

## SECTION 03 45 30

PRECAST CONCRETE STRUCTURES  
04/06

## PART 1 GENERAL

## 1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

## ASTM INTERNATIONAL (ASTM)

ASTM C 150	(2007) Standard Specification for Portland Cement
ASTM C 387	(2004) Packaged, Dry, Combined Materials for Mortar and Concrete
ASTM C 478	(2007) Standard Specification for Precast Reinforced Concrete Manhole Sections
ASTM C 858	(2004) Standard Specification for Underground Precast Concrete Utility Structures

## 1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

## SD-02 Shop Drawings

## Precast Concrete Structures;A/E

Detail drawings showing layout of structure and reinforcing steel placement, schedules, sizes and bending details.

## PART 2 PRODUCTS

## 2.1 Precast Concrete Structures

- a. Precast concrete structures shall comply with ASTM C 858 except as modified herein.
- b. Design for live and dead loads and to withstand site soil conditions. Alternate design by the strength design method shall include a load of 1.7 times the lateral earth or hydrostatic pressures. Design shall be per criteria as noted on Drawing General Structural Notes.
- c. Design shall also comply with the following restrictions:

1. The maximum reinforcement ratio allowed is one half the reinforcement ratio that produces a balanced strain condition.
  2. Earth pressure shall be converted to a horizontal pressure using a coefficient pressure at rest of 0.5 and not a coefficient of active earth pressure.
  3. Include a live load surcharge of 2 feet of soil in the design of the walls.
- D. Precast structures construction shall be in the form of monolithic walls or horizontal sections: do not use panel walls.
- E. Minimum wall thickness shall be 6 inches.
- F. Design and construct structures to be watertight.
- G. Provide openings in precast structures for piping and access.

#### 2.1.1 Precast Concrete Risers

Precast concrete grade rings and cones shall comply with [ASTM C 478](#), except the wall thickness shall be 6 inches minimum. Provide interlocking keyways on rings and cones. Provide cones with cast in place inserts for the manhole frame.

#### 2.1.2 Sealants and Mortar

Fill joints between precast sections with a double layer of plastic sealing compound to make watertight. Fill with mortar all recesses, lifting inserts, or other cavities not filled with plastic sealing compound. Mortar shall comply with [ASTM C 387](#), Type S.

#### 2.1.3 Cement

Cement shall be [ASTM C 150](#) Type II.

#### 2.1.4 Cement Strength

28-day compressive concrete strength shall be [4,000 psi](#), minimum.

#### 2.1.5 Waterproofing

The waterproofing material shall be Horn Dehydratine 4, Select Shield 301 A, or approved equal. The material is a black bituminous compound of brush or spray consistency for application on below grade concrete surfaces.

#### 2.1.6 Appurtances

Provide ladders, covers and frames, vents, remote gauge housings, supports, inserts, eyebolts, and other miscellaneous metalwork as shown on the Drawings.

## PART 3 EXECUTION

## 3.1 EXCAVATING AND BACKFILLING

Provide 6-inch minimum thickness 3/4-inch crushed rock over the full width of the vault base and extend 12 inches beyond the edges of the vault horizontally.

## 3.1.1 Installing Structure Sections and Risers

Set each precast concrete structure section or riser plumb on a double layer bed of sealant at least 1/2-inch thick to make a watertight joint with the preceding unit. Point the inside joint and wipe off the excess sealant.

## 3.1.2 Waterproofing

Waterproofing shall be factory applied to all exterior surfaces of structure sections and risers per manufacturer's recommendations. Prior to backfilling, field-apply waterproofing material on joints and damaged surfaces. Protect coating from damage during backfilling and compacting.

-- End of Section --