

STANDARD SPECIFICATION  
SECTION 03462 PRECAST CONCRETE VAULTS

PART 1 - GENERAL

1.01 DESCRIPTION

This section includes materials, design, and installation of precast concrete vaults with factory applied waterproofing.

1.02 RELATED WORK SPECIFIED ELSEWHERE

- A. Record Drawings Submittals: STD SPEC 01300.
- B. Earthwork: STD SPEC 02200.
- C. General Concrete Construction: STD SPEC 03000.
- D. Miscellaneous Metalwork: STD SPEC 05120.

1.03 SUBMITTALS

- A. Submit submittal packages in accordance with Standard Specification Section 01300.
- B. Submit manufacturer's catalog data on precast concrete items. Show dimensions of vault and location of openings including thicknesses of walls, floor and top slab. Show reinforcing wire and steel. Show materials of construction by ASTM reference and grade.
- C. Submit manufacturer's design calculations and certification signed and sealed by a professional civil or structural engineer registered in the State of California that vault design and construction comply with the specified design load conditions and the referenced ASTM specification (e.g., ASTM C 857 and C 858).
- D. Submit manufacturer's catalog data, descriptive literature, and installation instructions for the waterproofing material.

1.04 INSPECTION

- A. The District's Representative or his authorized representative will conduct an inspection of the vault fabrication process at the manufacturer's plant prior to the placement of the concrete into the formwork. The inspection will review the quality of materials, the formwork, placement of reinforcing steel, location of openings in the vault, and other construction details as shown in the approved fabrication drawings in the submittal package. If the concrete is placed into the formwork without this prior inspection, the vault will be rejected.
- B. The District's Representative or his authorized representative will conduct a second inspection of the vault upon its arrival at the jobsite. The inspection will review the quality of the concrete surfaces, defects that indicate any imperfect concrete mixing and molding, surface defects indicated by honey-combed or open texture and damaged areas, any

exposed or bare reinforcing steel, and waterproofing that is missing from indicated surfaces or poorly applied. If any of these items are present or exist, the vault will be rejected.

## PART 2 - MATERIALS

### 2.01 MANUFACTURERS

Precast concrete vaults shall be manufactured by Brooks Products Inc., Utility Vault, or District approved equal.

### 2.02 PRECAST CONCRETE VAULTS

- A. Precast concrete vaults shall comply with ASTM C 858 except as modified herein.
- B. Design live and dead loads shall be in accordance with ASTM C 857. Design precast concrete vaults to withstand site soil conditions and traffic loading of A-16 per Table 1 of ASTM C 857 with a 30% increase due to impact. Soil lateral loads shall be as determined by ASTM C 857. Alternate design by the strength design method shall include a load factor of 1.7 times the lateral earth or hydrostatic pressures. Design shall evaluate earthquake (Zone 4).
- C. Design shall also comply with the following restrictions:
  - 1. The maximum reinforcement ratio allowed is one-half the reinforcement ratio that would produce a balanced strain condition.
  - 2. Earth pressure shall be converted to a horizontal pressure using a coefficient of earth 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 vault construction shall be in the form of monolithic walls or horizontal wall sections; do not use panel walls.
- E. Minimum wall thickness shall be 6 inches. Design knockout wall panels to accommodate loading pressures defined above.
- F. Design and construct vaults to be watertight when subjected to groundwater over the entire height of the vault.
- G. Provide openings in precast vaults for piping and access. Provide cast in place inserts in the roof slab and end walls at the locations as shown on the Drawings. No field coring of openings is allowed.

### 2.03 PRECAST CONCRETE RISERS

Precast concrete grade rings and cones shall comply with ASTM C 478, except that 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.

## 2.04 SEALANTS AND MORTAR

Fill joints between precast sections with a double layer of plastic sealing compound and make watertight. Plastic sealing compound shall comply with Federal Specification SS-S-00210. 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.

## 2.05 CEMENT

Cement shall be ASTM C 150, Type II.

## 2.06 ADMIXTURES

Provide concrete admixtures as specified in Standard Specification Section 03000.

## 2.07 WATERPROOFING

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

## 2.08 VAULT APPURTENANCES

Provide ladders, covers and frames, vents, supports, inserts, eyebolts, and other miscellaneous metalwork. See Standard Specification Section 05120 for a description of the vault appurtenances.

# PART 3 - EXECUTION

## 3.01 EXCAVATING AND BACKFILLING FOR VAULTS

Perform earthwork as specified in Standard Specification Section 02200. 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. After repairing the waterproofing, backfill and compact around the vault with structural backfill material. Excavated material may be used for structural backfill provided it conforms to the Standard Specifications for structural backfill material.

## 3.02 INSTALLING VAULTS AND RISERS

Set each precast concrete vault 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.

## 3.03 WATERPROOFING

Waterproofing shall be factory applied to all exterior surfaces of vaults and risers. This includes the bottom of the vault to be coated as an exterior surface. Apply two coats at a rate of 65 square feet per gallon per coat. Prior to backfilling, field apply waterproofing material on joints and damaged surfaces. Protect coating from damage during backfilling and compacting.

END OF SECTION