

# POLE BRACING DESIGN LOADS\*

## WIRE-CABLE DATA FOR CALCULATION OF HORIZONTAL WIND, VERTICAL AND TENSION LOADING ON POLES

| WIRE ATTACHMENT TYPE          | TYPICAL ATTACHMENT DESCRIPTION | DIAMETER (IN) | WIND LOADING** (LBS/FT) | UNIT WEIGHT (LBS/FT) | WIRE TENSION*** (LBS) |
|-------------------------------|--------------------------------|---------------|-------------------------|----------------------|-----------------------|
| <b>Power Conductors</b>       |                                |               |                         |                      |                       |
| <b>46 kV Transmission</b>     |                                |               |                         |                      |                       |
| All                           | 556 kcmil AAC                  | 0.856         | 0.285                   | 0.522                | 1800                  |
| <b>Primary</b>                |                                |               |                         |                      |                       |
| Main Line                     | 336 kcmil AAC                  | 0.666         | 0.222                   | 0.316                | 1100                  |
| Laterals                      | #1/0 AWG AAC                   | 0.368         | 0.123                   | 0.100                | 400                   |
| <b>Secondary-Neutral</b>      |                                |               |                         |                      |                       |
| Main Line Neutral             | 195 kcmil AAAC                 | 0.502         | 0.167                   | 0.184                | 800                   |
| Lateral Neutral               | #1/0 AWG AAC                   | 0.368         | 0.123                   | 0.100                | 400                   |
| Lashed Secondary              | 2-1/0 AAC, 1-3/0 AAAC Msgr     | 1.548         | 0.516                   | 0.473                | 1600                  |
| Triplex                       | 2-1/0 AAC, 1-1/0 AAC Msgr      | 0.970         | 0.323                   | 0.368                | 300                   |
| Quadraplex                    | 3-4/0 AAC, 1-4/0 AAC Msgr      | 1.310         | 0.436                   | 0.945                | 600                   |
| Open-Wire Secondary           | #4 AWG Copper                  | 0.204         | 0.068                   | 0.126                | 500                   |
| <b>Communications Cables</b>  |                                |               |                         |                      |                       |
| <b>ADSS</b>                   | HECO Std. 144 ct               | 0.780         | 0.260                   | 0.216                | 800                   |
| <b>Small Diameter or CATV</b> | Self-Support, or 6M Msgr       | 0.500         | 0.167                   | 0.400                | 1200                  |
|                               |                                | 1.000         | 0.333                   | 0.875                | 1800                  |
| <b>Med Diameter Telcom</b>    | Sgl or Bundled on 10M Msgr     | 1.500         | 0.500                   | 1.425                | 2600                  |
|                               |                                | 2.000         | 0.666                   | 2.075                | 3200                  |
| <b>Large Diameter Telcom</b>  | Sgl or Bundled on 16M Msgr     | 2.500         | 0.833                   | 2.785                | 4000                  |
|                               |                                | 3.000         | 1.000                   | 3.580                | 4600                  |
|                               |                                | 3.500         | 1.166                   | 4.455                | 5000                  |

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| GROUNDING WIND MOMENT |                                |
|-----------------------|--------------------------------|
| POLE LENGTH<br>(FT)   | POLE WIND** MOMENT<br>(FT-LBS) |
| 40                    | 1,946                          |
| 45                    | 2,542                          |
| 50                    | 3,229                          |
| 55                    | 3,992                          |
| 60                    | 4,858                          |
| 65                    | 5,810                          |
| 70                    | 6,869                          |
| 75                    | 8,020                          |

| WIND LOAD ON TRANSFORMER |                      |
|--------------------------|----------------------|
| TRANSFORMER<br>KVA       | WIND LOAD<br>(LBS)** |
| 15                       | 17.5                 |
| 25                       | 21.6                 |
| 37.5                     | 30.0                 |
| 50                       | 32.0                 |
| 75                       | 39.7                 |
| 100                      | 39.7                 |
| 167                      | 61.2                 |
| 250                      | 69.7                 |
| 333                      | 72.3                 |
| 500                      | 77.5                 |

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\*\* Wind loading for single conductor or bundle or pole or transformer @ 4 psf wind pressure

\*\*\* Wire tension for single conductor or bundle @ construction loading condition (4 psf wind, 60° F, Final)

