



Poles



From 69 kV up to 400 kV, we design and manufacture a wide array of pole types and configurations.

Our pole operations are located at our plant in Monterrey, Mexico, situated within easy access of regional and US markets. We produce many varieties of poles including single circuit, double circuit, H-frames and overhead-to-underground transitions, all with or without underbuilt circuit supports. We routinely provide reliable solutions for complex base plate specifications, special crossarm requirements and multiple accessory configurations. Over the years we have developed a well earned reputation in the challenging telecommunication and high-mast lighting pole sectors, supplying poles in varying heights for diverse wind conditions and equipment requirements.



We are the industry's most complete in-house resource for transmission structures and related services. Our in-house design, detailing, prototyping, testing, manufacturing and supply capabilities give us unmatched ability to provide your Optimized Transmission Structure Solution.

We have streamlined our workflow, integrating design and manufacturing technology so that CAD/CAM shop drawings flow seamlessly to CNC-driven fabrication, resulting in accelerated cycle time, higher quality levels and increased production rates to meet today's fast growing demand. A complete prototype is made and assembled before any pole

components go into production to carefully check for proper fit. Every slip joint is test-fit to assure problem-free assembly. To improve supply chain integrity and on-time delivery, we have established key global relationships with the top raw material suppliers, including US steel mills.

We are known for our strong and defining tradition of customer service that shapes everything we do. Our proximity to our customers in the Americas is not only



reflected in accelerated supply cycles but in the ways we understand the needs, preferences and business cultures of our customers.

Industry-Leading In-House Pole Design Capability and Experience

State-of-the-art design technology systems coupled with the most experienced in-house staff of engineers in the Americas means that your design work will be done right, on time and with an eye toward quality, reliability and constructability. We utilize the latest versions of PLS-CADD, PLS-POLE, TOWER, AutoCAD, bocad and other CAD software.

Finite element analysis of special connections, cross arms and base plates provides a complete structural analysis that identifies possible stress concentrations in critical areas.

Our engineers understand today's construction methods and design accordingly. They have the tools, training and experience to generate designs that consider the full scope and complexity of your project requirements:

- Size
- Electrical clearance assessment
- Terrain
- Voltage range
- Phase configuration
- Body geometry
- Pole maintenance and accessibility
- Line and foundation designs
- Weather conditions
- Structural variation

We also offer a broad array of in-house line design services.

Quality. Reliability. Timely Delivery.



Manufacturing Quality and Capacity

High levels of output and reliability result from our quality-driven processes at our transmission structure manufacturing plants located in Monterrey, Mexico and Belo Horizonte, Brazil. These facilities encompass approximately 475,000 square feet. Both plants conform to AISC fabricating procedures and have achieved several coveted quality, safety and environmental certifications.

Our plants in the Americas have earned the following certifications:

- Quality Management Systems - ISO 9001
- Environmental Management Systems ISO 14001
- Occupational Health & Safety Management Systems - OHSAS 18001



Additional sales, engineering design and customer service operations are located at corporate headquarters in Houston, Texas.

Our pole manufacturing operation is based at our plant in Monterrey, Nuevo Leon, Mexico, approximately 120 miles south of Laredo, Texas. The 15-acre site includes 98,200 square feet of production space plus 6,500 square feet of engineering and administrative offices. A yard encompassing 84,200 square feet is dedicated to the pre-assembly and quality assurance of prototypes. The Monterrey facility has full access to global and US steel suppliers, allowing for ready availability of both structural angles and plate conforming to ASTM A36, ASTM A572, ASTM A588 and ASTM A871 specifications as well as other special grades as required.

Modern manufacturing processes include eight CNC angle punch machines, two CNC angle drill lines along with four CNC plate machines, four light-duty punch machines, one 1,500-ton press brake, three 250-ton vertical presses, plasma and oxy cutters, milling machines, plate shears and submerged arc welding equipment.

Hot-dip galvanizing is carried out in house in one of the most modern facilities in North America. The main kettle measures 5 feet (w) x 8 feet (d) x 41 feet (l) and is supported by eight pickling tanks, one flux, one rinse, one quench and three dulling and deglaring tanks.



Pole Manufacturing Process

Utilizing CAD/CAM layouts that optimize the amount of material required, our pole manufacturing process starts as plate is cut using automated (CNC) plasma/oxy cutting machinery.

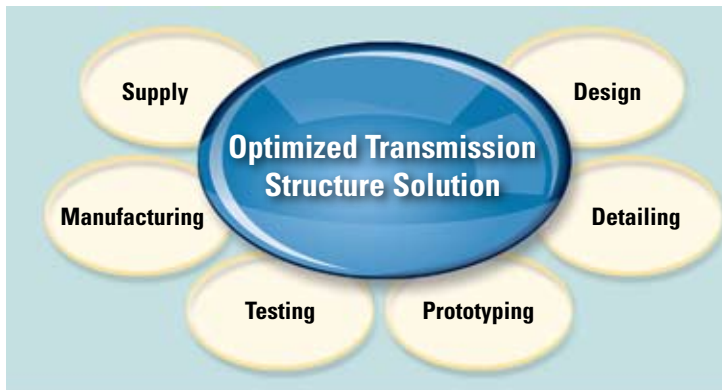
A 1,500-ton press brake forms the longitudinal bends that shape the multi-sided tapered tubular pole.

Shaft half-shells are joined using our state-of-the-art submerged arc welding equipment. A partial penetration weld is achieved assuring proper structural behavior of the shafts.

Next, the pole is fit with all the required attachments including crossarm connections, ladders, step-bolts and top plates.

The base plate requires a nearly perfect weldment between the bottom shaft and the base plate to assure that the most highly stressed areas of the pole are distributed into the foundation. Because of the importance of this critical connection, we employ a variety of non-destructive testing processes (visual, radiographic, magnetic particle, liquid penetrant and ultrasonic) to assure quality.

Galvanizing at our in-house facility provides complete control over the final step of our process.



SAE Towers

The largest steel lattice producer in the Americas providing Optimized Transmission Structure Solutions through world-class in-house capabilities.

- *Field-Fit Constructability*
- *Cost Effectiveness*
- *Weight Efficiency*
- *Shorter/Simpler Transaction Cycles*
- *Improved Live Line Maintainability*
- *Long Term Reliability*

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