

LineDesign Engineering
Pole Loading Program (PLOAD5)

Revisions / Enhancements List

Updated: 10/30/06

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| 9/7/02 | "Guying" tab, modified guying horizontal tension (T), column Q, to include any conductor cantilever forces. | | | | | | | | |
| 9/7/02 | "Calculation" tab, changed calculation of wind load on transverse spans "with angle" (in column I), to not assume wind is hitting the entire span length. It now uses $\cos(\text{angle}/2)$ for each span to get equivalent horizontal span lengths. | | | | | | | | |
| | equations in columns U & Y, rows 14-32 modified based on the above. | | | | | | | | |
| 9/7/02 | "Calculation" tab, added descriptions of columns H,I,L in "comments" in row 13. | | | | | | | | |
| 9/10/02 | "Calculation" tab, changed cell J4 to only accept setting depths of 0-15 feet | | | | | | | | |
| 9/10/02 | "Delete data and restore macro", changed to restore pole setting depth equation in cell J4 in case it was typed over. | | | | | | | | |
| 9/10/02 | "Delete data and restore macro", statements added to protect the "calculation" sheet, at the end of the macro. | | | | | | | | |
| 9/12/02 | "Delete data and restore macro", statements added to restore equations in "Guying" tab, guy lead column. | | | | | | | | |
| 9/19/02 | "Guys" tab, modified guy strength to include wood pole "strength factor" (SF), so guys are on same base as pole strength. | | | | | | | | |
| 9/19/02 | "Calculation" tab, adjusted cell M50 (Case 2, moments from "guys" tab) for pole "extreme SF", instead of using the same value as Case 1. | | | | | | | | |
| 9/19/02 | "Sum" tab, adjusted cell F32 & H36 (Case 2, moments & forces from "guys" tab) for pole "extreme SF", instead of using the same value as Case 1. | | | | | | | | |
| 9/20/02 | "Guying" tab, modified OF's used in guying calculations to only allow the OF's pertaining to guying (even when the OF's used for pole loading are different). For example, NESC table 253-1 OF's will be used for guying, even when table 253-2 OF's are used for pole loading (on the "calculation" and other tabs). The guying OF's are listed in a table on the "guying" tab, and are automatically filled in, based on the Grade & District selected on the "calculation" tab. | | | | | | | | |
| 9/21/02 | "Calculation" tab, cells C45-47, fixed error (some versions) on the equipment selection list missing the last entries in the list. | | | | | | | | |
| 9/30/02 | "Buckle" tab, added comments in cells E13, E15, E50, describing "k" and "%bpd". | | | | | | | | |
| 9/30/02 | "Delete data and restore macro", statements added to erase "guys" tab inputs, and restore equations in columns G & H. | | | | | | | | |
| 10/29/02 | "Calculation" tab, changed validation eq. in cells C44-C47 to "=equipment", so if you add equipment, they will appear in pulldowns. | | | | | | | | |
| 2/2/03 | "Delete data and restore macro", changed references from "wiretable" to "\$wiretable", to insure the equations which are restored properly reference the wiretable lookup "range". When copying the eq's back, the range was being incremented. | | | | | | | | |
| 5/1/03 | "Calculation" tab, added communication conductors to wire table | | | | | | | | |
| 5/15/03 | "Calculation" and "guying" tabs, added 3 special "1 inch ice" cases (B, C, C (crossing)) to model 1" of ice. | | | | | | | | |
| 11/16/03 | "Calculation tab", changed cells M8,N8,M52,N52 to 'OK' & 'Not OK', instead of 'Meets NESC' & 'Violation', to reflect other than NESC conditions. | | | | | | | | |
| 11/16/03 | "Calculation tab", change heading in cell G6 to show 'MPH' in blue, for case 2 (2002 NESC extreme loading). | | | | | | | | |
| 11/17/03 | "Guying tab", changed column width on Q,T,&U to 7.57 to display larger numbers. | | | | | | | | |
| 11/17/03 | "Calculation tab", changed cell M50 to only display guy wire moments when 'extreme' case moments are also shown. | | | | | | | | |
| 11/17/03 | "Guys tab", changed column "I" to only multiply by 90% factor. Used to multiply by pole SF to compare to pole strength. | | | | | | | | |
| 11/17/03 | Now the guy values can be directly compared to the moments due to wind, tension, etc. | | | | | | | | |
| 11/17/03 | "Guys tab", changed equation in column G to multiple by column B, to calculate correctly if multiple guys. | | | | | | | | |
| 11/17/03 | "Calculation tab", changed M50 to equal N50. Used to multiple N50 by ratio of pole SF's to obtain M50, to compare to pole strength. | | | | | | | | |
| 11/17/03 | "Sum tab", changed cell H36 from $=I36*J9/J8$, to $=I36$ | | | | | | | | |
| 11/17/03 | "Sum tab", changed F32 from $=G32*J9/J8$, to $=G32$ | | | | | | | | |
| 11/21/03 | Added new "Headguy/Downguy" tab, for calculating headguys between two poles, and calculating the downguys & anchors on the 2nd pole | | | | | | | | |
| 11/27/03 | "Calculation tab", added M55 & N55 "Guy wire status" to show if guys entered on "Guys" tab are adequate to hold entire load. | | | | | | | | |
| 11/27/03 | "Calculation tab", changed M52 & N52 "pole status" to also show if guys entered on "Guys" tab hold the load, if the pole itself can't hold the load. | | | | | | | | |
| 11/27/03 | "Calculation tab", added L58,M58,N58 "status indicator" to show if you need a stronger pole or guys added, or if you need more guys. These indicators will only display when the pole is not strong enough without guys, or when you have guys but they are not strong enough to hold the entire load. | | | | | | | | |
| 03/01/04 | "Guys tab & Taps tab", inserted new, more detailed, directional reference diagram | | | | | | | | |
| 05/04/04 | "Buckle tab", changed cell C15 & D15 validation list to reference cells M15-O15, instead of listing values in data validation box. This corrected problem of Excel changing 1/3 to Jan-03, etc. in cells C15 & D15. | | | | | | | | |
| 05/05/04 | "Sum tab", added a note (which only displays if the % rated values in the line above are negative), which explains what a negative value means. | | | | | | | | |
| 05/24/04 | "Sum tab", added 'pole status' and 'guy wire status' on rows 42 & 46. Also a note about needing guys or stronger pole on line 49 (only displays if loading over 100%) | | | | | | | | |
| 06/08/04 | "Sum tab", cleaned up misc. labeling, footnotes, fonts, positioning | | | | | | | | |
| 9/16/04 | "Taps" tab, added 10 more lines for entering taps, slacks, and complex spans. | | | | | | | | |
| 9/16/04 | "Calculation tab, added 10 more lines in the equivalent results area for "Taps & Slacks". | | | | | | | | |
| 9/16/04 | Also added all needed new equations and modified all existing equations to handle these additional 10 lines. | | | | | | | | |

