

2015 PLS-CADD Advanced Training and User Group Meeting

What's New in PLS-POLE™

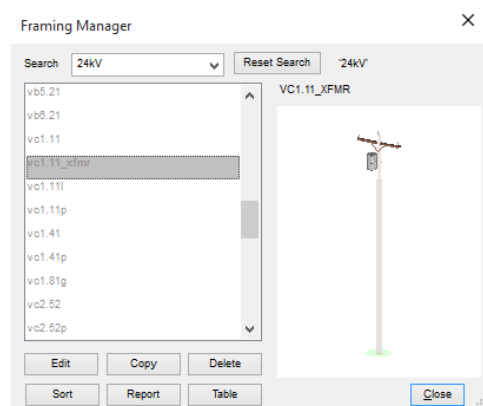
Summary of changes since July 2013 User Group, covers versions 12.50-13.31

Framing

The Framing Manager bundles together structure elements and insulators into reusable components. These components are stored in a new Framing Library (.frm file) which you manage with **Components/Framing Manager**. The location of the Framing Library is defined in **File/Preferences**. Framings must attach to at least one pole, but may attach to any number of poles (H-frames work). A Framing may be developed from any pole material and applied to a pole of any (not necessarily the same) material.

1) Watch the Framing video available at: <http://youtu.be/0kpdTICiCwQ>

2) Any existing .pol file may be turned into a Framing simply by dragging it from Windows Explorer and dropping it on the Framing Manager. Everything in the .pol file except the pole elements will be turned into a Framing assembly. You may also use **Components/Framing/Add Current Model..** to add the model that is currently open to the framing library or **Components/Framing/Import Other Models..** to multi-select a list of .pol files to add to the framing library.



3) The Framing Manager has buttons that enable you to Edit, Copy, Delete or Report on the Framing selected in the manager. The Table button takes you to a table where you change the stock number, notes, keywords and insertion distance for all framings at once.

4) Framings may be added to a model using **Geometry/Framing/Add**, the Graphical Add toolbar button or by dragging and dropping them from the Framing Manager into the model. We recommend drag and drop from the Framing Manager.

5) Framings may have an azimuth specified which rotates all entities in the framing around the pole. If a Framing with pinned crossarms is rotated by 90 degrees, the program automatically updates the pinned connection codes. Use **Geometry/Framing/Edit...** to enter an azimuth angle.

Engineering

- 1) Made changes to the McFarland Cascade laminated wood pole strength check. Contact McFarland Cascade or read the PLS-POLE manual for details.
- 2) Decreased the minimum ambient temperature that can be used with FRP poles to -60C from -20C at the direction of RS.
- 3) No longer apply wind load to embedded portions of pole that have been modeled (i.e. when have fixity as % of buried length > 0).
- 4) 222-G calculation of round steel pole component of usage due to moments now uses F_y instead of F_y' (F_y' is equal to F_y for small d/t , but F_y is larger as d/t increases) as per 222-G section 4.7.2. The previous behavior was conservative.
- 5) Automated the provisions of ASCE 48-11 section 6.4.2 for base plates: Whenever the load on a plate is less than one half of the moment capacity at the base of the pole the magnitude of the load (M_x and M_y) is increased to this value while maintaining the load direction. This only effects base plates that are very lightly loaded, but when it does happen we print a note in the "Base Plate Results by Bend Line" output and multiply the number of bolts acting on the line by -1 to emphasize that something unexpected has happened.
- 6) Improved the steel shaft optimizer to better handle the case where a tube length adjustment for auto-overlap changes the pole length by an amount greater than last tube length.
- 7) Steel pole shaft optimizer did not always try to fix w/t problems by reducing diameter in addition to increasing thickness so it would not always find the optimum solution when had a shaft limited by w/t. Now it does.
- 8) Added "Pinned Face" and "Fixed Face" connection code options for crossarms. In addition to automatically offsetting to the face of a pole, Pinned Face works for any azimuth so you no longer need to choose between "Pinned X" or "Pinned Y".

