

Pole Deflection Check in PLS-POLE and PLS-CADD

Starting with PLS-CADD and PLS-POLE version 7.30 you can specify a Pole Deflection Check (PDC) for any load case. In PLS-CADD you specify the check in *Criteria/Structure Loads (methods 3,4)* and in PLS-POLE in the *Loads/Vector Loads* or *Loads/Wire Loads* tables. In all cases you specify the check in the *Pole Deflection Check* and *Pole Deflection Limit* columns.

For each load case that specifies a PDC the deflection measured at the tip of a pole will be compared to an allowable deflection to develop a Deflection Usage (DU).

$$DU = (100.0 * \text{deflection}) / (\text{allowable deflection})$$

Where

Deflection is the 3d distance from tip of pole for this load case to the undeformed position of the tip of the pole

Allowable deflection is computed based on the value of the PDC which can be:

No Limit – the deflection check is skipped for this load case, all old files will default to this setting

% Pole Height – allowable deflection is calculated as a user input percentage times the pole height that extends above the fixity point (typically height above ground)

% Pole Length – allowable deflection is calculated as a user input percentage times the total pole length (including any embedded portion, but excluding any cuts)

% Pole Tip Diameter – allowable deflection is calculated as a user input percentage times the pole tip diameter

Input Limit – allowable deflection is input directly by the user (i.e. 3ft or 1m)

PLS-CADD treats the deflection usage separately from the strength usage just like it does insulator swing usage. Only PLS-POLE (method 4) structures can be checked for deflection. TOWER structures will ignore the PDC and will never have a deflection usage. PLS-POLE will calculate and display a deflection usage separately just like it does insulator or element usage. PLS-POLE will also consider the PDC when calculating allowable spans or interaction diagrams. Deflection usage is only indicated in the reports and is not used to color code the structure (only strength usage is used for color coding the structure).