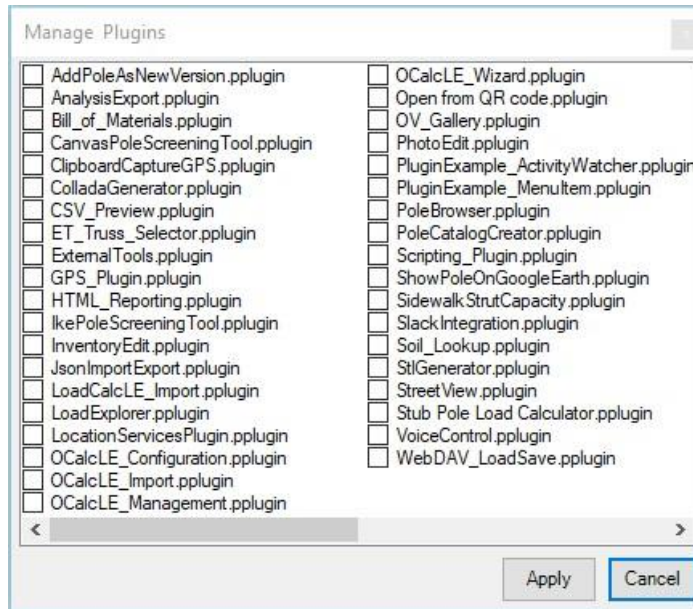
Plugins add extra features and functionality to the core of the O-Calc Pro software offerings. Plugins provide the ability to customize tasks and gather needed information. To work with available plugins, complete the following steps:

1. Select **Options > Manage Plugins**.



*Note: The available list of plugins is dependent on the customer's installation.*

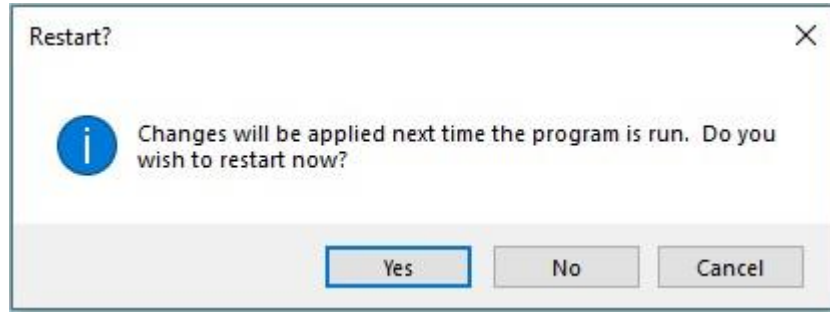
2. Select any **plugins** you would like to enable, by clicking in the corresponding box to place a check mark.



3. Click the **Apply** button.



4. Click **Yes** to the **Restart?** message.



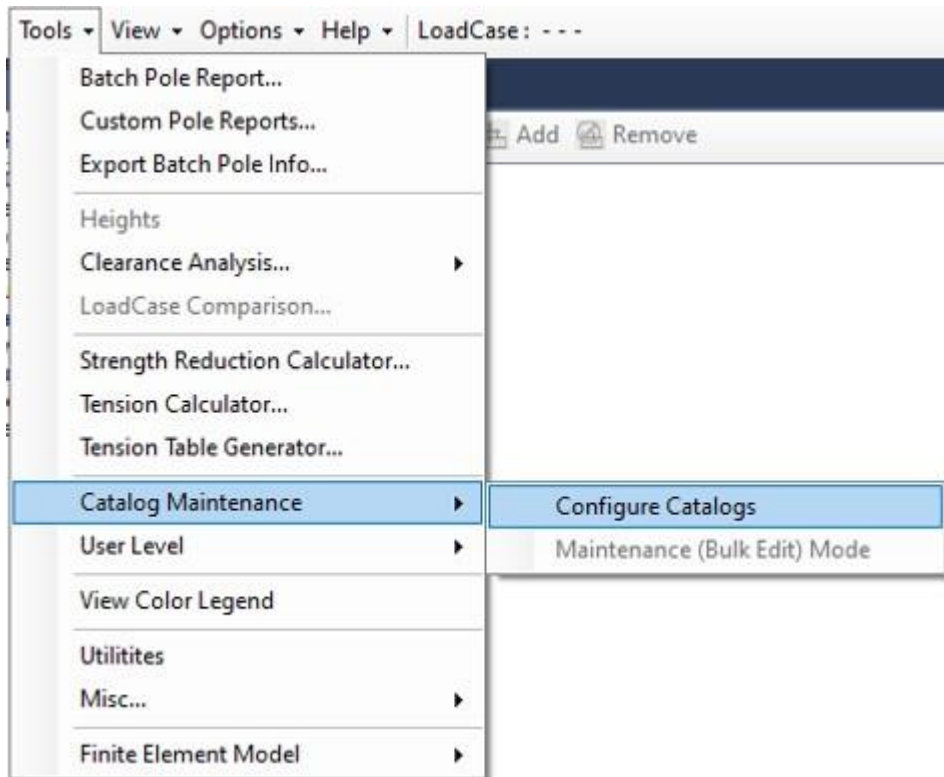
## Working with Catalog Configurations

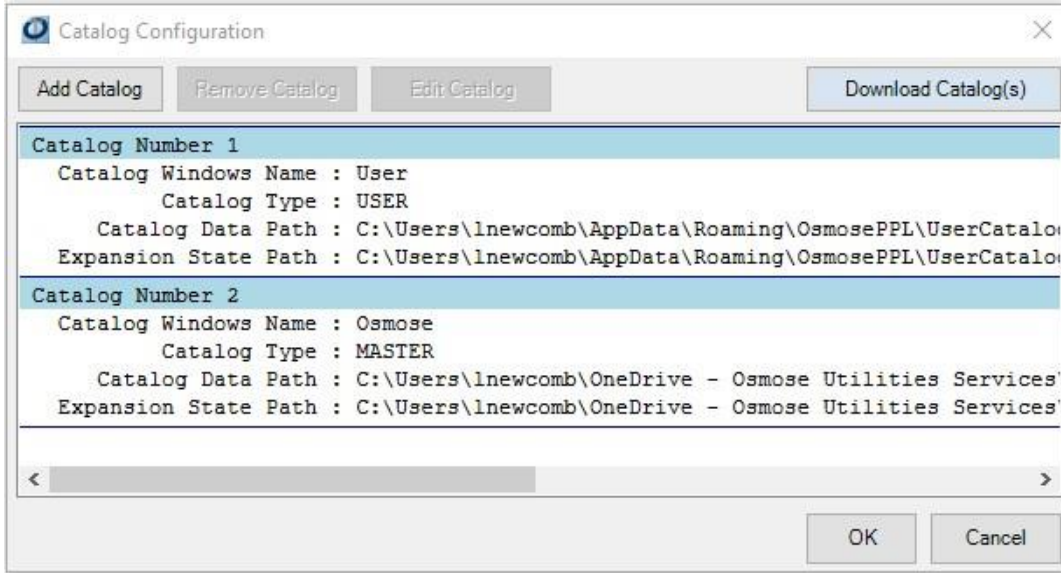
O-Calc® Pro allows the user to configure and utilize multiple Master and User Catalogs. Each catalog configuration displays independently within O-Calc Pro. The Catalog Configuration tool allows you to add, remove and edit any catalog configurations.

