

Item No. 505S

Concrete Encasement and Encasement Pipe

505S.1 Description

This item shall govern the furnishing of materials and the methods of constructing a Portland cement concrete encasement or encasement pipe in a trench.

This specification is applicable for projects or work involving either inch-pound or SI units. Within the text and accompanying tables, the inch-pound units are given preference followed by SI units shown within parentheses.

505S.2 Submittals

The submittal requirements of this specification item include:

- A. Type, of pipe, construction methods and sequence,
- B. Aggregate types, gradations and physical characteristics for the Portland cement concrete mix,
- C. Proposed proportioning of materials for the mortar mix.

505S.3 Materials

A. Portland Cement Concrete

The Portland cement concrete shall conform to Class D Concrete, Item No. 403S, "Concrete for Structures".

B. Pipe

Portland Cement concrete pipe shall conform to ASTM C-76, Class III or better.

Corrugated Metal Pipe (CMP) shall conform to Section 510.2 (8) (o) of the City of Austin Standard Specification Item No. 510, "Pipe".

Steel Pipe shall conform to ASTM A134 with a minimum thickness of 3/8 inch (9.5 mm) for pipe with a diameter of 16 inches (400 mm) and greater.

C. Grout

Grout shall consist of not less than 6 sacks Portland cement per cubic yard (335 kilograms Portland cement per cubic meter) and clean washed sand mixed with water. The grout shall have a consistency such that the grout will flow into and completely fill all voids. If allowed by the Engineer or designated representative, an air entraining admixture may be added to facilitate placement.

505S.4 Construction Methods

When indicated on the Drawings or acceptable to Engineer or designated representative, concrete encasement shall be placed to protect the pipe. Pipe or bedding shall not be placed where:

- (a) the top of the pipe would have less than 30 inches (750 mm) of cover from finish grade,
- (b) the ground water invades the trench, or
- (c) the trench bottom is of unstable material.

If either of these conditions is encountered, the Engineer or designated representative shall be notified and may direct the Contractor to:

- (a) encase the pipe with concrete,
- (b) change pipe material, or
- (c) use a higher strength class of pipe.

Concrete encasement shall extend from 6 inches (150 mm) below to 6 inches (150 mm) above the outer projections of the pipe over the entire width of the trench in accordance with the City of Austin Standard Detail 501S-1," Encasement Detail w/ Casing Spacers".

The ends of the encasement pipe shall be bulkheaded (Standard Specification Item No. 507S) with concrete blocks, bricks or stones, dry-stacked without mortar, sufficient to prevent the intrusion of trench backfill material into the encasement, but fitted loosely enough to facilitate the escape of water from the encasement should carrier pipe leakage or failure occur.

505S. 5 Measurement

Concrete encasement will be measured by the lineal foot (meter: 1 meter equals 3.281 feet), for size of pipe being encased, complete in place. The measurement will be made between ends of the encasement, along the central axis as installed.

Encasement pipe installed by open cut will be measured by size of encasement installed, complete in place. The measurement will be made between the ends of the pipe, along the central axis as installed.

505S.6 Payment

Work performed and materials furnished as prescribed by this item will be included in a unit price bid item from Standard Specification Item No. 510, "Pipe" unless included as a separate pay item in the contract.

When included for payment, it shall be measured as provided under "Measurement" and will be paid at the unit bid price per lineal foot for "Concrete Encasement" or "Encasement Pipe" of the size indicated on the Drawings. The unit bid price shall include full compensation for furnishing all materials, pipe for all preparation, hauling, installation and for all labor, tools, equipment and incidentals necessary to complete the work, including bench excavation and disposal of surplus material.

Payment, when included as a contract Pay Item, will be made under one of the following:

- Pay Item No. 505S-A:** Concrete Encasement for ___ Dia. Pipe - Per Lineal Foot.
- Pay Item No. 505S-B:** Encasement Pipe ___ Dia., Type ___, - Per Lineal Foot.

End

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| <i>SPECIFIC</i> Cross Reference Materials |
| Standard Specification Item No. 505S, "Encasement and Encasement Pipe" |

City of Austin Standard Specification Items

| <u>Designation</u> | <u>Description</u> |
|---------------------|-----------------------------|
| Item 403S | Concrete For Structures |
| Item 507S | Bulkheads |
| Item 510 | Pipe |
| Section 510.2(8)(o) | Corrugated Metal Pipe (CMP) |

City of Austin Standard Details

| <u>Designation</u> | <u>Description</u> |
|--------------------|-------------------------------------|
| Detail 501S-1 | Encasement Detail w/ Casing Spacers |

American Society for Testing and Materials (ASTM)

| <u>Designation</u> | <u>Description</u> |
|--------------------|---|
| A-134 | Specification for Pipe, Steel, Electric-Fusion (Arc)-Welded (Sizes NPS 16 and Over) |
| C-76/C-76M | Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe |

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| <i>RELATED</i> Cross Reference Materials |
| Standard Specification Item No. 505S, "Encasement and Encasement Pipe" |

TxDOT Specifications

| <u>Designation</u> | <u>Description</u> |
|--------------------|--------------------------|
| Item 421 | Portland Cement Concrete |
| Section 421.9 | Quality of Concrete |
| Section 421.2(8) | Mortar and Grout |

City of Austin Standard Specification Items

| <u>Designation</u> | <u>Description</u> |
|---------------------|------------------------|
| Item No. 501S | Jacking or Boring Pipe |
| Item No. 506 | Manholes |
| Section 510.2(8)(c) | Concrete pipe |
| Section 510.2(8)(m) | Steel Pipe |
| Item No. 593S | Concrete Retards |