

Internal Use Only

INTERNATIONAL ASSOCIATION OF PLUMBING AND MECHANICAL OFFICIALS

MATERIAL AND PROPERTY STANDARD

FOR

PRECAST CONCRETE SEEPAGE PIT LINERS AND COVERS

IAPMO PS 81-2006

1. PURPOSE

- 1.1 The purpose of this standard is to establish a generally acceptable standard for precast concrete seepage pit liners and covers. Its purpose is to serve as a guide for producers, distributors, architects, engineers, contractors, installers, inspectors and users; to promote understanding regarding materials, manufacture and installation; and to provide for identifying precast concrete seepage pit liners covers complying with this standard.
- 1.2 The provisions of this standard are not intended to prevent the use of any alternate material or method of construction, provided any such alternate meets the intent of this standard.

2. SCOPE

- 2.1 This standard covers dimensional, and material requirements in addition to the testing and marking requirements.

3. DEFINITIONS

- 3.1 **Seepage Pit Liners.** A reinforced concrete circular pit liner in which the walls are perforated with holes so that when the liner is positioned vertically in a round shaft excavation or pit and surrounded with gravel, it will serve as a structural support for the waste water drain pit while letting the water seep into the surrounding earth.
- 3.2 **Seepage Pit Cover.** A reinforced concrete cover placed over the top of seepage pit liner pipe.

4. GENERAL REQUIREMENTS

- 4.1 **Dimension and Tolerances.** Seepage pit covers shall be not less than 1.2 m (48") in diameter and be designed to support an earth load of not less than 24 kPa (500 psf) when the maximum coverage does not exceed 0.9 m (3'). Each cover shall be provided with a minimum of 229 mm (9") diameter access hole and cover for an inspection.
- 4.2 Seepage pit liners shall be a minimum of 0.9 m (3') outside diameter. The wall thickness to be minimum of 76.2 mm (3"). The liner wall to be perforated with 25.4 mm (1") to 44.45 mm (1 3/4") diameter holes placed at 152.4 to 254 mm (6 to 10") center to center. The walls must be designed for a outside load from soil with a specific weight of 480.6 kg/cu. m (30 lbs./cu. ft.).

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5. MATERIAL REQUIREMENTS

- 5.1** Seepage pit liners and covers shall be constructed of concrete and rebar. Concrete shall have a minimum compressive strength of 24132 kPa (3500psi). Concrete shall have a maximum water/cementing materials ratio of 6 gal./sack of cement. Concrete shall be made with Type II or V, low/alkali portland cement conforming to ASTM C 150, Specification for Portland Cement, and shall also include sulfate expansion option as specified in Table 4 of ASTM C 150 for Type II or V. Concrete shall contain 4% - 7% entrained air utilizing admixtures conforming to ASTM C 260, Specification for Air Entraining Admixtures for Concrete. Concrete aggregates shall conform to ASTM C 33, Specification for Concrete Aggregates. Ready mix concrete, if used, shall conform to ASTM C 94, Specification for Ready Mix Concrete. Fly ash and raw or calcined natural pozzolan, if used as a mineral admixture in portland cement concrete, shall conform to ASTM C 618, Specification for Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Portland Cement Concrete. The minimum area of steel reinforcement (in both directions) of the structural elements shall be in accordance with ACI 318-89. Specifications for steel reinforcement and placement location shall also comply with ACI 318-89. Seepage pit liners and clarifiers shall be of sufficient strength to resist stresses caused during handling and installation without structural cracking.

6. TESTING REQUIREMENTS

- 6.1 On-site Batch Plants.** Periodic testing of the cement plant calibration systems shall be done to insure consistent accuracy in the amounts of water/cementing ratio as required in Section 5.1. Regular scaling of these materials shall be done in ninety (90) day periods, or, whenever a particular by-product is purchased from a different supplier, or, immediately following a cement plant failure or breakdown. All relative concrete compression strength tests, and all other technical testing required shall be done by a qualified and accepted engineering or testing laboratory.
- 6.2 Concrete Deliveries (Transit Trucks).** Relative compression strength tests shall be conducted by a qualified engineering or testing laboratory, every ninety days, to assure compliance.
- 6.3 Hand Mixing.** Hand mixing is not accepted due to the amount of variables encountered in creating a consistent mix design.

7. MARKINGS AND IDENTIFICATIONS

- 7.1** Each seepage pit liner section and seepage pit cover shall be marked with the following:
- (a) Manufacturer's name or trademark; and
 - (b) Model number and maximum recommended depth of earth cover in feet.

Adopted: 1995

Revised:2000, February 2006