### Working with Catalog Configuration

To open the catalog configuration window, complete the following steps:

1. Select **Tools > Catalog Maintenance > Configure Catalogs**.



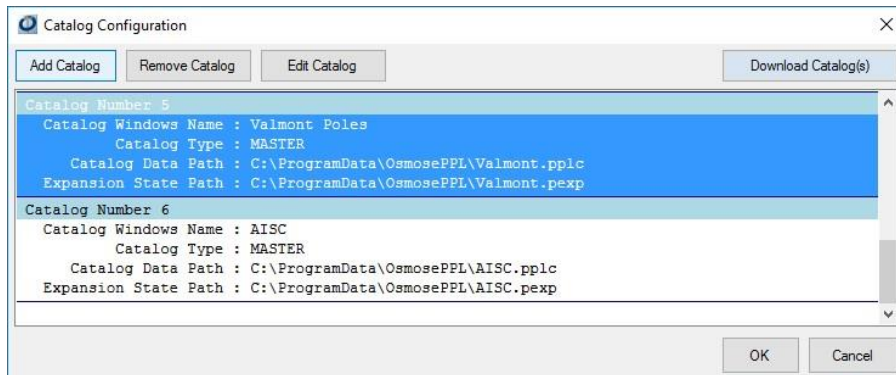
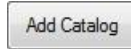


*Note: A default Master and User Catalog are provided upon installation of O-Calc Pro. Download additional Catalogs as desired. Use the Add, Remove and Edit Catalog buttons as needed.*

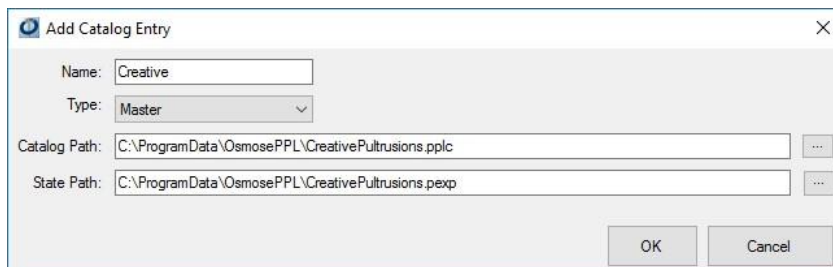
### Adding a Catalog

To add a catalog, complete the following steps:

1. Select the **Add Catalog** button



2. Enter the catalog **Name**.

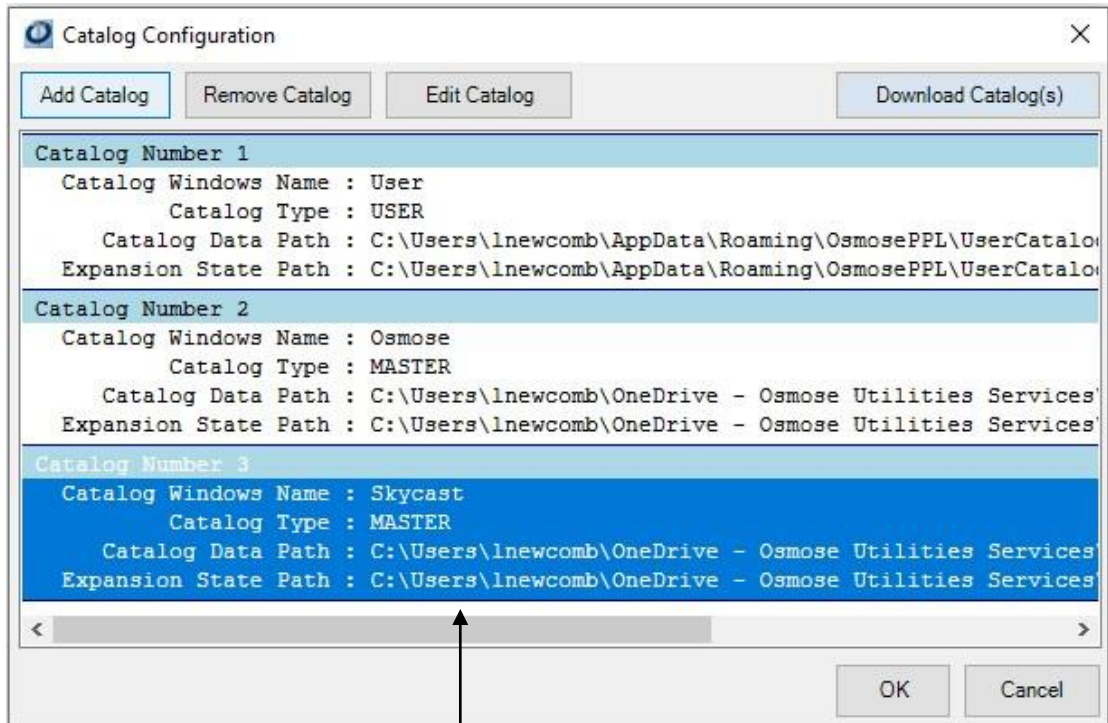


3. Select the catalog **Type** from the drop-down list.

*Note: Master Catalogs have blue folders and cannot be edited, User Catalogs have yellow folders and can be edited.*

4. Select the **Catalog Path** browse button  to browse to and select the catalog file and click the **Open** button.
5. The **State Path** is automatically populated. Or you can use the browse button  to browse to and select the catalog expansion file you would like to use and click **Open**.
6. In the Catalog Configuration window, click **OK** to close.

*Note: There is no undo for this operation.*



New Master Catalog is added.

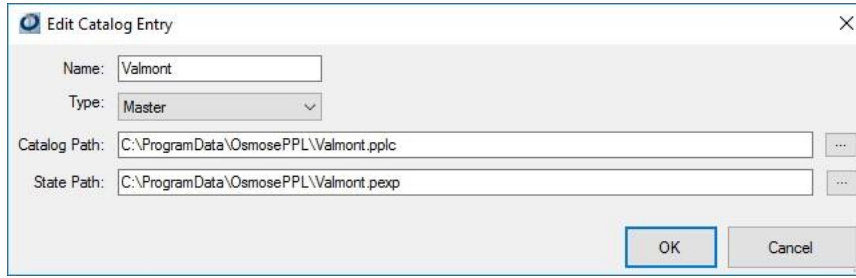
7. Click **OK** to close the Catalog Configuration window.

