Osmo-ET-Truss™

Helps to Increase Load Capacity on Poles

- Increase load capacity of existing poles
- Often 1/3 or less of replacement cost
- Crews can install up to 6-7 per day
- Engineered for appropriate strength & stiffness requirements

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Improve Wood Pole Load Capacity Osmo-ET-Truss

West Plains Energy – Great Bend, Kansas, a Division of UtiliCorp United

West Plains Energy, serving 70,000 customers in western Kansas, was faced with hundreds of overloaded Class 4 poles and blustery Rocky Mountain winds that commonly

reached 100 mph. With few trees, and even fewer buildings to break the winds, the utility's asset managers knew one break in an isolated area could cut power to an entire community. The decision was made to upgrade over 300 poles to Class 2, but the cost for replacement was prohibitive. Turning to Osmose, cooperative efforts led to the development of the Osmo-ET-Truss, and the saving of thousands of dollars.

Thousands of poles in service today, although adequate at the time of installation, no longer can safely carry the load they are being asked to support. The addition of new distribution, telephone and CATV lines have increased loads beyond the limits originally intended. Osmose engineers, working closely with utility managers and technical personnel (see West Plains Energy story at left), developed the Osmo-ET-Truss to help alleviate this problem by increasing the load capacity of existing poles.

How the ET-Truss Works

The ET-Truss (ET stands for Extended and Tapered) is fabricated from high-strength steel and is engineered to help increase bending capacity along the pole length – in contrast to the highly regarded Osmo-C-Truss which helps provide pole support at the groundline. To ensure that the

load is proportioned correctly between pole and truss, the stiffness of the ET-Truss is carefully matched to the stiffness of the pole. The result is a stronger unit that deflects in unison, helping keep both the pole and truss from becoming overloaded.

The ET-Truss is produced in both one- and two-piece versions. The two-piece version is often selected for urban and suburban applications where clearances are minimal.

The ET-Truss is hot-dip galvanized for corrosion resistance and looks very similar, when installed, to a typical riser that is seen on utility poles around the country. The appearance has been widely accepted. If other requirements exist, however, the Osmo-ET-Truss can be painted or it can be manufactured with weathering steel.

The ET-Truss can be installed by Osmose crews or sold separately to utilities for installation by their own crews. In most cases, the trusses can be installed while the line remains energized.

Engineered to Consider both Strength and Stiffness

One critical engineering criteria for a wood pole is the transverse bending load created from wind pressure on the wires, structure and equipment. A utility engineer selects the class of pole according to the ultimate horizontal load that can be applied 2' from the top of the pole.

When a wood pole is overloaded it is not likely to be overloaded for the full length of the pole. Bending load is a product of the horizontal load times the distance from the load application. For instance, in situations where a crossarm is present, bending load varies directly with the distance from the crossarm (see figures 1-3).

Testing has verified the theoretical expectations of the Osmo-ET-Truss design. These trusses can be engineered to increase the bending capacity of wood poles by 2 or more classes. The first step in designing the best ET-Truss for a particular application is through modeling the applied loads and evaluating the stress in the pole utilizing O-Calc, the Pole Loading Software from Osmose.

O-Calc™ Pole Loading Software

O-Calc is another Osmose innovation that has set new standards for modeling the loading on in-service poles. The program can be operated by non-structural personnel and generates outputs that describe any overload conditions. The analysis can be performed by utility personnel or by Osmose and will indicate the required strength, length and stiffness of the Osmo-ET-Truss.