Standards and Codes

- 1) Implemented Russian SNiP (SP 16.13330.2011) wind/ice loading method.
- 2) Added support for AS/NZS 7000 Terrain Categories 1.5, 2.5 and 3.5.
- 3) Implemented ISEC-NCR-83 wind/ice loading method which automates the calculation of the drag coefficient

(Ct), wind increase with height (M1') and terrain factor (M2).

Interface

- 1) **PLS-POLE** now has an Entity Info mode similar to the one in PLS-CADD. By default it will snap to joints and members. Left click for context menu items and to access Entity Info Settings. Some of the options available for the selected item when using Entity Info include: edit, info, move, min distance, delete, etc.
- 2) Can now undo all operations performed since the last save and redo any undone operations. Previously limited to undoing or redoing just the last operation.
- 3) Table pop up menu now has a **Copy & Fill Column** menu item to provide quicker method of filling entire column with a single value.
- 4) Combo boxes now support Ctrl-C, Ctrl-V and Shift-Ins, Ctrl-Ins to copy or paste an item.
- 5) Enhanced preservation of member/joint cut status in the undeformed geometry view so it is maintained even if the number of joints and/or members changes.
- 6) Now close all reports when you close the project. This is consistent with **PLS-CADD** and avoids possible problems with independent report windows.
- 7) Pressing 'c' in joint or member info now copies the currently selected joint or member label to the clipboard.
- 8) Added a "Unit System indicator" to the status bar (Imperial abbreviated as "US" and Metric as "SI").
- 9) Graphical Add Insulator enhanced to allow input of set description for the first phase and indicate if a clamp is a dead end.
- 10) Revised **View/Find/Member** so hilite in orange using concentric circles. Used orange so that hiliting isn't lost when in Member or Joint info modes. To unhilite, run the Find command a 2nd time and cancel.
- 11) Status bar font size can now be specified in **File/Preferences** *Font size for status bar text* and the status bar automatically grows to multiple lines of text if needed to fit displayed text. Earlier versions tried to make the text fit by decreasing the font size which could result in a font size that was difficult to read or clipped text.
- 12) Multiple monitor support improved through right click menu **Detach Window** function that allows reports and graphics windows to be dragged to other monitors.

- 13) Can now drag report/view windows to the edge of the main program window in order to automatically resize them to fill either half the screen, or the whole screen. Drag to the left edge and release to fill the left half of the window, drag to the right to fill the right half of the window, or drag to the top to maximize. Can now also resize report/view windows towards the top or bottom of the main program window to automatically resize to fill the full vertical space of the main program window. During these operations, a preview rectangle is displayed to show the resulting resize operation before it occurs.
- 14) Reuse of dialog box position and sizes from previous session can be defeated through **F1/Debugging Stuff/Reset dialog box positions and sizes....** Resetting dialog box positions and sizes to their default values can be helpful after changing the number of monitors on a computer. While the program attempts to adjust dialog positions to keep them visible on screen there are multiple monitor scenarios where it can't tell additional monitors have been removed (typically involves docking stations).
- 15) Added IxRect, IzRect, SxRect, SzRect, IRnd, SRnd, IPipe, SPipe functions to the built in calculator for calculating moment of inertia and section modulus for those shapes.
- 16) **Components/Cross Arms** geometry subtable now has inputs for horizontal and vertical bolt hole diameter. When input the program will reduce the section modulus and cross section area for beam elements adjacent to the hole.
- 17) May now specify bolt holes when creating joints in **Geometry/Wood Poles**.
- 18) May now drag pictures inset in many dialogs to our reports and to other programs (Word, paint programs, etc.).
- 19) Added a Voltage input in **General/General Data**. Input the highest voltage wire the structure is designed to support. Future versions will make use of this for searching and sorting structures. **File/Batch Modify** may be used to populate voltage for many structures at once.
- 20) The "Point load placed on non-existent joint" error now has an option to remove the LCA/LIC file reference to fix the problem.
- 21) The **Geometry/Insulators/Optional Attachment Restriction** table now allows suspension tip joints to be selected since can chain strain insulators off of them.
- 22) Graphical move of a cross arm improved so it now moves both ends of any braces attached to the cross arm.

