

2022 PLS-CADD Advanced Training and User Group

Cable Load Adjustments in PLS-CADD

by

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Power Line Systems

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Introduction

- Cable Load Adjustment Overview
 - Available Adjustments
 - Pre vs. Post Sag-Tension Adjustments
- New Cable Load Adjustments
 - Rotate Loads
 - Source/Destination Loads
- Considerations when Using Adjustments

Cable Load Adjustment Overview

- Adding an Adjustment
 - Additional adjustments turned off/on per load case
 - Defining ahead/back spans
- Adjustment Options
 - Adjustment value format
 - %, Subconductors, lbs, deg
- Pre. Vs Post Sag-Tension Commands

```
% Hor. Ten. (changes V, T and L)
Broken Wire (# Broken Subconductors)
Add Vert. Load (wire coord. system)
Add Trans. Load (wire coord. system)
Add Long. Load (wire coord. system)
% Vert. Load (wire coord. system)
% Trans. Load (wire coord. system)
% Long. Load (wire coord. system)
% Wire Ice
% Wire Wind Pressure
% Wire Dead Weight
Rotate wire coord. system clockwise after sag-tension
Rotate structure loads downward about current wire local transverse axis after sag-tension
Rotate structure loads about current local wire vertical axis after sag-tension
Rotate structure loads about global vertical axis after sag-tension
Add vertical structure load at Set:Phase:Span after sag-tension
Source Set:Phase:Span for after sag-tension structure load commands
Destination Set:Phase:Span for structure load copy after sag-tension
Destination Set:Phase:Span for structure load move after sag-tension
Destination Set:Phase:Span for structure load mirror after sag-tension
Destination Set:Phase:Span for structure snub load after sag-tension
```

“New” Cable Load Rotation

- Rotating Loads About Vertical Axis
 - Loads rotated clockwise from wire direction.
 - Wire direction is relative to ahead/back span
- Current Wire Vertical Axis
 - Rotates about axis defined by wire “direction”
- Global Vertical Axis
 - Rotates about purely vertical axis

“New” Cable Load Rotation Contd.

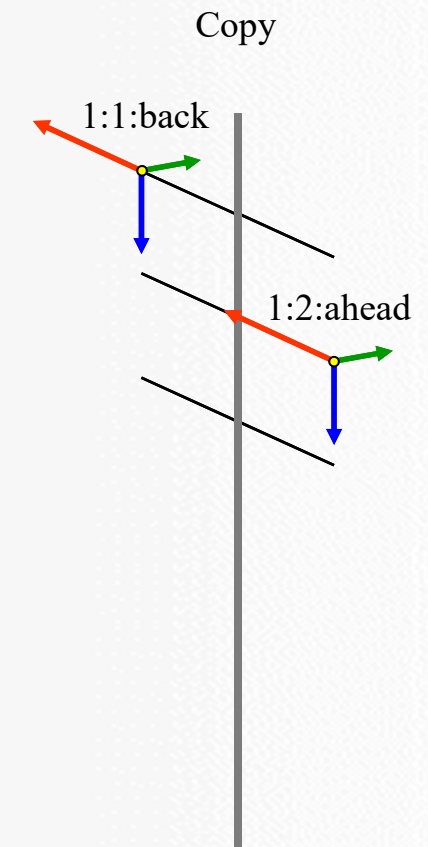
- Rotating Loads About Current Transverse Axis
 - Rotates structure loads up/down from current wire
 - Positive % = Pitched Downward
 - In the current direction of the wire/load

Source/Destination Loads

- Source
 - Select a structure load to adjust
 - “Initializes” TLV loads to be used at other locations
 - No adjustment value
- Destination
 - Location to move source load to

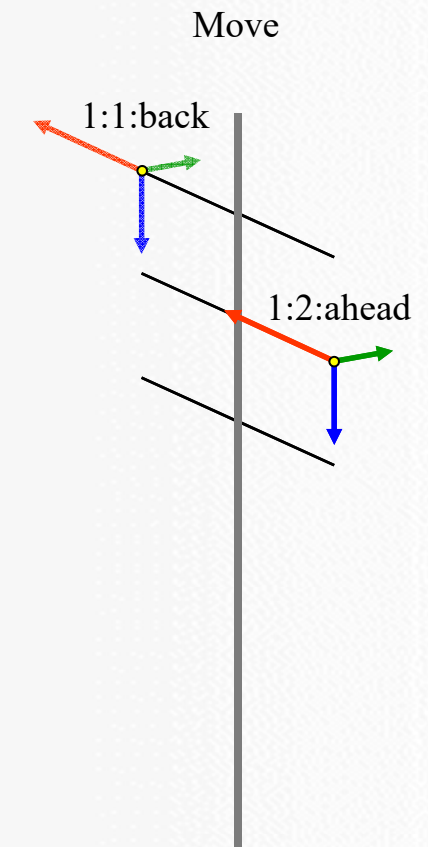
Load Destinations

- Copy
 - Source load is copied to destination
 - Source load also still applies to its primary location
 - Adds to destination load
 - No adjustment value



