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INDUSTRY
PRACTICES

April 2021

Pipeline Systems

**PIP PLE00005
Pipeline System Bonds**

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1. Scope

This Practice provides guidance for evaluation, selection, and specification of pipe bends for on-shore metallic pipelines designed and constructed to *ASME B31.8 Gas Transmission and Distribution Piping Systems* and *ASME B31.4 Pipeline Transportation Systems for Liquids and Slurries*. This Practice covers the following types of bends:

- a. Manufactured fittings
- b. Induction (hot) bends formed off-site
- c. Cold bends formed on-site

This Practice provides guidance for evaluation of which bend type to select by providing pros and cons based on specific site rights-of-way, pipe size and wall thickness, shipping considerations, pipe ovality, pigging requirements, etc. Additional, more explanatory references and recommendations are also provided.

2. References

Applicable parts of the following industry codes and standards shall be considered an integral part of this Practice. The edition in effect on the date of contract award shall be used, except as otherwise noted. Short titles are used herein where appropriate.

Industry Codes and Standards

- The American Society of Mechanical Engineers (ASME)
 - ASME B16.49 – *Factory-Made Wrought, Steel, Buttwelding Induction Bends for Transportation and Distribution Systems*
 - ASME B16.9 – *Factory-Made Wrought Buttwelding Fittings*
 - ASME B31.8 - *Gas Transmission and Distribution Piping Systems*
 - ASME B31.4 - *Pipeline Transportation Systems for Liquids and Slurries*
- Manufacturers Standardization Society (MSS)
 - MSS SP-75 – *High-Strength, Wrought, Butt-Welding Fittings*

3. Definitions

arc: curved portion of tube bends or pipe bends

bend angle/degree: angle in degrees to which the pipe bends or tube bends are formed (i.e., 45 degrees, 90 degrees, 180 degrees, etc.)

bevel: type of end preparation of tube bends or pipe bends

centerline radius (CLR): Distance in inches from the center of curvature to the centerline axis of the tube rolling or pipe rolling bends. Often abbreviated as CLR.

cold tube bending: bending of pipe or tube to shapes by cold working methods