### Editing a Catalog

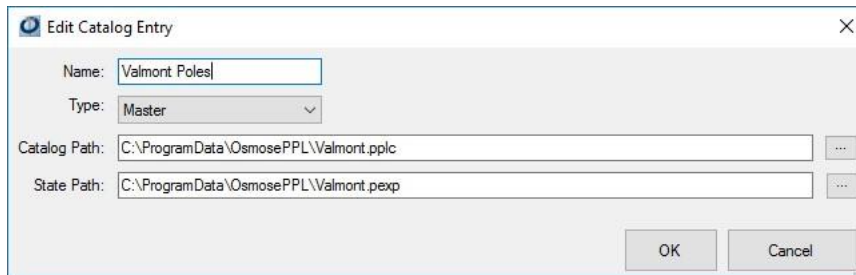
To edit a catalog configuration, complete the following steps:

1. Select **Tools > Catalog Maintenance > Configure Catalogs**.
2. Select the Catalog you would like to edit.

3. Select the **Edit Catalog** button .



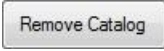
4. Complete any modifications to the catalog configuration.



5. Click **OK** to close the Add Catalog Entry window.  
*Note: There is no undo for this operation.*
6. Click **OK** to close the Catalog Configuration window.
7. Click **OK** to the **Restart Required** message.

### Removing a Catalog

To remove a catalog configuration, complete the following steps:

1. Select **Tools > Catalog Maintenance > Configure Catalogs**.
2. Select the Catalog you would like to delete.
3. Select the **Remove Catalog** button .
4. Select **Yes** to the remove confirmation message.

*Note: There is no undo for this operation. These customizations can only be restored by reverting to a previously saved backup of the Master Catalog.*

*Note: Backup versions of the Master Catalog can be obtained by selecting **Help > Folders > User Root Folder > Catalog Backup**. For additional information on restoring a backup version of the Master Catalog see [Working with Catalog Backups](#).*

### Downloading New Catalogs

To download the latest version of a catalog, complete the following steps:

1. Select **Tools > Catalog Maintenance > Configure Catalogs**.
2. In the Catalog Configuration window, select the **Download Catalog(s)** button.
3. Launches a Web Browser that navigates to <https://www.osmose.com/o-calc/catalogs>

4. Select a catalog to download – clicking on it will begin the download, close web browser when the download completes.
5. User will be prompted to choose a save location.
  - If saving in same location as older versions of a catalog, this action overwrites the older version.
6. In O-Calc, select **Tools > Catalog Maintenance > Configure Catalogs**
7. Use the **Add Catalog** button.

## Working with Sealed LoadCases

The LoadCase element contains the environmental and convention parameters required to codify such things as the standards body being used, the local wind and ice conditions, overload factors to be applied in different conditions, and to different element types, etc. Arguably the LoadCase is the most critical element in O-Calc® Pro, and the one that must be controlled and manipulated with the most care, and by the most qualified personnel. For this reason, O-Calc® Pro adds an extra layer of protection to LoadCase elements referred to as LoadCase Sealing.

O-Calc® Pro provides a set of sealed LoadCases pre-shipped in the Master Catalog that contain the correct parameters for all commonly encountered NESC and GO95 conditions, including extreme wind and extreme load. These LoadCases cannot be modified by any user regardless of their user level. They are “Sealed” against modification.

A user of “Normal” or higher level can unseal a COPY of a sealed LoadCase and make modifications to that copy. The resulting custom LoadCase can be placed in the User Catalog for future use or modification.

A user of “Administrative” level can additionally re-seal a LoadCase and place the newly sealed LoadCase back into the Master Catalog for use by any other user(s). Such a user may also re-seal a LoadCase that is located in the Catalog in an unsealed form.

The remainder of this section details the steps involved in unsealing or re-sealing LoadCases.

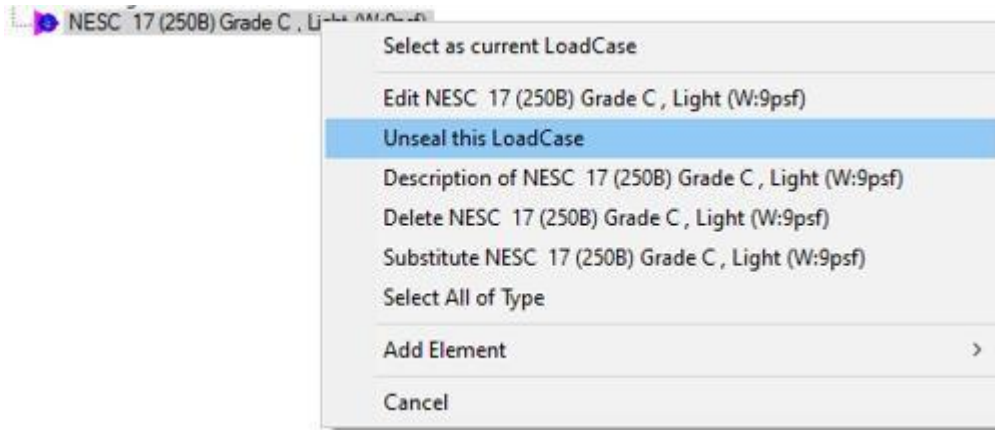
### Unsealing a LoadCase

To unseal a LoadCase in the Inventory Window for modifications, complete the following steps:

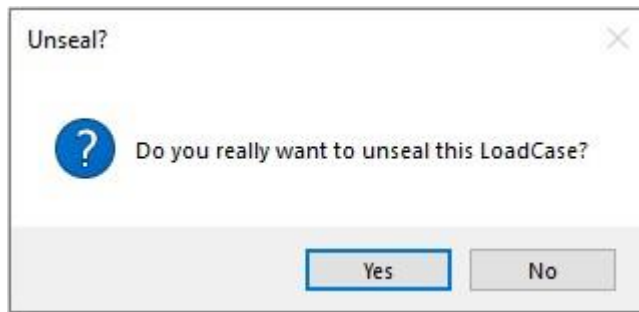
*Note: LoadCases should only be unsealed and modified with **extreme caution**. Modifying LoadCase attributes will affect O-Calc® Pro calculations.*

1. Right click on the LoadCase to be unsealed in the Inventory Window and select **Unseal this LoadCase**.

*Note: LoadCases cannot be unsealed in the Master Catalog. To add a LoadCase from the Master Catalog see [Adding Load Cases to a Pole](#).*



2. Select **Yes** to the confirmation message.



Data Entry	
LoadCase	Standard
Name	User defined LoadCase
Code	N/A
Construction Grade	N/A
Crossing Conditions	Unknown
Installation or Replacement	-N/A-
Pole Strength Factor	0.85

*Note:* To undo the unsealing of the LoadCase, select **Edit > Undo**.

