



PROCESS
INDUSTRY
PRACTICES

April 2017

Pipeline Systems

PIP PLSC0011
Trenching and Excavation for Pipelines

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In an effort to minimize the cost of process industry facilities, this Practice has been prepared from the technical requirements in the existing standards of major industrial users, contractors, or standards organizations. By harmonizing these technical requirements into a single set of Practices, administrative, application, and engineering costs to both the purchaser and the manufacturer should be reduced. While this Practice is expected to incorporate the majority of requirements of most users, individual applications may involve requirements that will be appended to and take precedence over this Practice. Determinations concerning fitness for purpose and particular matters or application of the Practice to particular project or engineering situations should not be made solely on information contained in these materials. The use of trade names from time to time should not be viewed as an expression of preference but rather recognized as normal usage in the trade. Other brands having the same specifications are equally correct and may be substituted for those named. All Practices or guidelines are intended to be consistent with applicable laws and regulations including OSHA requirements. To the extent these Practices or guidelines should conflict with OSHA or other applicable laws or regulations, such laws or regulations must be followed. Consult an appropriate professional before applying or acting on any material contained in or suggested by the Practice.

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1. Scope

This Practice provides requirements for the installation of pipelines constructed in accordance with *ASME B31.8*, “Gas Transmission and Distribution Piping Systems” and *ASME B31.4*, “Pipeline Transportation Systems for Liquids and Slurries.” This Practice covers trenching and excavation for pipelines to be buried below existing grade to a depth of 6.1 m (20 feet) or less.

2. References

Applicable parts of the following Practices and 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 will be used herein where appropriate.

2.1 Process Industry Practices (PIP)

- PIP CVS02100 - *Site Preparation, Excavation and Backfill Specification*

2.2 Industry Codes and Standards

- OSHA
 - Technical Manual Section 5, Chapter 2, *Excavation: Hazard Recognition in Trenching and Shoring*
 - 29 CFR 1926 *Safety and Health Regulations for Construction, Subpart P, Excavation*

3. Definitions

Owner/operator: The organization that exercises control over the operation, engineering, inspection, repair, alteration, pressure testing and rating of pipeline systems.

benching system: Method of protecting employees against cave-ins by cutting the sides of an excavation to form one or more levels or steps, usually with vertical or near-vertical sides

cemented soil: Soil which is held together by natural cement-like chemical agents. Hand-size samples cannot be crushed into powder or individual soil particles by finger pressure. Cemented soils include caliche and hardpan. These soils are very difficult to excavate.

clay soil: Soil that is hard to break up if dry, but can be crushed to a powder; and moldable and sticks together (i.e., cohesive) if wet.

cohesive soil: Soil with high clay content that sticks together if wet or dry. Cohesive soil does not crumble, can be dug with vertical sides, and is moldable if moist. Cohesive soil is hard to break up if dry, and sticks together if wet or underwater.

fissured: Cracked. A characteristic of some soils to break along definite lines and fracture easily; soil that has open cracks (e.g., tension cracks) on the ground or excavation face

granular soil: Gravel or sandy soils, possibly including silt, with little or no clay content. Granular soil has very little or no cohesive strength. Granular soil cannot be molded if moist and