

SECTION 03 0100
MAINTENANCE OF CONCRETE

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Cleaning of existing concrete surfaces.
- B. Repair of exposed structural, shrinkage, and settlement cracks.
- C. Resurfacing of concrete surfaces having spalled areas and other damage.
- D. Repair of internal concrete reinforcement.
- E. Scope of Work: All exposed concrete within the work area and as indicated on the drawings.

1.02 REFERENCE STANDARDS

- A. ASTM C928/C928M - Standard Specification for Packaged, Dry, Rapid-Hardening Cementitious Material for Concrete Repairs; 2009.
- B. AWS D1.4/D1.4M - Structural Welding Code - Reinforcing Steel; American Welding Society; 2011.

1.03 ADMINISTRATIVE REQUIREMENTS

- A. Scheduling: Perform blast cleaning only between the hours of 8:00 am to 5:00 pm.

1.04 SUBMITTALS

- A. See Section 01 33 23 for submittal procedures.
- B. Product Data: Indicate product standards, physical and chemical characteristics, technical specifications, limitations, maintenance instructions, and general recommendations regarding each material.
- C. Qualification Statements.

1.05 QUALITY ASSURANCE

- A. Cleaner Qualifications: Company specializing in, and with minimum of 3 years of experience in, the type of cleaning specified.

1.06 MOCK-UP(S)

- A. Test each type of maintenance procedure required on each type of existing construction, to determine the most appropriate procedures to use and as a record of expected results.
- B. Clean a 2 ft. by 2 ft. panel of wall to determine extent of cleaning
- C. Locate mock-up where directed by COR.
- D. Acceptable panel and procedures employed will become the standard of work of this section.
- E. Mock-up may remain as part of the work.

PART 2 PRODUCTS

2.01 CLEANING MATERIALS

- A. Masonry cleaning shall be equivalent or approved equal to the test locations shown on next page. For reference purposes: the test cleaning was performed using PROSOCO; 2010 Surface Cleaner (www.prosoco.com). Contractor must match the cleanliness of the test locations by performing a mock-up area per section 1.06 MOCK-UP for requirements.



2.02 CEMENTITIOUS PATCHING AND REPAIR MATERIALS

- A. Manufacturers:
 - 1. ARDEX Engineered Cements: www.ardexamericas.com.
 - 2. BASF Construction Chemicals-Building Systems: www.buildingsystems.basf.com.
 - 3. Prospec, an Oldcastle brand: www.prospec.com.
 - 4. The QUIKRETE Companies: www.quikrete.com.
 - 5. or an approved equal.
- B. Cementitious Resurfacing Mortar: One- or two-component, factory-mixed, polymer-modified cementitious mortar designed for continuous thin-coat application.
 - 1. In-place material capable of withstanding freeze/thaw conditions.
 - 2. Mixed with water or latex type bonding agent in proportions as recommended by manufacturer.
 - 3. Color: Light gray.
 - 4. Products:
 - a. L&M Construction Chemicals, Inc; Duracrete: www.lmcc.com.
 - b. Prospec, an Oldcastle brand; CR Concrete Resurfacer: www.prospec.com.
 - c. Prospec, an Oldcastle brand; Vinyl Concrete Patch: www.prospec.com.
 - d. SpecChem, LLC; Duo Patch: www.specchemllc.com.
 - e. SpecChem, LLC; Final Finish: www.specchemllc.com.
- C. Cementitious Repair Mortar, Trowel Grade: One- or two-component, factory-mixed, polymer-modified cementitious mortar.
 - 1. In-place material capable of withstanding freeze/thaw conditions.
 - 2. Mixed with water or latex type bonding agent in proportions as recommended by manufacturer.
 - 3. Dry Material: ASTM C928/C928M.
 - 4. Products:
 - a. Adhesives Technology Corporation; HARD-ROC Jet Patch: www.atcepoxy.com.
 - b. The QUIKRETE Companies; QUIKRETE® FastSet™ Repair Mortar: www.quikrete.com.
 - c. SpecChem, LLC; SpecPatch: www.specchemllc.com.
 - d. Meadow-Crete GPS: www.wrmeadows.com.