3. Select **File > Save**.

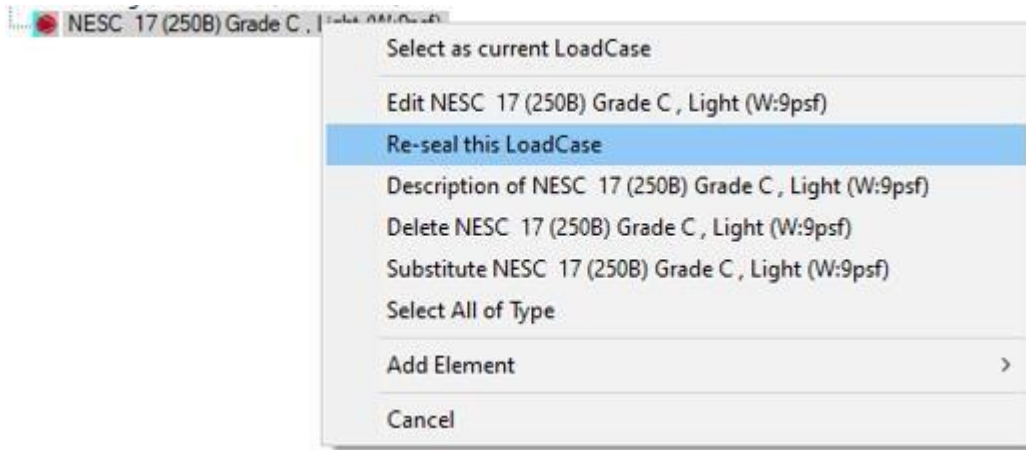
Once the LoadCase is unsealed you can modify the LoadCase attributes using the Edit option in the Inventory Window or the Data Entry. For additional information on editing attributes see [Editing Equipment Attributes](#).

If you need to use the unsealed LoadCase for future use or modifications copy the LoadCase to a specific User Catalog folder. To copy the unsealed LoadCase to a User Catalog folder left click on the LoadCase in the Inventory Window and drag it to a specific User Catalog folder.

### Re-Sealing a LoadCase

Only users with **Administrative privileges** can re-seal an unsealed LoadCase. To re-seal and prevent additional modification to the LoadCase, complete the following steps:

1. Right click on the LoadCase to be re-sealed in the Inventory Window and select **Reseal this LoadCase**.



2. Select **Yes** to the confirmation message.

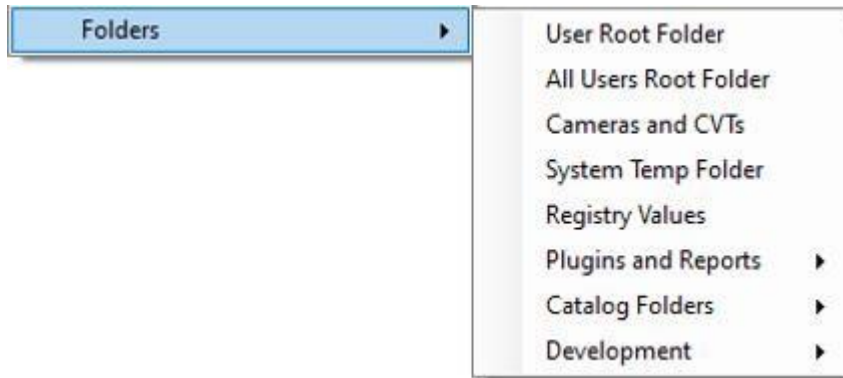
**Note:** To undo the sealing of the LoadCase, select **Edit > Undo**.

3. Select **File > Save**.

### Locating O-Calc® Pro Folders

To easily access O-Calc ® Pro user and common folders, complete the following steps:

1. Select **Help > Folders**.



2. Select the folder you need access to.

### Working with Jumper Cables

Jumper cables can be generated between two insulators on a pole, or between an insulator and a terminal point.

#### Creating a Jumper on a Double Dead-end

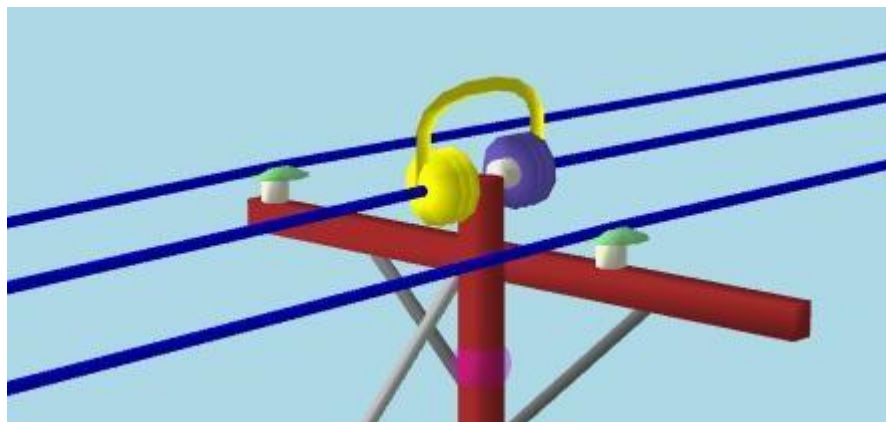
To Jumper between two dead-end insulators follow the following steps:

1. Select the first dead-end. In the data entry panel, filter the view to ‘jumper’ to see only the relevant information on jumpers
2. In the first row, called JumperID, name the jumper to be created.

Data Entry	
Insulator	Jumper
JumperID	Jumper 1
Jumper Targ ID	
Routing DX (in)	0.00
Routing Ang (°)	0.00
Routing DZ (in)	12.00

- Now select the second dead-end. This dead-end will be the target dead-end for the jumper cable
- In the second row of the data entry panel, the Jumper Targ ID, type the name of the jumper from before. You should see the jumper appear in the 3D View after entering the jumper name.

Data Entry	
Insulator	Jumper
JumperID	
Jumper Targ ID	Jumper 1
Routing DX (in)	0.00
Routing Ang (°)	0.00
Routing DZ (in)	12.00



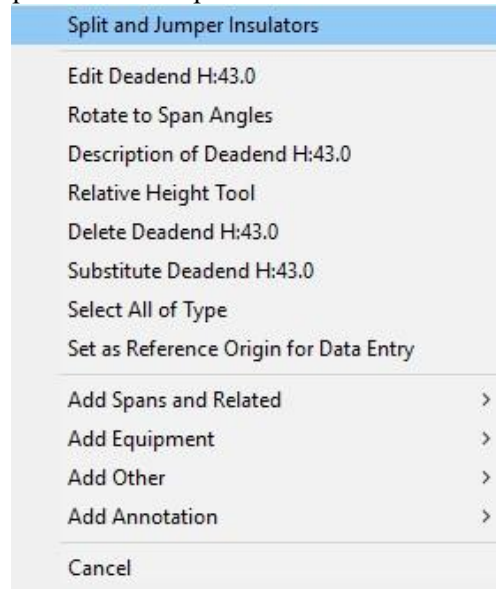
### Using the Split and Jumper Option

Instead of creating a jumper through the data entry panel as described above, the user can instead use the split and jumper method. For this tool the following conditions need to be met.