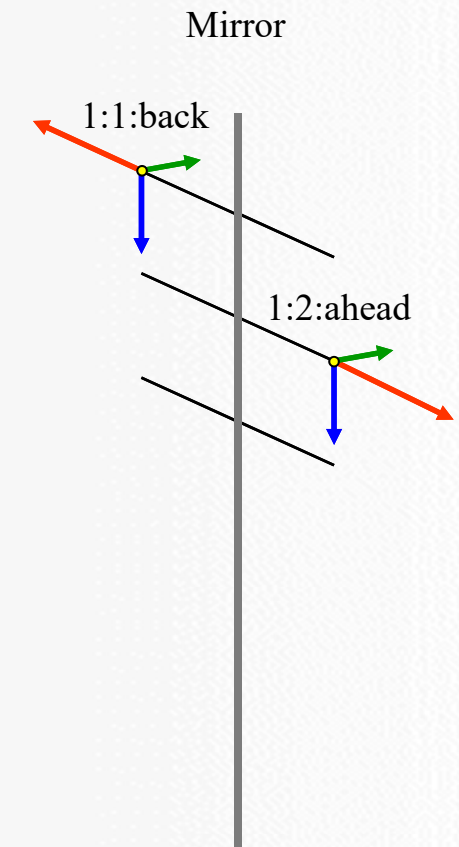
Load Destinations

- Move
 - Removes the source from its location
 - Moves source load to new set/phase
 - Adds to destination load
 - No adjustment value



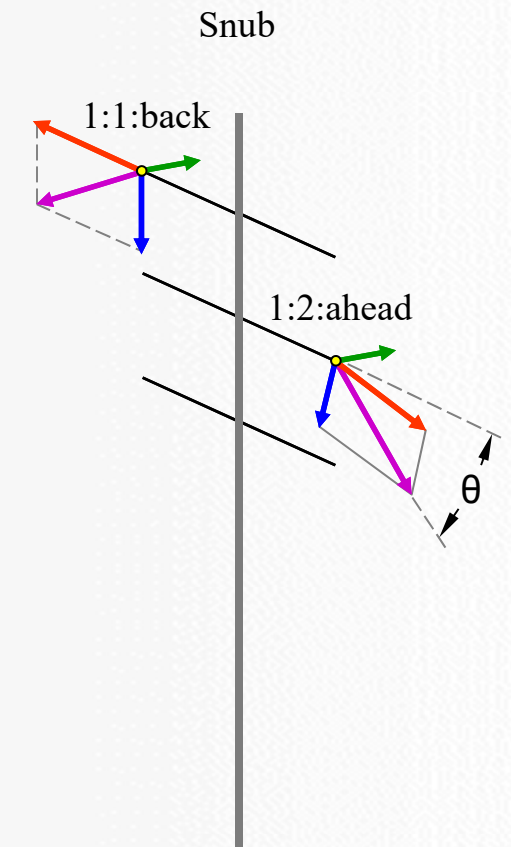
Load Destinations

- Mirror
 - Rotates source longitudinal load component 180°
 - Copies load to destination
 - Leaves source load intact
 - Adds load to destination
 - No adjustment value



Load Destinations

- Snub
 - Replaces existing loads at destination
 - Mirrors longitudinal component
 - Rotates loads about transverse wire axis so that resultant lies on input angle below horizontal



Load Adjustment Considerations

- Invalid source/destination
 - A warning will appear indicating improper load adjustment
 - Analysis will still be run
- Need to specify adjustment for each set:phase
 - Can result in many adjustments needed
 - i.e. stringing loads for all phases of double circuit line
- Loads w/in a row are processed sequentially
 - Helpful for performing several adjustment steps

Example 1 – Snub Load at DE

- Break all ahead spans
- Source Loads
 - Choose each set/phase back span separately
- Destination Snub
 - Enter 18.43° for 3:1 angle to ground
- Destination Rotate
 - Rotate 5° to move load clockwise

Example 2 – Temporary Phase Move

- Move Back Loads
 - Source Back 5:1
 - Destination Back 1:1
- Move Ahead Loads
 - Source Ahead 5:1
 - Destination Ahead 1:1

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