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| 9/16/04 | "Guying" tab, added 10 more lines and equations to account for the extra 10 lines on the "Taps" tab. | | | | | | | | |
| 9/16/04 | "Headguy" tab, added 10 more lines and equations to account for the extra 10 lines on the "Taps" tab. | | | | | | | | |
| 9/16/04 | "Fixed Pt." tab, added 10 more lines and equations to account for the extra 10 lines on the "Taps" tab. | | | | | | | | |
| 9/16/04 | "All points" tab, added 10 more lines and equations to account for the extra 10 lines on the "Taps" tab. Boy, was that a pain to modify! | | | | | | | | |
| 9/16/04 | "Calculation" tab, corrected rated strength of 7/16" EHS comm messenger from 2800 to 20800. | | | | | | | | |
| 10/02/04 | "Calculation tab, changed headings on line 10 from "unguyed angle" to "line angle". | | | | | | | | |
| 10/02/04 | "Calculation tab, changed headings on line 10 from "unguyed 90 degree tap or DE" to "90 degree tap or DE". | | | | | | | | |
| 10/02/04 | "Calculation" tab, deleted "(ice & wind)" from main label so it now reads just "Transverse Pole Loading Calculations" | | | | | | | | |
| 10/02/04 | "Sum" tab, added "buckling" summary data to bottom part of "sum" tab. | | | | | | | | |
| 10/02/04 | "Guying" tab, column R, if column Q (horiz. tension) is zero, then do not list the guy attachment height in column R | | | | | | | | |
| 10/16/04 | "Headguy" tab, column R, if column Q (horiz. tension) is zero, then do not list the guy attachment height in column R | | | | | | | | |
| 10/16/04 | "Headguy" tab, column W, if column Q (horiz. tension) is zero, then do not list the guy attachment height in column W | | | | | | | | |
| 10/16/04 | "Headguy" tab, column T, if column Q (horiz. tension) is zero, then do not list the diff in attachment heights in column T | | | | | | | | |
| 12/21/04 | "Taps" tab, added a "delete data & restore equations TAPS tab ONLY" button, so you can erase data on just this tab | | | | | | | | |
| 12/21/04 | "Guys" tab, added a "delete data & restore equations GUYS tab ONLY" button, so you can erase data on just this tab | | | | | | | | |
| 2/19/05 | "Delete data" and "delete guys" macro, changed the equation which is copied back in cell G33 to include "*B33" (times B33). | | | | | | | | |
| | The spreadsheet equation was fine, but the macro equation which was copied back was incorrect, so *B33 was added to the macro. | | | | | | | | |
| | Before this correction was made, doing a "delete macro" would not multiply the guy wire strength by the number of guys wires (B33) | | | | | | | | |
| 6/28/05 | "Delete macro", changed the macro so it does not give an error msg. if the guys, guying or headguy tabs are not there. This is needed for | | | | | | | | |
| | customers who order the program without these tabs. | | | | | | | | |
| 3/10/06 | Wire data, added all the Hendrix Co. wires and spacers, per data from Hendrix Co. | | | | | | | | |
| 5/28/06 | "Sum" tab, changed "% Stress Distribution" to not include transverse effects from guys, to eliminate negative % values in some cases | | | | | | | | |
| | (when guys are entered on the "guys" tab). Therefore the %'s now reflect the % loading from all effects other than transverse effects from guys. | | | | | | | | |
| 9/11/06 | "Calculation" tab, added EHS 9/16" guy wire. "Guys" tab, added EHS 9/16" guy wire. | | | | | | | | |
| 9/11/06 | "Calculation tab" (cells M2 & N2) & "Summary tab (cells F45 & G45)", added a flag to show if maximum stress is above | | | | | | | | |
| | ground line. Even though the "fiberstress height effect reduction" (CP2780-2007) was not approved in 2007, some users will want to use it | | | | | | | | |
| | since it is likely it will be approved in 2012. This will give them a noticable flag. | | | | | | | | |
| 10/9/06 | "Calculation" tab, and associated tabs, added Rule 250D requirement and logic (new rule to 2007 NESC). | | | | | | | | |
| 10/9/06 | "Calculation" tab, Changed "case 1" selections to include all cases, including Rules 250C and 250D. | | | | | | | | |
| | However, the cells (F8 & G8) are protected, and can only have values "manually entered" if "unprotected" first. | | | | | | | | |
| | Changed "case 2" to just include 250C & 250D, and made the wind and ice cells (F9 & G9) "non-protected", | | | | | | | | |
| | since the wind and ice values have to be "manually entered", cooresponding to the loading maps for your area. | | | | | | | | |
| 10/9/06 | "Calculation" tab, added "Restore Equations" macro, which restores the equations, without deleting most of the input data. | | | | | | | | |
| | The cells which have equations "restored", will of course over-write any manually entered values, which were typed | | | | | | | | |
| | over the top of equations. | | | | | | | | |
| 10/9/06 | "Delete data" and "restore" macros, added cells F8,F9, G8,G9 (Calculation tab) to equations that are "restored" back. | | | | | | | | |
| 10/9/06 | "All Points" and "Fixed Point" tabs, added Fiber stress "height effect" (reduction factor) - per ANSI O5.1-2002, | | | | | | | | |
| | only used when theoretical point of maximum bending stress is above groundline (G.L.) | | | | | | | | |
| | Both tabs now compare stresses to the Fiber stress with and without the "height effect". The "height" effect is NOT | | | | | | | | |
| | required yet by the NESC, but is recommended by ANSI O5.1, and is expected to be required by future NESC editions. | | | | | | | | |
| 10/9/06 | "Calculation tab", added logic to handle Rule 250D windspeed conversion from MPH to #/sq.ft.using NESC table 250-4. | | | | | | | | |
| 10/9/06 | "Calculation tab" and associated tabs, added logic to handle NESC Table 253-1 note 7 derate for Grade C, | | | | | | | | |
| | Extreme Wind loading over 100 mph. Cells I8-L9 equations. | | | | | | | | |
| 10/9/06 | "Loadcases" tab, move load factors and strength factors to this new tab. | | | | | | | | |
| 10/9/06 | "Loadcases" tab, "guying" tab, and "headguy" tab, changed load factors for Grade C, Extreme wind loading, | | | | | | | | |
| | per 2007 changes. These values changed from the 2002 NESC. | | | | | | | | |
| 10/16/06 | "Calculation" tab, changed 250C calculations of Grf and Kz logic due to 2007 NESC change | | | | | | | | |
| | Grf is determined by the equations in Table 250-3 (not table values). This is permitted by NESC 250C2. | | | | | | | | |