- There is only one dead-end insulator required



2. That dead-end insulator has two spans attached to it, in opposite directions To use this method, simply right click on the dead-end insulator and choose the split and jumper insulators option shown below.



## Development Information

### Retrieving Reference Information

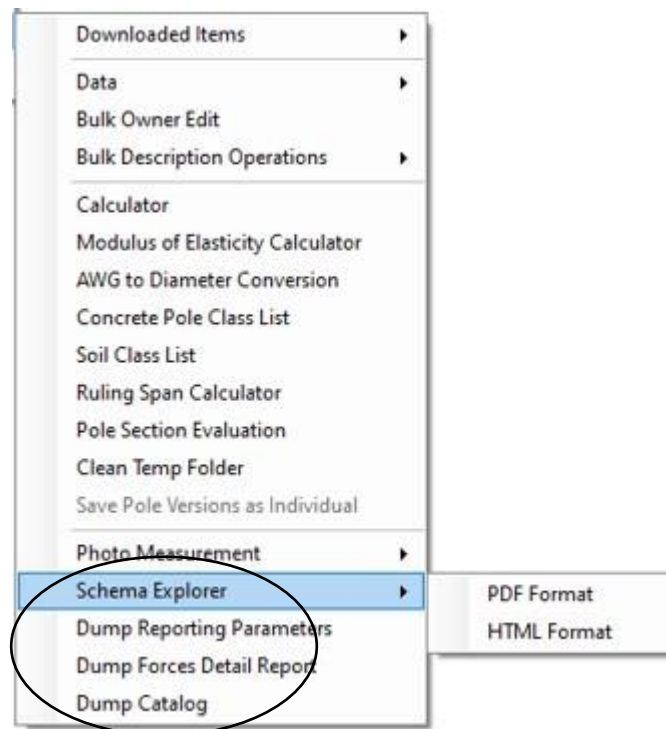
O-Calc® Pro contains a number of reports containing reference information. Catalog and schema information is provided for developers. Details of the values available to the reporting system are available for custom report authors. Raw reports of data and calculated forces are all available to assist in the understanding of pole loading. These utilities are intended for software and report architects and as such they are of limited use to general users. To access the reference information, complete the following steps:

1. Select **Tools > Misc.**

There are four reference reports available:

- Schema Explorer (PDF or HTML Format)
- Dump Reporting Parameters
- Dump Forces Detail Report

- Dump Catalog



2. Select the reference report you would like to run.

*Note:* These schemas can be enabled by setting the 'SchemaAndForces' value to try in the registry. The registry path is `HKEY_CURRENT_USER>Software>PPL>Dump`.

## Creating Custom Loading Districts

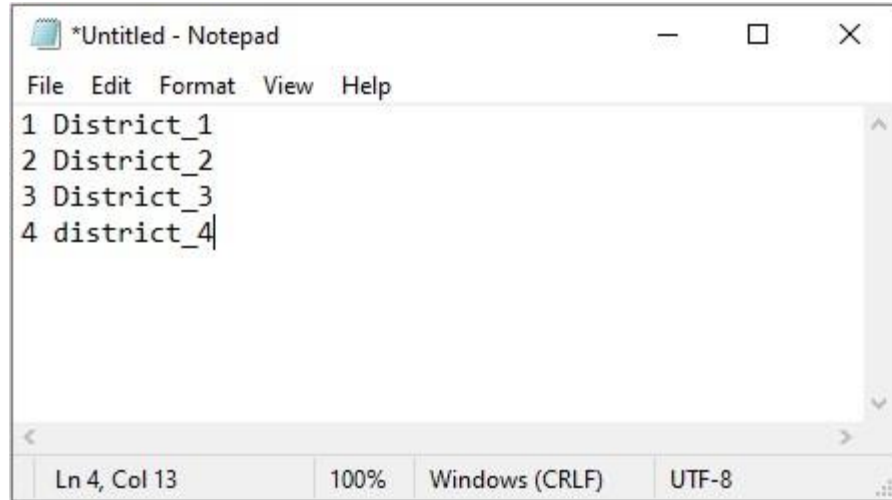
In certain situations, it may be necessary to use custom loading districts within the O-Calc® Pro application. Creating a custom loading district file will replace the O-Calc® Pro default loading district values. If you need any of the default loading district values, you will need to manually add them to your custom loading district file.

Load Cases that currently use the O-Calc® Pro default loading districts will not be overwritten when a custom loading district file is created. If you need pre-existing loading districts changed you will need to manually edit these LoadCases. A LoadCase district can only be changed in an unsealed LoadCase.

*Note:* For additional information on editing unsealed LoadCases see [Working with Sealed LoadCases](#).

To create a custom loading district file, complete the following steps:

1. Open **Notepad**.
2. Create a list within Notepad of the custom loading districts.



3. Select **File > Save**.
4. **Save in** \Documents and Settings\All Users\Application Data\OsmosePPL.

*Note: Read and write permission will be needed to the OsmosePPL directory. This directory can also be accessed by selecting Help>Folders>All Users Root Folder from within O-Calc Pro.*

5. Enter the **File name** as “*customloadingdistricts.txt*”.

	Name	Status	Date modified	Type
★ Quick access				
Desktop	Admin HR	✓	8/19/2020 12:18 PM	File folder
Documents	Camtasia	✓	9/1/2021 3:09 PM	File folder
Pictures	CatalogBackup	✓	8/19/2020 12:16 PM	File folder
OneDrive - Osmose I	Custom Office Templates	✓	8/19/2020 12:16 PM	File folder
	DPI Display Settings	✓	9/29/2021 7:35 PM	File folder

*Note: Once the customloadingdistricts.txt file has been created and saved to the correct location the O-Calc® Pro application will automatically utilize this file. O-Calc® Pro will need to be restarted for the changes to take effect.*

*To restore the default loading district values simply remove the customloadingdistricts.txt file from the OsmosePPL directory. O-Calc® Pro will need to be restarted for the changes to take effect.*

### Working with Catalog Backups

Each time changes are made to a catalog a backup of the catalog is automatically created when the current session is closed. O-Calc® Pro retains up to 10 backups of each catalogs, automatically deleting the oldest as new ones are created. By retaining a backup of each time, the catalog(s) are changed by session it allows you to revert to a previous catalog in case a change was done in error.

