SteelCalc®
## Assessment Techniques & Condition Analysis

Osmose®

For many years, the condition of steel structures was determined through visual assessments and the collection of field measurements on areas of the structure affected by corrosion. This method categorized structures based on cross-section loss, so that a condition rating could be determined, and appropriate mitigation options could be applied.

While this method was considered the best practice for many years, a new industry standard has been developed by Osmose's team of PE-licensed civil, structural, and software engineers. SteelCalc® offers a tailored approach by analyzing the structure's reaction to various load cases and comparing it to the current load capacity of each individual member to provide utilities with a more accurate condition rating method.

SteelCalc is the only analysis method in the electric utility industry that provides accurate component and structure condition ratings. It provides more precise results, improved risk profiles at the structure and circuit level, extends service life, and optimizes the use of capital budget.

LEG 2   LEG 3

DEAD-END SPAN

LEG 1   LEG 4
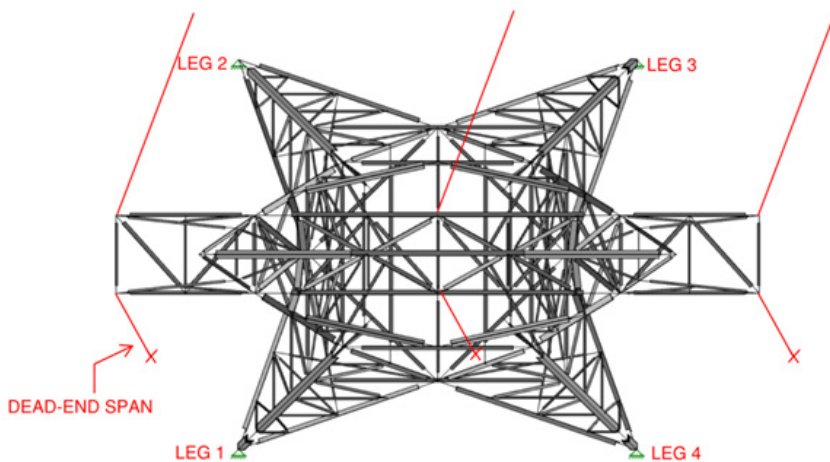
Assessment Process and Outcome

The assessment is conducted by collecting rudimentary field measurements to supplement known tower characteristics and site conditions.

1. Prior the start of a job, pertinent information from the transmission system is collected from the utility owner. Useful variables include available circuit information, structure coordinates, and design drawings.

2. Next, field data is collected and input into a data collection system and analyzed to determine trends specific to the various structure types within the circuit.

3. Following the visual assessment, poles and tower legs are excavated, thickness of key structural components are measured against original, environmental measurements are taken, and the coatings are assessed and re-applied if necessary.

Once the field data collection process is complete, the remaining capacity of each component is determined and compared to industry load cases. These load cases include NESC 250B – Ice and Wind, NESC 250C – Extreme Wind, NESC 250D – Extreme Ice with concurrent wind and other utility-specific load cases. SteelCalc applies each load case, analyzes each component, and determines the applied load on each member.

Once complete, a condition rating is assigned to help determine structure priority and allow for better management of mitigation and restoration options as needed.

The updated steel condition rating system builds on the current rating systems by taking additional measurements and leveraging structure-specific variables to more thoroughly prioritize structure risk. Structures that fall within the critical/priority range will receive the highest restoration priority, followed by structures that fall under the poor/severe category. This improved assessment protocol benefits utilities by providing them a targeted and precise plan of action with more accurate condition assessments.
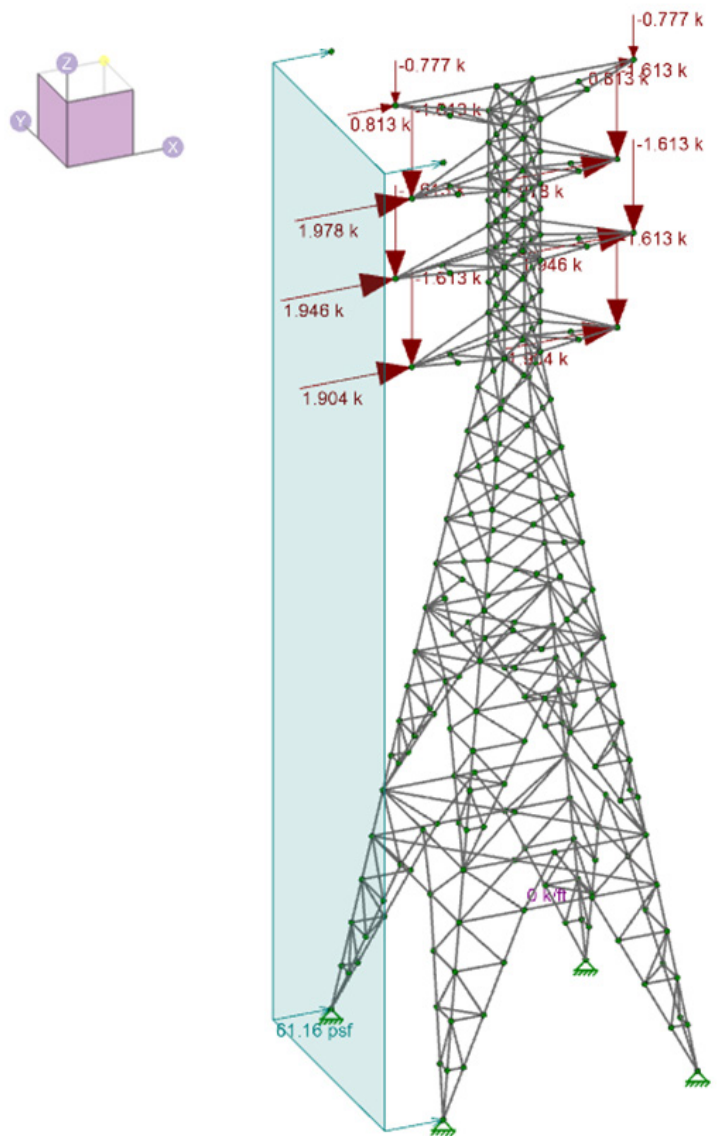
Loads: LC 8, NESC 250C

Contact your local Osmose expert, call 770.632.6700, or email steel@osmose.com.

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