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| | Kz is determined by Table 250-2 "table values" for H <= 250', and by the equations for H > 250'. | | | | | | |
| | 2007 NESC Rule 250C1 does not state that equations may be used for Kz, when H <= 250'. | | | | | | |
| 10/18/06 | "Sum" tab, modified to only show "case 1" values if poles are under 60' above ground and you have not specified "y" fo | | | | | | |
| | "show 250C & 250D values if pole is not more than 60' out of the ground (normally a 70' pole or taller), on the Loadcases tab | | | | | | |
| 10/18/06 | "Loadcases" tab, added option to apply "Fiber Stress Height Effect" or not (per ANSI O5.1-2002). Not required by 2007 NESC. | | | | | | |
| 10/18/06 | "All Points" tab, added a flag to show if "Fiber Stress Height Effect" is used to determine the Status ("OK" or "not ok") for each level. | | | | | | |
| 10/18/06 | "Fixed Point" tab, added a flag to show if "Fiber Stress Height Effect" is used to determine the Status ("OK" or "not ok"). | | | | | | |
| 10/22/06 | "Calculation" tab, added an error flag if you choose an invalid combination of pole size, class, & type. | | | | | | |
| 10/24/06 | "Calculation" tab, added an error flag if incorrect ice or wind entered on row 9 for rule 250C or 250D loadings. | | | | | | |
| | "Calculation" tab, added validation & drop down lists for wind and ice amounts on row 9 for rule 250C and 250D loadings. | | | | | | |
| 10/30/06 | Multiple tabs, added "wind direction at 90 degrees" on all tabs for clarity. | | | | | | |