Backups of the catalogs are easily accessible from within the O-Calc® Pro application. The backups are located in a **CatalogBackup** folder wherever catalog files are located.

Some of your catalog backup files can quickly be located using the links under the **Help > Folders > User Root Folder**.

Each catalog backup file provides the date and time that the backup file was created right in the file name.

(Catalog Name).pplc.02\_12\_2016\_08\_03\_18.Backup

Catalog Name
Date
Time

To revert to a previous version of a catalog, complete the following steps:

*Note: The steps below are for reverting to a previous catalog.*

1. Open the **catalog folder** that has the catalog that you need to revert.
2. Open the **CatalogBackup** folder.
3. Select and **copy the backup file** you need to revert to.
4. Edit (open) the **Catalog Data Path** that your current catalog resides in (the one you want to replace).

*Note: The Catalog's Data Path is located in the Catalog Configuration window. The Catalog Configuration window can be accessed by opening **Tools>Catalog Maintenance>Configure Catalogs**.*

5. **Rename** the catalog that resides in this folder.
6. **Copy** the Catalog Backup file you copied in step 4.
7. **Edit** the catalog's name by removing the Date, Time and the word Backup.
8. O-Calc® Pro application will need to be **closed and reopened** before the change will take effect.

### Catalog Maintenance Mode

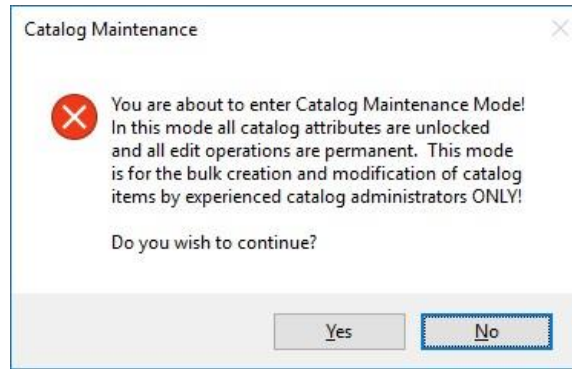
O-Calc® Pro provides a Catalog Maintenance Mode that enables administrators to complete modifications within a catalog. The Catalog Maintenance Mode allows anyone with administrative privileges to have full editing capabilities to all catalogs. All attributes included attributes that are normally un-editable can be edited in this mode. This mode should only be accessed by the most qualified personnel as all changes are permanent once they are saved. When the Catalog Maintenance Mode is activated, only modifications within the Catalog Window are permitted. All options within O-Calc® Pro that do not pertain to the Catalog Window are disabled until you have exited the Catalog Maintenance Mode.

To use the Catalog Maintenance Mode, complete the following steps:

*Note: Only a person with **Administrative privileges** can access the Catalog Maintenance Mode.*

1. Close any pole that is opened in the Inventory Window **File > Close Pole**.
2. Select **Tools > Catalog Maintenance > Maintenance (Bulk Edit) Mode**.

*Note: When the Maintenance Mode is enabled a check mark will display next to the menu option.*



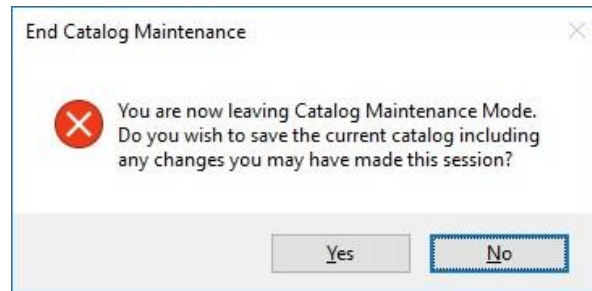
3. Select **Yes** to continue in Catalog Maintenance Mode.

*Note: The Status Bar will turn yellow and clearly indicate that the Catalog Maintenance Mode is active.*

4. Complete your modifications to the catalogs.

*Note: There is no undo option available.*

5. Deselect the **Tools > Catalog Maintenance > Maintenance Mode** option.



6. Select **Yes** to save your changes.

## Appendix D – 3D Navigation Enhancements

### Using the Default and Alternate Control Scheme

Previous 3D View Controls included in our older versions of O-Calc Pro, restricted the camera to a cylindrical orbit 20,000 inches away from the centerline of the pole. Traditionally, the camera could move to a point on that cylinder only, and zooming was accomplished by changing the camera's field of view. Panning was only possible along a vertical axis. But depending on field of vision (FOV) this made the ability to visualize other locations, i.e. adjacent poles, limited and hard to understand.

In the 7.0.1 version of O-Calc Pro we have added 2 new control sets; Default and Alternate, which should make 3D navigation much more intuitive for users.

To accompany these new control sets new filters and a Camera Look Point icon as been added in the form of a pink ball at the center of the 3D View window.

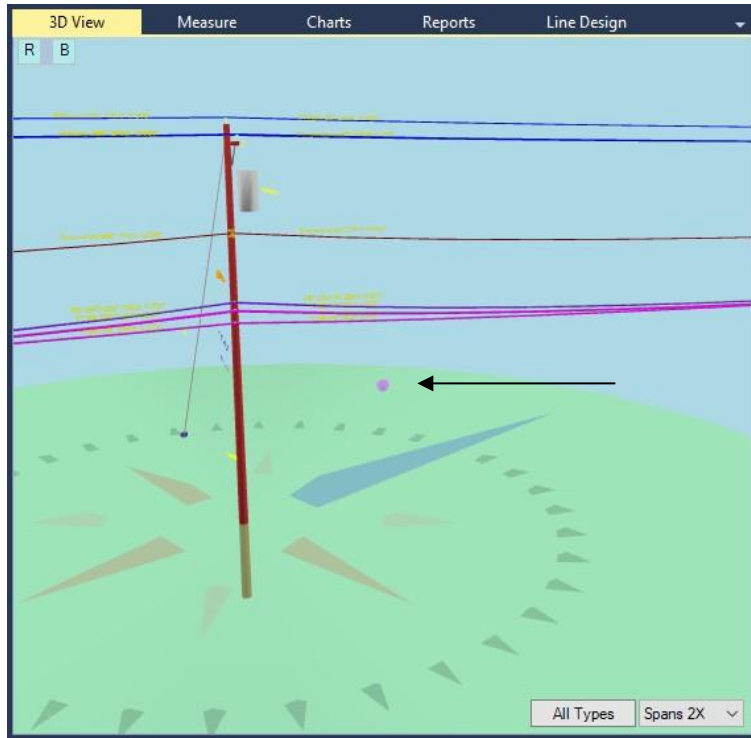
## Camera Look Point

The pink "ball" icon represents the camera "look point". The ball icon is displayed in the center of the 3D View.

