

# MEYER

## UTILITY STRUCTURES

## Achieving Weld Performance Excellence



Meyer performs 100% ultrasonic inspections on all full penetration welds as required by ASCE 48-11.

All full penetration welds require 100% ultrasonic inspection or radiographic inspection (AWS D1.1)

All full penetration baseplate and flange plate welds shall be 100% UT inspected for toe cracks both before and after galvanizing (ASCE 48-11)

Welding requirements should be clearly defined in your specifications

# Achieving Weld Performance Excellence

A significant amount of structure damage and failure can be attributed to poor weld compliance and insufficient weld inspections. While industry standards require that all complete joint penetration welds undergo 100% ultrasonic inspection or radiographic inspection, many welds fail to meet this industry standard criteria. Ensuring that your welds are inspected as required by ASCE 48 will assist in the identification of toe cracks or inadequate welding.

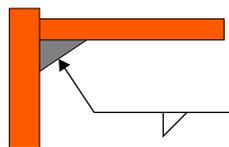


## Wind Induced Vibration

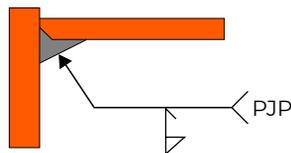
Wind induced vibration is caused by alternating wind vortices flowing over a surface. When steady state wind passes across a slender structural member, such as a conductor or an overhead shield wire arm, the resulting vibration generates cyclic loads that impose bending stresses at the highest stress locations or at points of weakness, typically the weld joint and heat affected zone of the structural member.

Studies have shown that full penetration welds are significantly more resistant to cyclical vibration loading. Meyer Utility Structures uses 100% full penetration welds on all arm bracket to arm shaft welds. Meyer has successfully completed testing on arm bracket to arm shaft connections to provide reliability and confidence in the integrity of these connections.

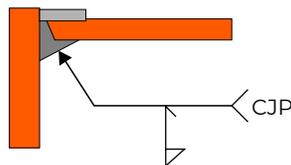
Fillet Weld  
(others)



Partial Penetration Weld  
(others)



Full Penetration Weld  
(Meyer)



## Toe Cracks

Per ASCE 48-11, Section 10.3.5, all full penetration welds shall be 100% ultrasonic inspected for toe cracks after galvanizing. "Toe cracks" can be caused by several factors of the fabrication process, including welding practices, material characteristics, and product designs. Toe cracks are oftentimes formed on baseplate welds when varying baseplate and pole shaft material thicknesses cool at different rates. Because thicker baseplate materials cool more slowly, additional stresses are applied to the connecting welds, creating toe cracks. Proper preheat and monitoring of minimum interpass temperatures can result in more consistent cooling rates, which will assist in prevention of toe cracks. Extreme heating events, such as galvanizing, may also create residual stresses on welds, further promoting toe cracking.

Meyer performs 100% ultrasonic inspections on all full penetration welds as required by ASCE 48-11. Thorough visual inspections are also conducted by certified welders and weld inspectors to detect any cracking or any other undesirable characteristics.

## Welding Practices

All welds are not created equal. Some welds are much more susceptible to failure than others. While fillet, partial, and full penetration welding practices are all used, full penetration welds with reinforcing fillet welds provide the greatest assurance against weld failure.

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