23) Many more minor user interface refinements too numerous to list here.

Drafting

Added a Sheets view and a Drafting menu with functionality similar to **PLS-CADD**'s. You may define a set of sheets (title, note, drawing and appendix pages) upon which you can draw using annotation and send schema output from reports to these pages. An example drawing created with these tools can be seen at http://www.powline.com/files/pls_pole/StructureDrafting_vc1.pdf

- 1) Moved the Attachments and Annotation sub-menus from General to the new Drafting menu.
- 2) The Attachment Manager now allows reordering of attachments by right clicking on one to drag and drop it to the desired position.
- 3) The Attachment Manager now has an "Open" button that opens any selected attachments using Windows Explorer.
- 4) Default drafting sheets are created for old structure projects and any new project. These default sheets can be fully replaced or customized.
- 5) **Drafting/Page Size...** specifies the size of all sheet pages.
- 6) **Drafting/Number of Sheet Pages...** specifies the starting page number and how many pages there are for each type of sheet: title, notes, drawing, and appendix.
- 7) **Drafting/Import Drafting Settings...** allows you to import drafting related settings from another project for sheet page configuration, attachments, annotations, structure views, and/or report views. These imported settings can either be added to or replace the current project's drafting settings.
- 8) With **Drafting/Text Size, Line Width, Style, Color and Layer...** you can adjust the default appearance of many drafting elements including annotation text size and line thickness and color, inset report view text size and color (also line thickness and color), sheet border thickness and color, and the border style and label sizes of inset structure views.
- 9) The **Drafting/Annotation (User Input)** commands all apply now to both annotations for the model view and for annotations on drafting sheets.

- 10) When using either **Drafting/Annotation (User Input)/Move Point or Text...** or **Drafting/Annotation (User Input)/Move Line or Polygon...** you can now hold down the CTRL key to restrict movement to the horizontal or vertical plane.
- 11) **Drafting/Annotation (User Input)/Add/Section Bubble...** is a new annotation type which consists of a line with an attached two line label contained by a circle which can be used to document section cuts or regions of the structure in an inset structure view.
- 12) **Drafting/Annotation (User Input)/Add/Arc..** is a new annotation type for a section of a circle defined by three points.
- 13) **Drafting/Annotation (User Input)/Add/Ellipse/Circle...** is a new annotation type for drawing ellipses. Hold down the CTRL key when drawing an ellipse to force it to draw a circle.
- 14) **Drafting/Annotation (User Input)/Add/Dimension Angle...** is a new annotation type which draws an arc and labels that arc with the angle it defines. Hold down the CTRL key when drawing the angle to force horizontal/vertical angles.
- 15) **Drafting/Annotation (User Input)/Add/Dimension Snap...** has been enhanced to replace the offset dialog with graphical controls which allow you to select if you want the dimension to snap to a horizontal or vertical axis, how much of an offset to use, and whether you want lead lines from the joints measured to the dimension arrow points.
- 16) The new annotation types and **Dimension Snap** have been added to the annotation toolbar.
- 17) **Drafting/Inset Views/Add Inset Structure View** creates a view of the structure on one of the drafting sheets. The view can be of either all or part of the structure depending on the selected scale and can be from one of several possible orientations including the plan view, longitudinal view, transverse view, isometric view, or a custom view copied from the current model window.
- 18) Added several new options for customizing Inset Structure Views including a title and border for the view, the style of structure drawing including coloring, and optional labels for joints and members.
- 19) **Add as Annotation to Inset View** command in the context menu for any report will create an Inset Report View on a sheet page with all the contents of that report as appropriately sized annotation elements.
- 20) If you re-run a report that you've created an Inset Report View from, it will automatically update the contents

of the view with the latest report results. You can also lock an Inset Report View to prevent the auto update (or any other automatic changes that may result in the loss of manual customizations).