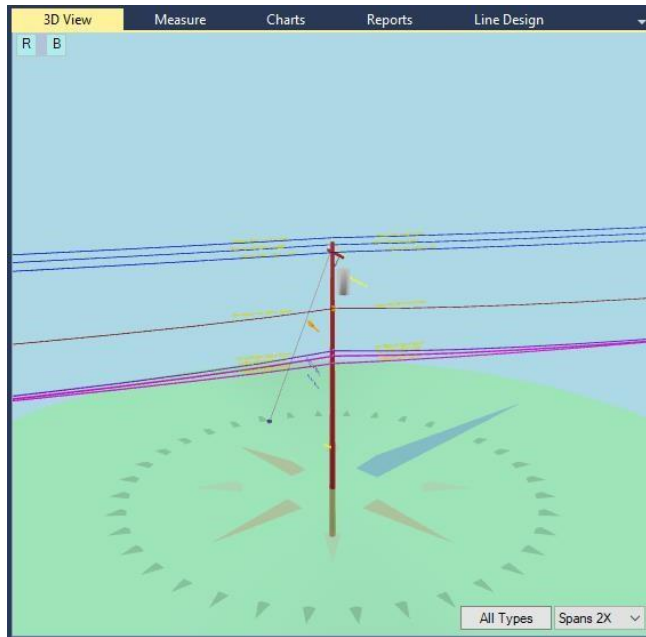
- To locate the **Camera Look Point** (hidden from view behind the pole) right click in the 3D View and drag left or right to reveal the ball icon.



- To orbit around the **Camera Look Point**, right click your mouse and drag the 3D View in a circular motion, around the Camera Look Point.



- To return the pole to the center of the 3D View, click the **R** (Reset) button.

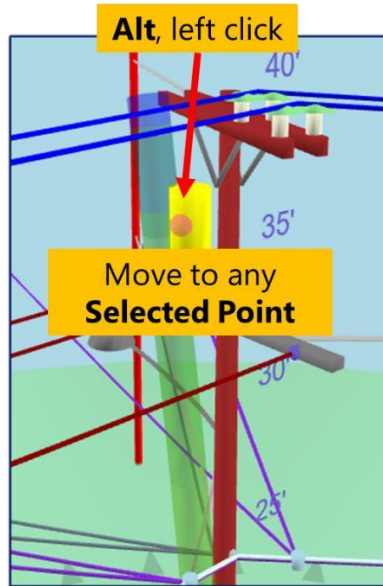


*Note: When hovering the mouse over the camera look point and zooming in, the camera look point ball becomes enlarged. Simply hit the “R” to restore the ball icon to its original size.*

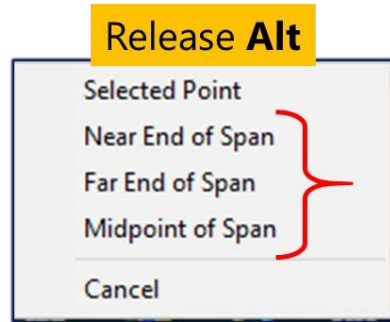
### Alt Key Controls

The use of additional key controls allows users greater range of motion capabilities within the 3D View. To try the movement actions, follow these steps:

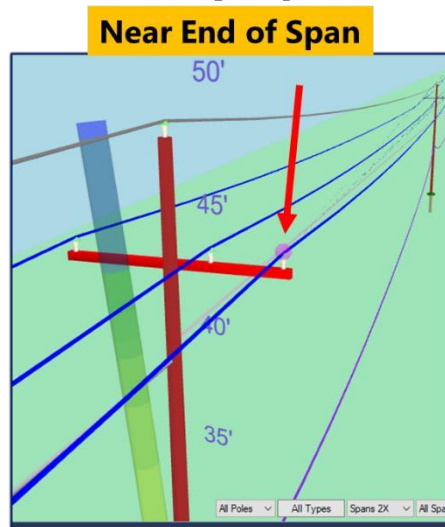
1. Hold the **Alt** key and left click mouse on any object to move to that selected point.



2. Release the **Alt** key to view the additional move options.



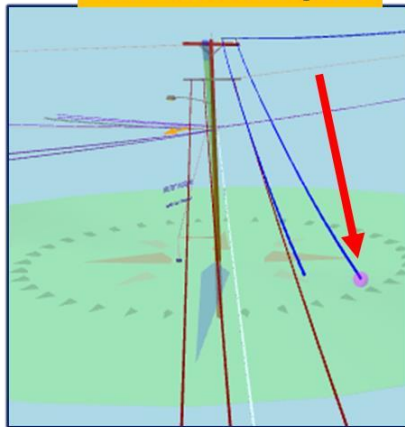
3. Select the **Near End of Span** option.



