



March 15, 2012

Message Center Management
40 Woodland Street
Hartford, CT 06105

Attn: Virginia King
Phone: 860-727-5790

**Re: Design and failure modes for a 120' of a 140' Tapered Monopine
Quality of Steel and Fabrication of a Monopole Structure
Valmont Quotation No. 166273-01
Site Location: Redding, CT**

In order to assure you of the high quality of all Valmont products, we would like to offer the following comments:

- Communications monopole structures designed by Valmont are sized in accordance with the latest governing revision of the ANSI/TIA 222 standard unless otherwise requested by our customer. This standard has been approved by ANSI/ASCE-7, which has dealt with the design of antenna support structures for over 40 years. The TIA standard, based on provisions of this nationally known specification, has a long history of reliability. At its core philosophy is it's first and foremost priority to safeguard and maintain the health and welfare of the public.
- The TIA standard designates a wind loading for each county in the United States. Valmont uses the wind loading listed in the TIA standard unless a greater value is specified by our customer. Structures are also designed for radial ice at a code specified reduced design wind loading. Code designated coefficients are used to ensure that the structure will survive the designed wind speed. The structure can usually survive an even greater wind load than the basic design wind speed because of these conservative coefficients.
- Design and loading assumptions that are used for the analyses of these structures are very conservative in nature when compared to other codes, which makes structural failure highly improbable.
- Failure of a steel monopole occurs when a point is reached where the induced stresses exceed the yield strength of the material. At this point, the deflections induced in the material are no longer temporary. Hence, a permanent deflection in the monopole would exist.
- The term failure above refers to local buckling at a designated point on the pole. Local buckling does not cause a free falling pole; rather it relieves the stresses from the pole at this location. Monopoles are flexible, forgiving structures, which are not generally susceptible to damage by impact loads such as wind gust or earthquake shocks.
- When local buckling occurs, a relatively small portion of the shaft distorts and "kinks" the steel. When the pole begins to bend the exposure area is reduced and therefore, the force due to wind is decreased as well. Even though buckling exists, the cross section of the pole is capable of carrying the entire vertical load. Therefore, wind induced loads could not conceivably bring this type of structure to the ground due to the excellent ductile properties, design criteria, and failure mode.
- Valmont's communication poles have proven to be very reliable products. Valmont has provided structures that have performed well during earthquakes in California, hurricanes in the South (including Hugo, Andrew, Opal and Katrina), and a number of tornadoes. In over 25 years of engineering and fabricating thousands of monopoles, to our knowledge Valmont has never experienced an in service failure of a communication pole due to weather induced overloading, even though, as in the cases of Hurricanes Hugo, Andrew and Katrina, the wind speeds exceeded the design wind speed. We use the latest standards, wind speed information, and sophisticated analytical tools to ensure that we maintain our unblemished record for quality.



Valmont Quality of Steel and Manufacturing:

- Monopoles are fabricated from ASTM A572 Grade 65 material with a controlled silicon content of 0.06% maximum to ensure a uniform galvanized coating. The base material is fabricated from Grade 60 material. All plate material meets a V-Notch toughness requirement of 15 ft-lbs. @ -20 degrees Fahrenheit. By meeting the strict toughness requirement, monopoles are best suited to resist the cyclic/fatigue type loading (i.e. wind induced loading) these structures exhibit.
- Valmont's anchor bolts are fabricated from A615 Grade 75 material. The bolts are 2 ¼ in diameter, made from #18J bar stock. Anchor bolts come complete with four (4) A194 Grade 2H hex nuts.
- For the past 40 years, our company has always guaranteed the quality of the steel used in building our structures. Material Certifications are available on all material at the time of fabrication. Fabrication of the monopole is performed in accordance with the provisions of the AISC Manual of Steel Construction and ASCE's Design of Steel Transmission Pole Structures. All welding and inspection is in accordance with the American Welding Society's Specification D1.1-latest revision. Testing and inspection reports are available upon request at the time of fabrication.

I hope these comments address the issues that you might encounter relative to the anticipated performance of monopole structures and quality of steel fabrication. If you have additional questions or comments, I may be reached at 503-589-6671.

Sincerely,

Dennis Beal
Lead Inside Sales Specialist