

**GENERAL:**

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The scope of this document is to provide instruction for the installation of precast trench and chase lids.

**DESIGN GUIDELINES:**

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**A. General**

1. For existing pipe trench lids, all field dimensions required to insure proper fit of new lids on existing trench shall be obtained.
2. Precast concrete lids shall be manufactured by a recognized supplier of precast concrete products having at least 3 years successful experience in the fabrication of similar pre-cast units.
3. Allowable Tolerances
  - 3.1. Lids shall be manufactured to comply with the following dimensional requirements.
    - 3.1.1. Warpage: One corner out of plane of other three (1 in 200) from nearest adjacent corner.
    - 3.1.2. Bowing: (Length of Bow/360) to maximum of 3/4".
    - 3.1.3. Overall length and width: Plus or minus 1/8".
    - 3.1.4. Thickness: Plus 1/4", minus 1/8".
    - 3.1.5. Deviation from square:
      - 3.1.5.1. In any length: (1 in 600).
      - 3.1.5.2. Maximum: 1/4".
4. Design Criteria
  - 4.1. Lids shall be constructed per drawing "Design Standard – Typical Chase Structure" and in compliance with the latest revision of American Concrete Institute ACI 318.
  - 4.2. Provide any additional reinforcing as required for stripping forms and erecting lids.
  - 4.3. All reinforcement bars shall be fabricated with MMFX steel.
  - 4.4. Maximum lid length shall be ten (10) feet.
  - 4.5. Work shall be laid out at the site in order to determine the number and exact length of lids required
5. Lifting Provisions
  - 5.1. Provide lifting system for lids to include sling complete with spreader bar, cables, brackets, hardware, etc.
  - 5.2. Lids shall have suitable underside recesses at each corner (4 per lid) where the brackets attach. See Drawing, "Design Standard – Typical Chase Structure".
6. Molds
  - 6.1. Molds shall be constructed to conform to the shape and dimension of the lids as shown on the Drawings and to maintain the tolerances as specified.
  - 6.2. Molds shall be designed to prevent damage to concrete from:
    - 6.2.1. Restraint as concrete shrinks.
    - 6.2.2. The stripping operation when panel is lifted from mold.

- 6.3. Joints in molds shall be so constructed and filled so they do not appear on the finished product.
- 6.4. Wood molds shall be treated to prevent excessive absorption which would cause a non-uniform finish.
7. Finish
  - 7.1. Lids for underground trench/tunnel require no special finish.
8. Manufacture
  - 8.1. Concrete shall be mixed in proportions to develop a minimum 28 day strength of 4000 psi.
  - 8.2. All cement, and coarse and fine aggregates required for all lids shall be from the same source to assure uniformity of color.
  - 8.3. Molds shall be free from stains, rust, dirt, etc., which will cause discoloration or damage to the lids.
  - 8.4. Transporting, placing and consolidation of concrete shall be by a method to prevent segregation of concrete materials and displacement of inserts and reinforcing.
  - 8.5. Place and secure in forms all inserts, lifting devices, reinforcing and other devices and accessories required for handling and structural requirements. Reinforcing shall have concrete cover as shown on the Drawings.
9. Curing
  - 9.1. Initial curing shall take place in molds at temperature above 50°F with protection to precast units to prevent loss of moisture. Maximum curing temperatures shall be 150°F. Curing temperatures shall be uniform without localized hot areas.
  - 9.2. Initial curing shall continue until concrete reaches a compressive strength of 2500 psi.
  - 9.3. Care shall be taken to prevent covers from causing staining or discoloration of the lids from covers or condensation.
  - 9.4. Curing methods shall be uniform from lid to lid.
  - 9.5. After removal from forms, lids shall be protected from excessive evaporation and from freezing.
  - 9.6. The use of curing compounds will not be permitted.

## **B. Installation**

1. Delivery, Handling and Storing
  - 1.1. Deliver precast units to project site in such quantities and at such times to assure continuity of installation.
  - 1.2. Lids shall be handled and stored in such a manner as to prevent structural damage, detrimental cracking, distortion or architectural impairment.
2. Prior to waterproofing, lids shall be shimmed, with 4 inch plastic shim pack materials, to prevent lid rocking during backfilling.
3. Precast lids shall be carefully placed and fitted upon chase, aligned, centered between walls, and laid end-to-end minimizing joint thickness as much as possible. Once installation of lids is completed, placement of waterproofing shall be performed. See Construction Standard – Joint Sealants and Construction Standard – Waterproofing.

4. Lids having broken corners or edges, spalls, cracks or other defects shall not be installed in the work.
5. Hair cracks (surface cracks) visible to the eye but not measurable are acceptable. Cleavage cracks (cracks that penetrate at least to the reinforcing steel) and fractures are not acceptable.

### **C. Commissioning**

1. Owner's Representative shall determine whether each precast concrete lid is acceptable.

### **REFERENCES**

- A.** Reference shall be made to other sections of the Construction Standards for related **work** as follows:
1. Concrete Reinforcement.
  2. Cast-In-Place Concrete.