4. Select the **Far End of Span** option.

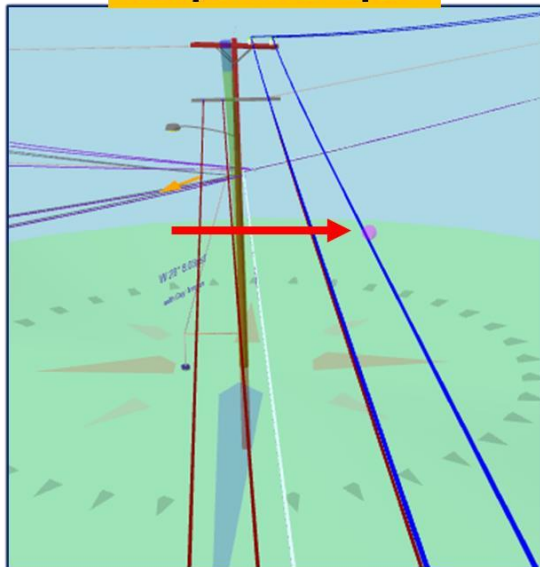


### Far End of Span



5. Select the **Midpoint of Span** option.

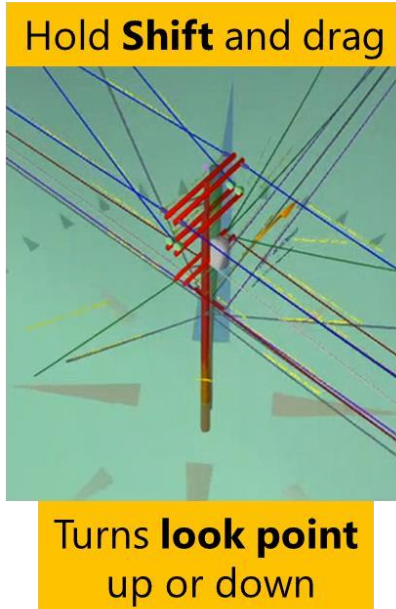
### Midpoint of Span



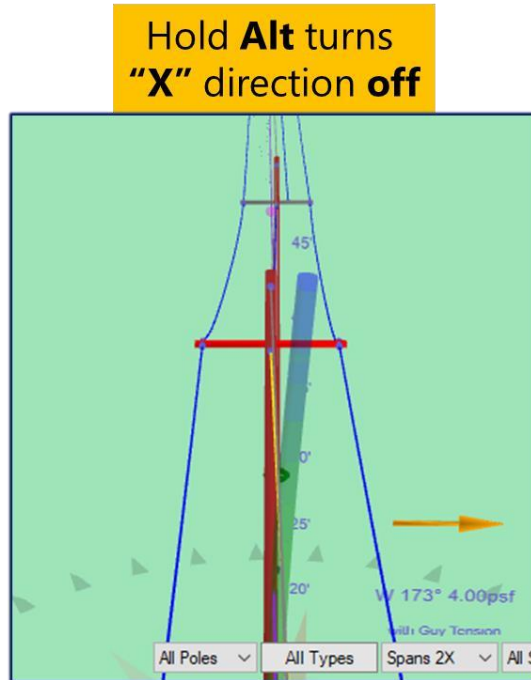
## Alt and Shift Key Controls

By using a left click you can move the camera, a right click action moves the camera look point. To try the movement actions, follow these steps:

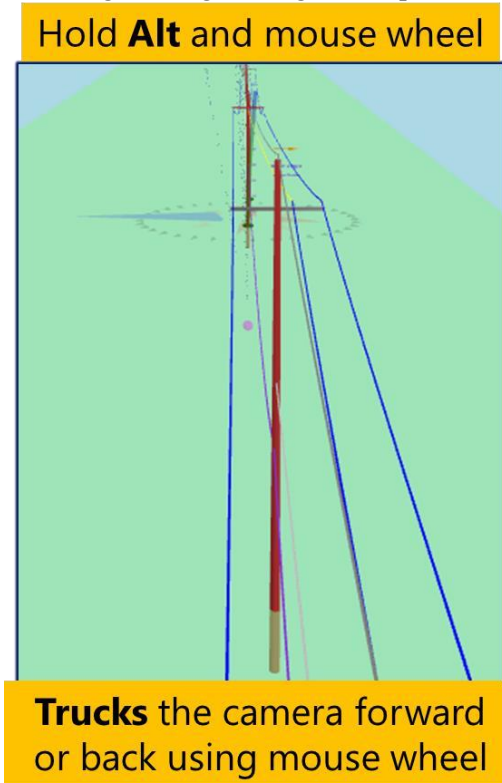
1. Hold the **Shift** key and drag the cursor to turn the look point up or down.



2. Hold the **Alt** key turns the “X” direction off.



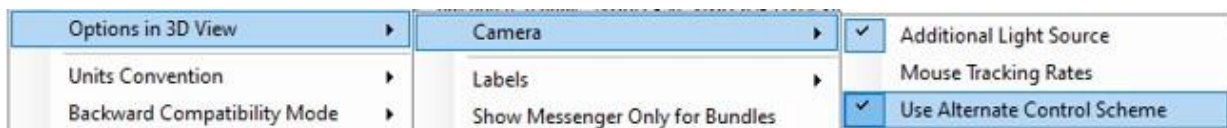
3. Hold the **Alt** and **mouse wheel** causing a “trucking” motion which brings the camera forward or backward. This motion is especially useful when navigating in Line Design through a long line of poles.



### Alternate Control Scheme

The Alternate Control Scheme was developed to make navigating in Line Design to multiple poles easier for users. These controls are based on 3D Modeling Industry standards. The controls are divided into two sets; the Default Control set and Alternate Control set. To activate the Use Alternate Control Scheme option, follow these steps:

1. From the Options menu, select Camera, and click the **Use Alternate Control Scheme** option.



*Note: Deselect (uncheck) the **Use Alternate Control Scheme** option to return to the Default Control set of controls.*

### Default Control Set

Press the **left** mouse button and drag in the following directions:

Mouse Direction	Resulting Effect in 3D View
Left or Right	Movement turns the camera look point around in cylindrical rotation
Up or Down	Moves the camera AND look point up or down equally
Holding "Alt" key down	Left and Right movement does nothing Up Down movement works as expected
Holding "Shift" key down	Left and Right movement works as expected Up and Down moves ONLY the camera (tilt)
Holding "Shift" and "Alt" keys down simultaneously	Move the mouse to cause a rocking motion in 360 degrees

Press the **right** mouse button and drag in the following directions:

Mouse Direction	Resulting Effect in 3D View
Left or Right	Orbits the camera look point around the camera (pan)
Up or Down	Moves the camera AND look point up or down equally
Holding "Alt" key down	Left and Right movement does nothing Up Down movement works as expected
Holding "Shift" key down	Left and Right movement works as expected Up and Down moves ONLY the look point (reverse tilt)
Holding "Shift" and "Alt" keys down simultaneously	Move the mouse to cause a forward and backward motion in 360 degrees

Press the **mouse wheel** button and drag in the following directions:

Mouse Direction	Resulting Effect in 3D View
Forward	Moves the camera towards the look point (zoom in)
Backward	Moves the camera away from the look point (zoom out)

Holding "Alt" key down	Forward - moves camera AND look point in look directions (dolly)
	Backward – moves camera AND look point away from look direction (reverse dolly)
Left Click	Moves up, down, left, right, orbits around 360 degrees
Left click and Alt key	Moves look point to element clicked (if any)
Right Click	Moves up, down, left, right, orbits around 360 degrees

### Alternate Control Set

Although the alternate control set is based on current 3D modeling standards, it was a significant deviation from traditional O-Calc Pro controls, therefore it was decided against being the default control set.

Press the **left** mouse button and drag in the following directions:

Modifier Keys	Resulting Effect in 3D View
None	X = Orbits Camera around the Look Point Y = Raises and Lowers the Camera Look Point
Alt Key	X = Orbits Camera around Look Point Y = Raises and Lowers Camera only but NOT Look Point
Shift Key	X = Orbits Look Point around Camera Y = Raises and Lowers Camera only but NOT Look Point
Holding "Shift" and "Alt" keys down simultaneously	X = Orbits Camera around Look Point Y = Raises and Lowers Look Point but NOT Camera

Press the **right** mouse button and drag in the following directions:

Modifier Keys	Resulting Effect in 3D View
None	X = Moves Camera and Look Point Perpendicular to Look Direction Y = Moves Camera and Look Point Parallel to Look Direction

Shift Key	X = No action Y = Moves Camera Towards or Away from Look Point (Zoom)
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Press the **mouse wheel** button and **key** below to drag in the following directions:

Modifier Keys	Resulting Effect in 3D View
None	Moves Camera Towards or Away form Look Point (Zoom)
Shift Key	Raises and Lowers Camera and Look Point
Alt Key	Raises and Lowers Look Point but NOT Camera
Shift and Alt Key	Raises and Lowers camera only but NOT Look Point