SECTION 03 01 30 MAINTENANCE OF CAST-IN-PLACE CONCRETE
SECTION 03 01 40 MAINTENANCE OF PRECAST CONCRETE
SECTION 03 01 50 MAINTENANCE OF CAST DECKS AND UNDERLAYMENT
SECTION 03 01 70 MAINTENANCE OF MASS CONCRETE
SECTION 03 01 80 MAINTENANCE OF CONCRETE CUTTING AND BORING
SECTION 03 54 16 HYDRAULIC CEMENT UNDERLAYMENT
[Note to specifier: Verify above references are current and applicable.]

PART I GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the contract, including General and Supplementary Conditions, apply to this section.

1.2 SUMMARY

A. This section specifies material for general construction, plastering and very rapid concrete repairs from 1/2 inch to 6 inches thick.

1.3 SUBMITTALS

A. Substitutions:
[Note to specifier: This paragraph should be included in section 01 25 13. It is shown here as a convenience for your review.] Requests for substitution must be received by Architect at least 14 days prior to bid opening and shall be accepted only from prime bidders. Request shall include: documentation from an approved independent testing laboratory showing compliance with this specification, record of past performance, list of similar installations, detailed comparison of the qualities of the proposed substitute with the specified product, statement of product costs showing all savings passed to owner if approved, and certification by the contractor that the proposed substitute is in every significant way equal to or better than the specified product.

B. Submit 2 copies of product manufacturer's literature and Material Safety Data Sheets (MSDS). [Note to specifier: Add any other required submissions.]

1.4 QUALITY ASSURANCE

A. Comply with the following unless modified by this specification.

1. ASTM C109/C109M-02 Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. Cube Specimens)
2. ASTM C191-04 Standard Test Method for Time of Setting of Hydraulic Cement by Vicat Needle
3. ASTM C882-99 Standard Test Method for Bond Strength of Epoxy-Resin Systems Used With Concrete By Slant Shear
4. ASTM C928-00 Standard Specification for Packaged, Dry, Rapid-Hardening Cementitious Materials for Concrete Repairs

1.5 DELIVERY, STORAGE, AND HANDLING

A. Delivery: Deliver materials to jobsite in original, unopened, undamaged containers that clearly show the manufacturer's name, product name, and batch number.

B. Storage: Store material in a dry area off the ground. Protect from rain, snow, and other sources of moisture.

PART 2 PRODUCTS

2.1 REPAIR MATERIAL

A. Shall be Rapid Set® Mortar Mix manufactured by CTS Cement Manufacturing Corp., 11065 Knott Avenue, Suite A, Cypress, CA, 90630. Phone: 800-929-3030 Website: www.ctscement.com

B. The material shall meet the following minimum performance requirements.

1. Set time per ASTM 191 (Mod.):
   Final set 45 minutes, maximum.
2. Compressive strength per ASTM C109 (Mod.):
   1 hour* 2500 psi
   3 hour 4000 psi
   7 day 5000 psi
   28 day 7000 psi
   * after final set
3. Bond strength per ASTM C882 (Mod.):

1 day 1000 psi
28 day 2200 psi

4. ASTM C928 for packaged concrete repair materials.
5. -0.05% maximum drying shrinkage at 28 day when tested per ASTM 928.

C. The material shall be hydraulic cement based, non-metallic with no added chlorides. Shall be pre-blended requiring only the additon of water.

D. Apply material in thicknesses ranging from ½" to 6".

2.2 Water: Potable.

2.3 Admixtures and Additions:

If modification of the setting time, fluidity, color, or other properties is desired, use Rapid Set® Concrete Pharmacy® additives. Add the pre-measured packets per the manufacturer's recommendations.

Do not add other materials unless specified here or approved in writing by CTS Cement Manufacturing Corporation

PART 3 EXECUTION

3.1 SURFACE PREPARATION

A. Remove a minimum of 1/16 inch from the application surface.

B. Concrete must be free of materials such as paint, oil, curing compound, bond breaker, or any material that will inhibit bonding. Mechanically remove loose, unsound, contaminated concrete.

C. For partial depth repairs, the perimeter of the area to be repaired shall be sawcut or chipped perpendicular to the surface to a minimum depth of ½ inch. Do not cut or damage reinforcing steel.

D. Reinforcing steel shall be free from rust and other materials that will inhibit bond. [Note to specifier: Add special requirements concerning replacement of reinforcing that has lost too much cross-sectional area.]

E. Thoroughly clean extraneous material such as dirt, loose chips, and dust from concrete surface. If compressed air is used, it shall be free of oil.

F. Concrete surface shall be saturated with potable water. Standing water shall be removed from surface to achieve a saturated-surface-dry (SSD) condition.

G. If placed directly on the subgrade, the subgrade must be well compacted. [Note to specifier: State compaction requirement.]

H. For exterior plaster repairs, chip back perimeter to expose enough lath to provide proper lath overlap. Do not install against a saw cut edge. Maintain an irregular, fractured edge. Reinstall any damaged lath and vapor barrier to meet building code requirements.

[Note to specifier: Refer to local building code for lath and vapor barrier requirements]

3.2 MIXING

A. Organize personnel and equipment before mixing.

B. Use 3 to 5 quarts of water per 55 pound bag of repair material.

C. Follow manufacturer's recommendations for mixing in cold or hot conditions. The mixed temperature may be controlled by protecting the bags of repair material from temperature extremes and using hot or cold mix water.

D. Add water to the mixing container. While mixing in a power driven mechanical mixer, such as a mortar mixer or a drill mounted mixer, add repair material.

E. Mix for 1 to 3 minutes to achieve a uniform, lump-free consistency.

F. Do not re-temper.

3.3 PLACEMENT

A. Place Mortar Mix immediately after mixing.

B. Work the mixed Mortar Mix firmly into all application surfaces to achieve good bond. Consolidate to remove air voids.

C. Do not wait for bleed water. Apply final finish as soon as material condition allows.

3.4 CURING

A. Water cure installations per manufacturer's recommendations.

3.5 CLEAN UP

A. Maintain a clean, orderly work area.

B. Clean excess material from surrounding areas immediately.

C. Protect adjacent surfaces that may be damaged, with drop cloths, waterproof paper, or other means to maintain surfaces free of material splashes, water, and debris.

END OF SECTION