- 21) From any table in the program you can use the **Add as Annotation to Inset View** command in the context menu to create an Inset Report View on a sheet page. This report view can contain the entire table, or just the selected cells.
- 22) **Drafting/Inset Views/Split Inset Report View** will divide any Report Inset View into multiple separate Report Inset Views which can then be moved or resized separately to display long or detailed reports more clearly or across multiple pages. The contents are divided between the newly created inset views. All created views remember the report they came from and can update appropriately if not locked.
- 23) There are **Move**, **Resize**, or **Delete** commands for any inset view. When moving and resizing, you can snap an inset view edge to an adjacent inset view.
- 24) If any inset views overlap, you can use the **Bring to Front** and **Send to Back** commands to determine which views are drawn on top. Any inset view can be set to have a transparent background so it won't completely obscure what is underneath it.
- 25) For Structure Inset Views, the **Drafting/Inset Views/Autoscale Inset View** command will automatically adjust that view's center point, scale, and clip dimensions to fully display the current contents of the model view inside that inset view.
- 26) For Report Inset Views, the **Drafting/Inset Views/Autoscale Inset View** command will automatically adjust the text size, row height, and column width to fit the report contents in the current inset view area. You can hold down the CTRL key to select multiple report inset views for this command. If you do, then the text size and row height will be the same across all selected views and the rows for the different inset views will line up properly. Note: Autoscaling a Report Inset View will revert any manual customizations made to the annotations within the Report Inset View since it was last generated or auto-updated.
- 27) **Drafting/Add Orientation to Structure View...** will add a VTL diagram annotation labeling the Vertical, Transverse, and Longitudinal axes of the selected Structure Inset View or the model view.
- 28) If this structure has an LCA vector load file associated with it, **Drafting/Add Loading Tree Report...** will create, on the specified sheet, a Loading Tree Report Inset View along with an Isometric Structure Inset View with a VTL diagram and the attachments labeled. The report contains the vertical, transverse, and longitudinal loads for each attachment point for each load case.

- 29) **Drafting/Add Material List Report...** will create a Report Inset View containing the stock number, description, and quantity of each type of material associated with this structure.

Reports

- 1) Added the "Report Navigator" toolbar which allows you to quickly Goto, Table View, XML Export and Add As Annotation the various tables in a report.
- 2) Report windows can now be freed from the main application window by selecting "Detach Window" in the report right click menu (allows report to be displayed on different monitor). An "Attach Window to Application" menu is also provided to undo this. A video demonstrating this feature is available on our Web site. Similar "detach" capability for graphics views is available. This behavior is controlled by a new tristate setting in **File/Preferences: Open reports in separate free-floating windows** which defaults to "Never" (the previous behavior). Select *With Multiple Monitors* or *Always* to benefit from this work. We strongly recommend this for clients with more than one monitor.
- 3) Reports now support keystrokes Ctrl + (Control and plus key) and Ctrl - (Control and minus key) to jump to the next and previous schemas (results) in a report. Also available via **Edit/Next Result** and **Edit/Previous Result**.
- 4) Hovering mouse over tables in reports now displays information about customizing table format and showing hidden columns in the status bar.
- 5) Right click **Compare report** command now bolds alternate rows in difference schema so obvious which row came from which report.
- 6) URLs in reports are now highlighted and can be clicked upon to launch a Web browser.
- 7) Added *Equilibrium Joint Positions and Rotations for All Load Cases* summary to the **Model/Results** menu available in the deformed geometry.
- 8) Added **Loads/Loading Tree Report** which produces a simple loading tree report suitable for inclusion on structure drawings.
- 9) Added the *Material List* report to the input echo when have defined stock numbers for the components in your structure.

