

**SECTION 03 30 00
CAST-IN-PLACE CONCRETE**

PART 1 - GENERAL

1.10 SUMMARY

A. Provide very rapid hardening, shrinkage compensated, high strength repair mortar for full depth horizontal structural repair of existing substrate.

B. Related Sections: Other specification sections which relate directly to the work of this section include the following:

Section 030130: Maintenance of Cast-in-place Concrete

Section 030140: maintenance of Precast Concrete

Section 033000: Cast-In-Place Concrete

Section 033100: Structural Concrete

Section 030129: Rigid Pavement Repair

1.20 SUBMITTALS

A. Product Data: Submit manufacturer's product data and installation for each material and product

used. Include manufacturer's Material Safety Data Sheets.

1.30 REFERENCES

A. ASTM C 39: Compressive Strength of Cylindrical Concrete Specimens

B. ASTM C 191: Setting Time of Hydraulic Cement

C. ASTM C 882: Slant Shear Bond Strength

D. ASTM C 928: Rapid Hardening Cementitious Materials for Concrete Repairs

1.40 QUALITY ASSURANCE

A. Manufacturer's Qualifications: The manufacturer shall be a company with at least fifteen years

experience in the manufacturer and marketing of cementitious dry packaged repair materials.

B. Installer's Qualifications: The contractor shall be qualified to perform the work specified by reason of experience.

1.50 DELIVERY, STORAGE AND HANDLING

- A. Deliver products in original packaging, labeled with product identification, manufacturer, batch number and shelf life.
- B. Store products in a dry area. Protect from direct sunlight.
- C. Handle products in accordance with manufacturer's printed recommendations.

PART 2 - PRODUCTS**2.10 MATERIALS**

- A. Very rapid hardening, shrinkage compensated high strength, hydraulic cement based repair material for full depth concrete repairs.

Comply with the following:

- 1. Manufacturer: Fastset™ Concrete mix (#1004-51) as manufactured by the QUIKRETE® or equal

- 2. Performance and Physical Properties at 73 degrees F and 50 percent relative humidity:

- a. Compliance: ASTM C 928 R-3 specifications
- b. Set Time, ASTM C 191: 25-45 minutes
- c. Compressive Strength, ASTM C39: 3000 psi (20.7 MPa) @ 3 hours, 5000 psi (34.5 MPa) @ 24 hours, 6000 psi (41.3 MPa) @ 7 days and 7000 psi (48.3 MPa) @ 28 days.
- d. Slant Shear Bond Strength, ASTM C 882: 1000 psi (6.9 MPa) @ 24 hours, 1500 psi (10.3 MPa) @ 7 days.
- e. Shrinkage ASTM C 928: 28 days in air > - 0.15%, 28 days in water < +0.15%
- f. Application thickness: 1½" (38 mm) to 24" (610 mm)

PART 3 - EXECUTION**3.10 EXAMINATION**

- A. Examine substrates and conditions under which materials will be installed. Do not proceed with installation until unsatisfactory conditions are corrected.
- B. Coordinate installation with adjacent work to ensure proper sequence of construction. Protect adjacent areas landscaping from contact due to mixing and handling of materials.

3.20 SURFACE PREPARATION

Comply with manufacturer's printed instructions and the following:

- A. Remove all spalled and unsound concrete from area to be repaired. If rusty reinforcing steel is present; it must be abrasive blasted to remove rust.
- B. Remove enough material to completely expose reinforcing steel. Patch depth must be a minimum of 1½" (38 mm).
- C. Clean surface to be repaired of all materials including dust, oil, dirt, and grease.
- D. Dampen forms, hole or subbase thoroughly with clean water before patching and remove standing water.

3.30 MIXING

Comply with manufacturer's printed instructions and the following:

- A. Material should be mechanically mixed for a maximum of 3-4 minutes using a barrel-type concrete mixer or a standard mortar mixer.
- B. Add 3 quarts (2.8L) of clean water for each 70lb (31.8 kg) bag. Add the powder to the water and mix to a stiff cohesive consistency. If more water is needed to achieve a firm workable mix, add small amounts at a time and continue to mix until the desired consistency is achieved. Do not exceed a total volume of 1 gallon (3.8L) of water for each 70lb (31.8) kg) bag.
Do not mix more material than can be placed in 15 minutes.

- C. Do not re-temper with additional water.

3.40 APPLICATION:

- A. Fill the forms completely working from one end to the other. Avoid partial depth lifts which

could result in cold joints.

B. Consolidate the material using hand tamping and/or chopping with a shovel. Compact around the edges of the forms or patches.

C. Screed the surface then apply a trowel or broom finish as desired.

D. Do not apply if temperatures are below 40°F (4°C) or are expected to go below 32° (0°C) within a 24 hour period. Use cold water in hot weather or hot water in cold weather to achieve desired grout temperature.

3.50 **CURING:**

- A. No special curing is required. If ambient temperature is above 50 F (10 C) application QUIKRETE Concrete Sealer (#8800) or other approved curing compound is beneficial. Under hot, dry and windy conditions it may be necessary to use a very fine fog spray of water to reduce excessive heat generation that could occur in extremely hot weather.

3.60 **CLEANING:**

- A. Remove excess material before material cures. If material has cured, remove using mechanical methods that will not damage substrate.

END OF SECTION

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