

CATCH BASIN SEALING AND REINFORCEMENT

(as provided by AP/M Permform)

PART 1 - GENERAL

This section prescribes the minimum standards for the safe and efficient sealing and reinforcement of flat walled storm water catch basins and manholes.

PART 2 - MATERIALS

2.01 LEAK PLUGGING

All visible leaks shall be plugged prior to application of the cementitious liner. Quick setting, non-shrink hydraulic cement mortars of the same or greater strength than the Liner Mix and/or chemical grouts may be used. If water pressures are severe, the contractor may drill relief holes at the bottom of the manhole wall to concentrate the leaks before plugging.

A **Water Plug**

- a A quick setting hydraulic cement compound used to quickly stop running water or seepage leaks in masonry and concrete. The plug material shall be nonshrinking, nonmetallic, and noncorrosive. It shall require only potable water for mixing and it shall achieve initial set in 1 to 3 minutes, even when applied under water.
- b This material is used above or below grade, interior or exterior, to stop seepage and flowing water leaks in most concrete and masonry walls and floors. While plug material will not permanently seal running water leaks that are caused by thermal or structural movement, it is ideal for stopping leaks prior to application of the permanent liner.
- c The plug material shall be compatible with the Liner Material. It shall be Permacast-Plug™ or equal as approved at least ten days prior to the bid.

B **Patch Material**

- a A fast setting, ready-to-use, cement based concrete and masonry patching compound formulated specifically for underwater use shall be used to fill voids. It shall require only potable water for mixing and it shall achieve initial set in 3 to 5 minutes and final set within 20 minutes even under water. After initial set, it may be shaved to conform to the contours of the surrounding surface.
- b It shall be used underwater or below grade on vertical, overhead, and horizontal surfaces for filling voids in structures prior to the liner application. It shall be particularly well suited to fill offsets and large voids.
- c The patch material shall be compatible with the Liner Material. It shall be Permacast-Patch™ or equal as approved at least ten days prior to the bid.

2.03 LINER MIX

Shall be densely compacted, micro silica enhanced Portland cement mortar applied uniformly at a specified thickness from 1/2 to two (2) inches. Liner Mixes shall attain minimum strengths as follows:

| | 24 hours | 28 days |
|-------------------------------|--------------------------|------------|
| Compressive ASTM C-109 | 5,000 psi | 12,000 psi |
| Flexural ASTM C-295 | 800 psi | 1200 psi |
| Elasticity ASTM C-469 | 3.48 ^{10.6} psi | |
| Sulfate Resistance ASTM C-267 | | excellent |
| Freeze/Thaw Resistance | 200 cycles | undamaged |

Liner mixes producing less than 5,000 psi compressive strength in the first 24 hours shall be applied at 1.5 times the prescribed minimum thickness. Material shall be delivered in factory prepared packaging suitable for mixing with just the addition of clean water in the prescribed dosage. No additives shall be used at the site without prior approval. Liner materials shall be PERMACAST® ST-12,000 or equal as approved at least ten days prior to the bid.

2.04 SURFACE SEALING

A non-yellowing acrylic based sealing compound shall be applied as a protective seal coat and provide protection against abrasion, chemical attack and enhanced chloride ion penetration.

| | |
|----------------------------|--------------------------|
| Water Retention ASTM D-156 | 0.042 gr/cm ² |
| ASTM C-309: C-1315 | |
| Dry to Touch (min) | 40 min. |
| Sprayable at 40 F | Sprayable |
| Percent Moisture Retained | 96.3% |
| Chemical Resistance | Excellent |

Surface Sealing materials shall be Cor+Gard® AcrylaSeal or equal as approved at least ten days prior to the bid.

PART 3 - EXECUTION

3.01 PREPARATION OF THE INTERIOR WALLS

Prior to repair, a covering shall be placed over the base to collect debris and the interior shall be pressure washed at 3,500 psi or at a level sufficient to etch the brick or

concrete surface. All leaks shall be plugged and all voids filled. All loose or defective material shall be removed.

3.02 MIXING

The manufacturer's published technical specifications and directions for proportioning and mixing shall be strictly followed by the certified applicator.

3.03 EQUIPMENT

Equipment shall be as recommended by the manufacturer to ensure proper mixing and pumping of the mortar and shall be clean and in good working order according to the manufacturer's recommendations for safe operation. Only factory certified workers shall operate the equipment. A high-speed centrifugal spraying device with a controllable retrieval method shall be used to produce a uniform and densely compacted application.

3.04 APPLICATION

Once prepared, the application shall commence, according to the manufacturer's recommended procedures, in the presence of the owner's inspector in a single application to the prescribed thickness without delay or interruption in order to produce a uniform and monolithic liner at the prescribed minimum thickness. Multiple layers with time between applications for drying are **not** recommended. The spray application will commence at the lowest point on the wall and work upwards. The surface shall be struck evenly with a pool float leaving the corners rounded.

Use surface sealing membrane per ASTM C-309: C-1315 to create the most optimal curing condition possible. The use will help keep mortar hydrated during the curing phase and reduce chloride ion penetration. Apply PC Cure 'n Seal (or approved equal) immediately after finishing.

If epoxy topcoats are specified, sealing membranes should not be used. Only use products that will be compatible to enhance the epoxy bond.

3.05 TESTING & VERIFICATION

The owner's inspector shall verify the thickness with a wet gauge. Any area found to less than the minimum prescribed thickness shall immediately receive the additional material needed. Two test cubes shall be cast from each day's mix and tested for strength verification by the owner.

PART 4 - SAFETY

If personnel are required to enter the confined space during the application procedure, all OSHA requirements as well as those required by the manufacturer's material safety data sheets shall be complied with fully.