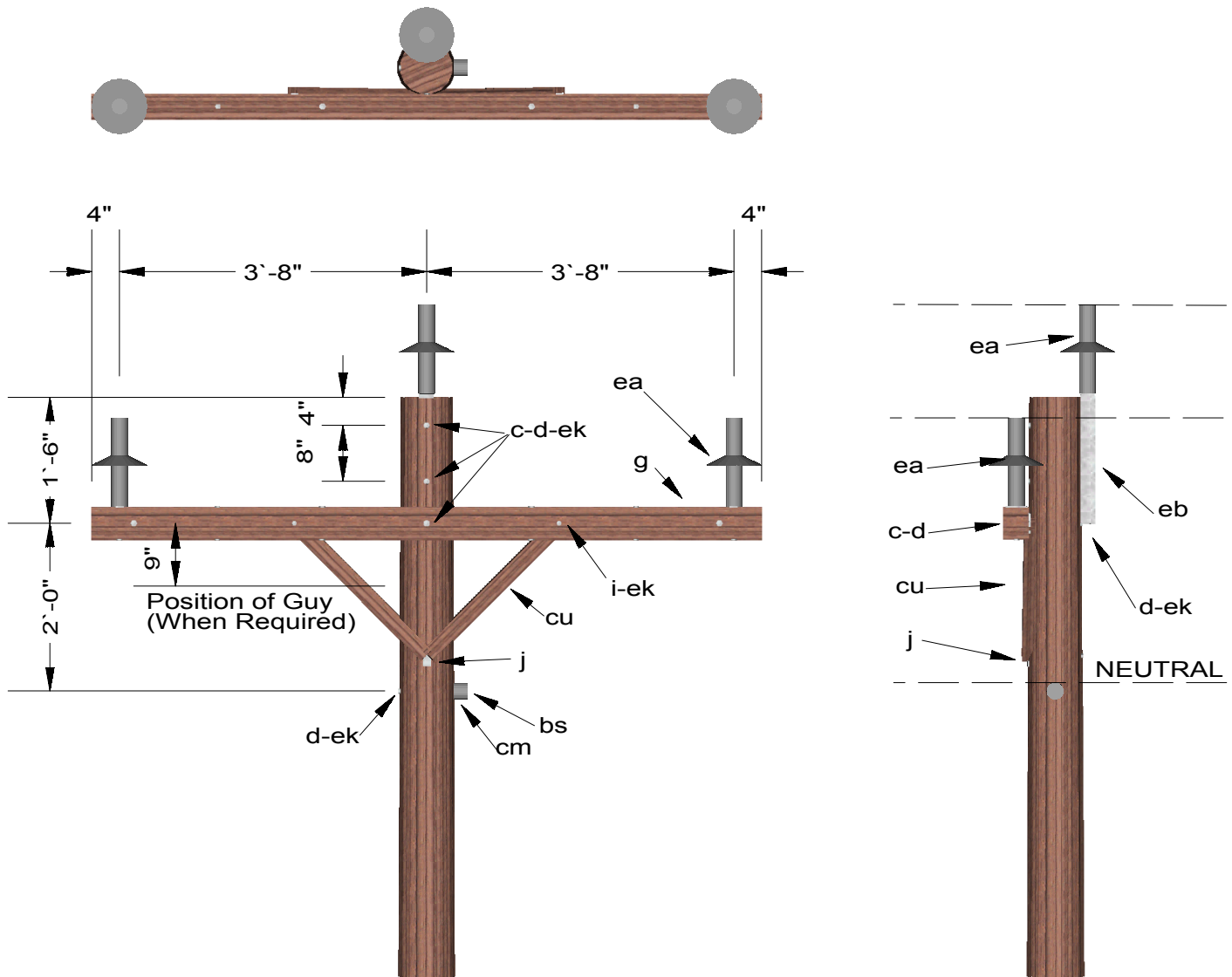
10) *Detailed Pole Loading Data for Load Case* now echoes GRF and Kz when **General/Output Options** "Print Extended Diagnostic Output" is checked.

