



PROCESS
INDUSTRY
PRACTICES

September 2021

Electrical

**PIP ELCWC08
Electrical Manhole / Cable Vault
Design Criteria**

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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. Determination concerning fitness for purpose and particular matters or application of the Practice to a 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 describes design criteria for precast concrete manholes or cable vaults used in conjunction with underground electrical ducts, and installation of cables in underground manholes. Proper design and installation of manholes is essential for safety and reliability of plant electrical services. Basic designs and installation requirements included in this Practice shall be reviewed by site engineering personnel for each new installation to ensure proper application.

2. References

Applicable parts of the following Practices, industry codes and standards, and references 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.

2.1 Process Industry Practices (PIP)

- PIP STC01015 - *Structural Design Criteria*
- PIP STF05501 - *Fixed Ladders Fabrication Details*

2.2 Industry Codes and Standards

- American Society for Testing and Materials (ASTM)
 - C 857 - *Standard Practice for Minimum Structural Design Loading for Underground Precast Concrete Utility Structures*
 - C 858 - *Specification for Underground Precast Concrete Utility Structures*
- National Fire Prevention Association (NFPA)
 - NFPA 70 - *National Electric Code (NEC)*

3. Definitions

owner: The party who owns the facility wherein the specified equipment will be used

purchaser: The party who awards the contract to the supplier. The purchaser may be the owner or the owner's authorized agent

purchaser's inspector: The purchaser's authorized representative with authority to act in the interest of, and on behalf of, the purchaser in all quality assurance matters

supplier: The party responsible for manufacturing, furnishing, and/or installing the specified equipment

4. Requirements

4.1 Supplier

Precast manholes shall be a standard design offered by a reputable manhole supplier unless electrical and/or structural requirements dictate the need for a custom design.

4.2 Design Requirements

Precast manholes shall be constructed of reinforced concrete which has been designed and placed in accordance with the current editions of *ACI 318*, *ASTM C 857*,