Load Tree Automation with .xml, VBA, & Excel

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Load Tree Development Automation w/ Excel, .xml, & VBA

- Many times we find clients that have specific needs when supplying structure loads to vendors for design.
- Clients have requested various things like rounded wind spans, loads rounded to nearest 100lbs, largest load used from left to right, enveloped loads, and so on.
- All of these items and others like them cannot be generated directly from PLS-CADD w/o some level of data manipulation.
- In the past this manipulation has been typically done by hand using excel and other means.
- We have developed methods within Excel to take .xml exports directly from PLS-CADD and manipulate the data to ours or our client's needs automatically in exponentially less time with no errors.
- We do this using a programming language within Excel known as Visual Basic for Applications (VBA)

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- Most of our VBA programming is done simply with the Excel tool: Macro Recorder
- This allows us to record and write VBA code for various tasks we do within Excel automatically.
- We do this to get a basic framework of the code and then we tweak the code manually to suit our needs.
- The next slide shows a quick video (with audio commentary) of a macro program we used to populate loading trees for a client's specific needs.

Movie.pdf - Adobe Reader

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INSTRUCTIONS

1) Click anywhere on the screen to activate the movie.

2) You will be presented with a yellow box near the top of the screen as pictured.

3) Under the "Options" menu in the upper right corner select "Trust this document one time only".

4) Then click anywhere on the screen one more time to activate the movie.

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- As you can see the spreadsheet takes .xml data straight from PLS-CADD and quickly tailors it to our needs.
- In this particular example we needed to round all loads to the nearest 100lbs and express them in kips.
- Then we loaded each load case by selecting the load case desired and clicking on the multicolored button (one for wind from left and the other for right). The spreadsheet then looked at wind from left and right, compared all attachments, and enveloped the loads.
- The end result is a loading tree that has the highest vertical, transverse, & longitudinal load at each attachment point with wind in either direction.
- Also note that there were multiple trees that allowed for various configurations, such as double circuit w/ different conductors, and shield wires that connected to the pole instead of arms.
- With this method we're able to create loading trees that conform to the client's need in a very fast and consistent manner. We also get the added benefit of a saved file of the original loads (.xml file). With this file, if we ever have to, we can go back to the beginning to see how it was created/developed.

Thank you and questions

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