Commands

- 1) Added **Geometry/Rake Pole** command so you can work with azimuth and rake distance instead of calculating inclination angles.
- 2) The Merge button in **Loads/Vector Loads** now allows multiple LCA files to be merged in at once (if you multi-select them in the file selection dialog).
- 3) Added **File/Fit Vertical To Page** mode which fits the vertical extent of the screen to the page (may result in horizontal clipping) which is a better match to the aspect ratio of most structures. If not checked then the behavior does not change: the entire screen is fit to the page.
- 4) Added **File/Show Print Area** which is only available in "Fit Vertical To Page" mode. Draws dashed lines showing the edge of the page.
- 5) Added **F1/Debugging Stuff/Toggle Unit System** principally to have the command available for making a custom toolbar button to switch unit systems.
- 6) Added **F1/Toggle Render Mode (Line/Wireframe/Render)** principally to have the command available for making a custom toolbar button to do this.
- 7) Added *Cable Geometry* to the list of items that can be applied via **File/Batch Modify**.
- 8) **File/Batch Modify** now has an *Analysis Option (Design Check, Allowable Spans, ...)* option. Coincident with this renamed "Analysis Option" to "Analysis Type" as it selects linear/nonlinear analysis and that is consistent with naming in the General Data dialog.
- 9) **File/Batch Modify** now has an option for *Post Processor Options*.
- 10) You may now use **File/New/Framing Wizard** to quickly create a **PLS-POLE** model from a pre-existing framing library.
- 11) **File/Model Diff** will now check Wood Material Properties for differences.

Miscellaneous

- 1) Maximum number of arms (crossarm and davit, tubular and generic) increased from 200 to 300 for substation modeling.
- 2) Upgraded to newer more reliable versions of libraries used for jpeg, tiff and file compression (libjpeg, libtiff, zlib). This and other related changes should improve performance and reliability.
- 3) The *Project Repair Wizard* now has an option to "Remove reference to file" which can be useful for missing LCA files.
- 4) New manual available for download via **Help/Check For Updated Manual**.
- 5) Fixed sources of more than 14 different ways to crash program identified in client submitted crash reports.
- 6) Fixed limitation in Intel CPU library that prevented running on computers with more than eight cores per physical processor.
- 7) Minor changes to reduce memory usage, improve interface or performance too numerous to mention here.



ASSEMBLY: VC1.11P

Material List				
Stock Number	Item Description	Quantity	Unit of Measure	
c	Bolt, machine, 5/8" x req'd length	3.00	Each	
d	Washer, square 2 1/4"	5.00	Each	
g	Crossarm, 3 5/8" x 4 5/8" x 8'-0"	1.00	Each	
i	Bolt, carriage, 3/8" x 4"	2.00	Each	
j	Screw, lag, 1/2" x 4"	1.00	Each	
bs	Bolt, single, upset	1.00	Each	
cm	Insulator, spool, 3"	1.00	Each	
cu	Brace, 28"	2.00	Each	
ea	Insulator, post type (24.9/14.4 kV)	3.00	Each	
eb	Bracket, pole top	1.00	Each	
ek	Locknuts	6.00	Each	

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<p>DESIGN PARAMETERS: MAXIMUM LINE ANGLES: 5° - Smaller Conductors 2° - Larger than #1/0</p>	<p>SINGLE SUPPORT ON CROSSARM (TANGENT) (POST INSULATORS)</p>		
	<p>April 2015</p>	<p>3 - PHASE PRIMARY 24.9 / 14.4 kV</p>	<p>VC1.11P</p>
	<p>PLS</p>		