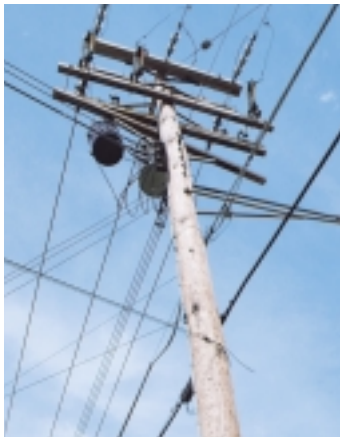
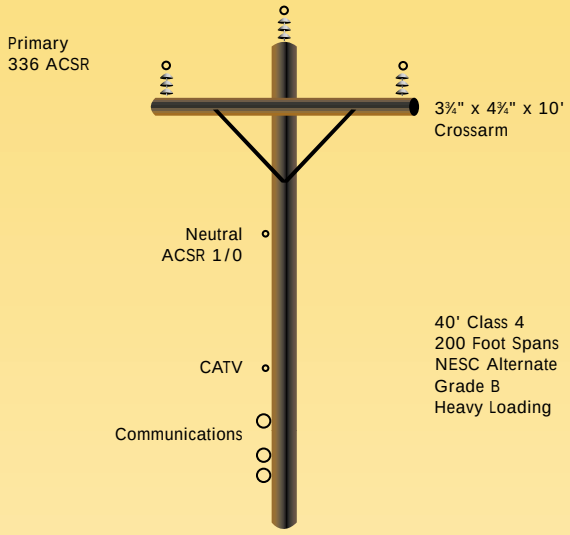


Figure 1 An Overloaded Pole



Bending Load = 110,463 ft–lb, or 139% of Pole Capacity

Bending Capacity = K x Fiber Stress x C^3
Capacity for 40 Foot Southern Pine Pole
Class 2: 120,460 ft–lb
Class 3: 98,484 ft–lb
Class 4: 79,358 ft–lb

Figure 2 ET-Truss Solution

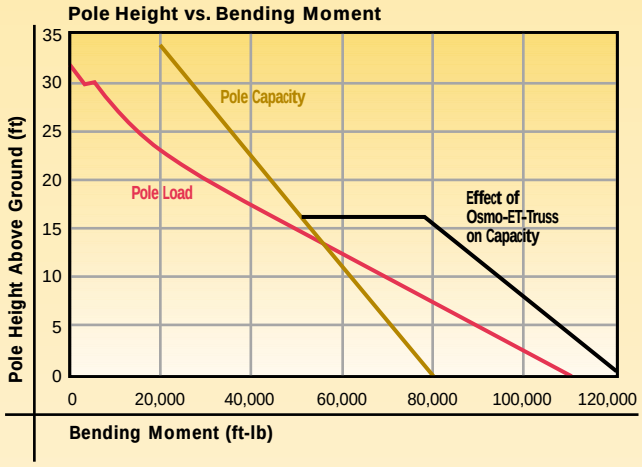
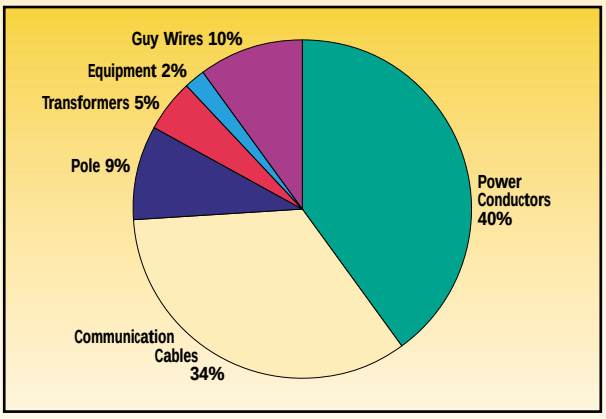


Figure 3 O-Calc generates a variety of charts and graphs



Each Component as a Percent of Total Load.

ET-Truss, Another Osmose Asset Management Solution

- **Turnkey project management by Osmose**
- **Deflects uniformly to share load with pole**
- **Tapered to match the natural shape of the pole**
- **One- and two-piece designs**

Osmose Joint-Use Solutions

- **GIS Data Collection**
  Inventory • Loading • Clearance • Mapping
- **Pole Numbering & Cable ID**
- **O-Calc Pole Loading Software**
- **Osmo-ET-Truss**
- **Pole Loading Data Processing**
- **Pole Clearance Data Processing**

Osmose®

For more information contact your
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