2.03 EPOXY PATCHING AND REPAIR MATERIALS

- A. Manufacturers:
 - 1. Adhesives Technology Corporation: www.atcepoxy.com.
 - 2. SpecChem, LLC: www.specchemllc.com.
 - 3. W.R. Meadows, Inc: www.wrmeadows.com.
- B. Epoxy Repair Mortar: Epoxy resin mixed with aggregate and other materials in accordance with manufacturer's instructions for purpose intended; conform to pot life and workability limits.
 - 1. Products:
 - a. Adhesives Technology Corporation; Crackbond LR-321: www.atcepoxy.com.
 - b. SpecChem, LLC; SpecPoxy 1000, SpecPoxy 2000, SpecPoxy 3000 or SpecPoxy 3000 FS: www.specchemllc.com.
 - c. W.R. Meadows, Inc.; Rezi-Weld Gel Paste, Rezi-Weld Gel Paste State, Rezi-Weld 1000, Rezi-Weld LV, or Rezi-Weld LV State: www.wrmeadows.com.
- C. Epoxy Bonding Adhesive: Non-sag, two-part, 100 percent solids; recommended by manufacturer for purpose and conditions under which used.
 - 1. Products:
 - a. Adhesives Technology Corporation; Ultrabond 2100: www.atcepoxy.com.
 - b. SpecChem, LLC; SpecPoxy 3000: www.specchemllc.com.
 - c. W.R. Meadows, Inc.; Rezi-Weld 1000: www.wrmeadows.com.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that surfaces are ready to receive work.
- B. Beginning of installation means acceptance of substrate.

3.02 CLEANING EXISTING CONCRETE

- A. Provide enclosures, barricades, and other temporary construction as required to protect adjacent work from damage. Refer to section 01 00 00 for more information.
- B. Clean concrete surfaces of dirt or other contamination using the gentlest method that is effective.
 - 1. Try the gentlest method first, then, if not clean enough, use a less gentle method taking care to watch for impending damage.
 - 2. Clean out cracks and voids using same methods.
- C. The following are acceptable cleaning methods, in order from gentlest to less gentle:
 - 1. Water washing using low-pressure, maximum of 100 psi, and, if necessary, brushes with natural or synthetic bristles.
 - 2. Increasing the water washing pressure to maximum of 400 psi.
 - 3. Adding detergent to washing water; with final water rinse to remove residual detergent.
 - 4. Steam-generated low-pressure hot-water washing.
- D. Do not use any of the following cleaning methods, unless otherwise indicated:
 - 1. Brushes with wire bristles, grinding with abrasives, solvents, hydrochloric or muriatic acid, sodium hydroxide, caustic soda, or lye.
 - 2. Soap or detergent that is not non-ionic.
 - 3. Alkaline cleaning agents.
 - 4. Acidic cleaning agents.
 - 5. Abrasive blasting.

3.03 CONCRETE STRUCTURAL MEMBER REPAIR

- A. See the drawings for specific areas to be repaired.
- B. Remove broken and soft concrete at least 1/4 inch (6 mm) deep.
- C. Mechanically cut away damaged portions of reinforcement.
- D. Remove corrosion from steel and clean mechanically.
- E. Blast clean remaining exposed reinforcement surfaces.
- F. Repair by welding new bar reinforcement to existing reinforcement using sleeve splices.
 - 1. Perform welding work in accordance with AWS D1.4.
 - 2. Make welded sleeve splices to achieve strength to exceed strength of new reinforcement.
- G. Cover exposed steel reinforcement with epoxy mortar.
- H. Work epoxy mortar into broken surface and build up patch to match original.
- I. Feather edges of repairs flush to sound surface and trowel surface to match surrounding area.

3.04 CONCRETE SURFACE REPAIR USING CEMENTITIOUS MATERIALS

- A. Clean concrete surfaces, cracks, and joints of dirt, laitance, corrosion, and other contamination using method(s) specified above and allow to dry.
- B. Apply coating of bonding agent to entire concrete surface to be repaired.
- C. Fill voids with cementitious mortar flush with surface.
- D. Apply repair mortar by steel trowel to a minimum thickness of 1/4 inch (6 mm) over entire surface, terminating at a vertical change in plane on all sides.
- E. Trowel finish to match adjacent concrete surfaces.

END OF SECTION 03 0100