

SECTION 03 01 00
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 deteriorated concrete.
- E. Repair of internal concrete reinforcement.
- F. Scope of Work: As indicated on the drawings.

1.02 RELATED REQUIREMENTS

- A. Section 03 30 00 - Cast-in-Place Concrete: Finishing of concrete surface to tolerance; floating, troweling, and similar operations; curing.

1.03 PRICE AND PAYMENT PROCEDURES

- A. See Section 01 22 00 - Unit Prices, for additional unit price requirements.
- B. Repair Surface: By the square foot. Includes surface preparation, repair, finishing.
- C. Preparation for Resurfacing: By the square yard. Includes surface preparation, cleaning.

1.04 REFERENCE STANDARDS

- A. ASTM A615/A615M - Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement; 2016.
- B. ASTM A767/A767M - Standard Specification for Zinc-Coated (Galvanized) Steel Bars for Concrete Reinforcement; 2009 (Reapproved 2015).
- C. ASTM A775/A775M - Standard Specification for Epoxy-Coated Steel Reinforcing Bars; 2007b (Reapproved 2014).
- D. ASTM A996/A996M - Standard Specification for Rail-Steel and Axle-Steel Deformed Bars for Concrete Reinforcement; 2014.
- E. ASTM A1064/A1064M - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete; 2015.
- F. ASTM C33/C33M - Standard Specification for Concrete Aggregates; 2016.
- G. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens; 2015a.
- H. ASTM C109/C109M - Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or (50-mm) Cube Specimens); 2013.
- I. ASTM C150/C150M - Standard Specification for Portland Cement; 2016.
- J. ASTM C348 - Standard Test Method for Flexural Strength of Hydraulic-Cement Mortars; 2014.
- K. ASTM C404 - Standard Specification for Aggregates for Masonry Grout; 2011.
- L. ASTM C881/C881M - Standard Specification for Epoxy-Resin-Base Bonding Systems for Concrete; 2014.
- M. ASTM C928/C928M - Standard Specification for Packaged, Dry, Rapid-Hardening Cementitious Material for Concrete Repairs; 2013.
- N. ASTM C1059/C1059M - Standard Specification for Latex Agents for Bonding Fresh to Hardened Concrete; 2013.
- O. AWS D1.4/D1.4M - Structural Welding Code - Reinforcing Steel; 2011.

1.05 ADMINISTRATIVE REQUIREMENTS

- A. Scheduling: Perform blast cleaning only between the hours of 7 am to 10 pm.

1.06 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, 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.
- D. Project Record Documents: Accurately record actual locations of structural reinforcement repairs and type of repair.

1.07 QUALITY ASSURANCE

- A. Designer Qualifications: Design reinforcement splices under direct supervision of a Professional _____ Engineer experienced in design of this type of work and licensed in the State in which the Project is located.
- B. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section, with not less than three years of documented experience.
- C. Cleaner Qualifications: Company specializing in, and with minimum of 3 years of experience in, the type of cleaning specified.
- D. Installer Qualifications: Company specializing in performing work of the type specified and with minimum of 3 years of documented experience.

1.08 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. Crack Injection: Prepare one sample of each type of injection.
- C. Horizontal Surface Repair: Total of 10 foot square area, demonstrating each type of repair.
- D. Vertical Surface Repair: Total of 10 foot square area, demonstrating each type of repair.
- E. Where color or texture matching is required, first prepare a small size sample on cementitious board.
- F. Locate mock-up(s) where directed.
- G. Re-work mock-up(s) until satisfactory to Architect.
- H. Re-work mock-up(s) until satisfactory to Owner.
- I. Satisfactory mock-up(s) may remain as part of the work.

1.09 DELIVERY, STORAGE, AND HANDLING

- A. Comply with manufacturers' instructions for storage, shelf life limitations, and handling of products.

PART 2 PRODUCTS

2.01 CLEANING MATERIALS

- A. Degreaser:
 - 1. Manufacturers:
 - a. L&M Construction Chemicals, Inc., a subsidiary of Laticrete International, Inc.; CITREX: www.lmcc.com.
 - b. SpecChem, LLC; Orange Peel-Citrus Cleaner: www.specchemllc.com/sle.
 - c. W.R. Meadows, Inc.; Ultrite Degreaser: www.wrmeadows.com/sle.
 - d. _____.
 - e. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Detergent: Non-ionic detergent.

- C. Alkaline Cleaning Agent: _____.
- D. Acidic Cleaning Agent: _____.
- E. Blasting Medium: _____.

2.02 CEMENTITIOUS PATCHING AND REPAIR MATERIALS

- A. Manufacturers:
 - 1. Adhesives Technology Corporation: www.atcepoxy.com.
 - 2. ARDEX Engineered Cements: www.ardexamericas.com.
 - 3. BASF Construction Chemicals-Building Systems: www.buildingsystems.basf.com.
 - 4. Dayton Superior Corporation: www.daytonsuperior.com.
 - 5. Kaufman Products Inc.: www.kaufmanproducts.net.
 - 6. Prospec, an Oldcastle brand: www.prospec.com.
 - 7. The QUIKRETE Companies: www.quikrete.com.
 - 8. SpecChem, LLC: www.specchemllc.com/sle.
 - 9. Stauf USA LLC: www.staufusa.com.
 - 10. W.R. Meadows, Inc: www.wrmeadows.com/sle.
 - 11. _____.
 - 12. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Bonding Slurry: Water-based latex admixture complying with ASTM C1059/C1059M, combined with Portland cement and sand in accordance with admixture manufacturer's instructions.
 - 1. Admixture Manufacturers:
 - a. Dayton Superior Corporation; Acrylic Bonding Agent J40: www.daytonsuperior.com.
 - b. The QUIKRETE Companies; QUIKRETE® Concrete Bonding Adhesive: www.quikrete.com.
 - c. SpecChem, LLC; Acrylic Bonder: www.specchemllc.com/sle.
 - d. W.R. Meadows, Inc.; Acry-lok: www.wrmeadows.com/sle.
 - e. _____.
 - f. Substitutions: See Section 01 60 00 - Product Requirements.
- C. Cementitious Resurfacing Mortar: One- or two-component, factory-mixed, polymer-modified cementitious mortar designed for continuous thin-coat application.
 - 1. In-place material resistant to freeze/thaw conditions.
 - 2. Mixed with water or latex type bonding agent in proportions as recommended by manufacturer.
 - 3. Integral corrosion inhibitor.
 - 4. Recommended Thickness: Feather edge to 1/8 inch.
 - 5. Color: Light gray.
 - 6. Manufacturers:
 - a. ARDEX Engineered Cements; ARDEX Feather Finish: www.ardexamericas.com.
 - b. ARDEX Engineered Cements; ARDEX MRP: www.ardexamericas.com.
 - c. ARDEX Engineered Cements; ARDEX SD-P: www.ardexamericas.com.
 - d. ARDEX Engineered Cements; ARDEX SKM: www.ardexamericas.com.
 - e. Dayton Superior Corporation; Architectural Finish: www.daytonsuperior.com.
 - f. Dayton Superior Corporation; Thin Resurfacer: www.daytonsuperior.com.
 - g. Dayton Superior Corporation; Recrete 20 Minute: www.daytonsuperior.com.
 - h. Dayton Superior Corporation; Recrete Light 20 Minute: www.daytonsuperior.com.
 - i. Kaufman Products Inc.; DressUp: www.kaufmanproducts.net.
 - j. Kaufman Products Inc.; Patchwell: www.kaufmanproducts.net.
 - k. Kaufman Products Inc.; Patchwell Kit: www.kaufmanproducts.net.
 - l. Kaufman Products Inc.; Patchwell Deep Light: www.kaufmanproducts.net.
 - m. L&M Construction Chemicals, Inc, a subsidiary of Laticrete International, Inc.; Duracrete: www.lmcc.com.

- n. Prospec, an Oldcastle brand; CR Concrete Resurfacer: www.prospec.com.
 - o. Prospec, an Oldcastle brand; Vinyl Concrete Patch: www.prospec.com.
 - p. The QUIKRETE Companies; QUIKRETE® Concrete Resurfacer: www.quikrete.com.
 - q. SpecChem, LLC; Duo Patch: www.specchemllc.com/sle.
 - r. SpecChem, LLC; RevCrete: www.specchemllc.com/sle.
 - s. SpecChem, LLC; Final Finish: www.specchemllc.com/sle.
 - t. Xypex Chemical Corporation; XYPEX Megamix II: www.xypex.com.
 - u. W.R. Meadows, Inc.; Parge-All AF: www.wrmeadows.com/sle.
 - v. W.R. Meadows, Inc.; Meadow-Patch T2: www.wrmeadows.com/sle.
 - w. _____.
 - x. _____.
 - y. Substitutions: See Section 01 60 00 - Product Requirements.
- D. Cementitious Repair Mortar, Trowel Grade: One- or two-component, factory-mixed, polymer-modified cementitious mortar.
- 1. In-place material resistant to freeze/thaw conditions.
 - 2. Mixed with water or latex type bonding agent in proportions as recommended by manufacturer.
 - 3. Dry Material: Complies with ASTM C928/C928M.
 - 4. Integral corrosion inhibitor.
 - 5. Products:
 - a. ARDEX Engineered Cements; ARDEX TWP: www.ardexamericas.com.
 - b. ARDEX Engineered Cements; ARDEX B 20: www.ardexamericas.com.
 - c. ARDEX Engineered Cements; ARDEX OVP: www.ardexamericas.com.
 - d. ARDEX Engineered Cements; ARDEX Forti Finish: www.ardexamericas.com.
 - e. ARDEX Engineered Cements; ARDEX ERM: www.ardexamericas.com.
 - f. ARDEX Engineered Cements; ARDEX PC-R: www.ardexamericas.com.
 - g. Adhesives Technology Corporation; HARD-ROC Jet Patch: www.atcepoxy.com.
 - h. Dayton Superior Corporation; Polyfast FS: www.daytonsuperior.com.
 - i. Dayton Superior Corporation; Special Patch: www.daytonsuperior.com.
 - j. Dayton Superior Corporation; Civil/Structural VO: www.daytonsuperior.com.
 - k. Dayton Superior Corporation; HD 25 VO: www.daytonsuperior.com.
 - l. Dayton Superior Corporation; