Power Line Systems

2022 PLS-CADD Advanced Training and User Group

The Effects of Stringing Direction on Wind Loads

Jesse Kohler & Suzanne Brzoznowski

Power Line Systems



IT'S ALL ABOUT YOUR POWER LINES



IT'S THE SOLUTION

Wind Load Models



251B2

Part 2: Safety Rules for Overhead Lines

Horizontal load component 2.

The horizontal load shall be the horizontal wind pressure of determined under Rule 250 applied at right angles to the direction of the line using the projected area of the conductor or messenger and conductors spacers, or equipment that it supports, ice covered where required by Rule 250.

NOTE: The projected area of the conductor or messenger is equal to the diameter of the conductor or messenger, plus ice if appropriate, multiplied by the span length (see Rule 252B4). See Rule 251A2 for force coefficient values of different surface shapes.

Total load 3.

The total load on each wire, conductor, or messenger shall be the resultant of components 1 and 2 above, calculated at the applicable temperature in Table 251-1, plus the corresponding additive constant in Table 251-1. In all cases the conductor or messenger tension shall be computed from this total load.

6/30/2022

Power Line Systems

252A

2

Station Based NA+ Impacts



Max Wind 360 Impacts

6/30/2022

- Immune to stringing direction
- Single global wind direction applied to all spans and structure at the azimuth that yields the highest usage



4

XY Based NA+ Impacts

 Structure bisector wind is based on angle formed by selected wires in the structures staking table



XY Based NA+ Impacts

Structure bisector wind is based on angle formed by selected wires in the structures staking table

1-60 190.0000 rection\Structures\Switch Structure.pol TS-	5-5G	0 1 5	11 15 190.000	00 irection\Structures\Switch
Attachment Sets For Computation of XY Based Structure Line Angle	<u> </u>		Attachment Sets For Computation	n of XY Based Structure Line Angle
Attachment Sets For Computation of XY Based Structure Line Angle Line angle is computed automatically for an XY based structure based structures as there is no user defined alignment for the program to use as there would be for station based structures. Instead of using a user defined alignment PLS-CADD will assume that each wire connected to one of the se selected below defines a virtual alignment segment connecting this structure's center with another structur center. Line angle is computed as the largest angle between any of these virtual alignments. Select attachment sets to be considered in computation of line angle calculation for XY structure below. Exclude sets you do not want to influence line angle (structure with tap off to side at 90 degrees can excluse if do not want it to be 90 degree angle structure) Set 1, 3_8-7_strand_ehs_steel.wir to structure 3 Set 2, 3_8-7_strand_ehs_steel.wir to structure 4 Set 3 Set 4 Set 5, drake_acsr.wir to structure 3 Set 10 Set 11, 3_8-7_strand_ehs_steel.wir to structure 1 Set 11 Set 12 Set 13 Set 14 Set 20 Set 13 Set 20 Set 21 Set 22	ed ets sude tap		Line angle is computed automatical alignment for the program to use a Instead of using a user defined alig selected below defines a virtual alig center. Line angle is computed as the large Select attachment sets to be cons Exclude sets you do not want to in set if do not want it to be 90 degr Set 1, 3.8-7 strand_ehs_steel.wi Set 2, 3.8-7_strand_ehs_steel.wi Set 3 Set 4 Set 5, drake_acsr.wir to structure Set 6, drake_acsr.wir to structure Set 7 Set 8 Set 9 Set 10 Set 11, 3.8-7_strand_ehs_steel.wi Set 12 Set 13 Set 14 Set 15, drake_acsr.wir to structure Set 13 Set 14 Set 15, drake_acsr.wir to structure Set 13 Set 14 Set 15, drake_acsr.wir to structure Set 13 Set 14 Set 15 Set 19 Set 20 Set 21 Set 22	ly for an XY based structure based structures a is there would be for station based structures, griment PLS-CADD will assume that each wire co griment segment connecting this structure's cen- ist angle between any of these virtual alignmen- idered in computation of line angle calculation for ifuence line angle (structure with tap off to sid- ee angle structure) r to structure 3 r to structure 4 3 4 wir to structure 1 e 1
OK Car	ance			
	Doworlir	o Systems		



Power Line Systems





IT'S ALL ABOUT YOUR POWER LINES

FAC 008/009 LiDAR Modeling CSA Distribution Line Optimization

GO95

IT'S THE SOLUTION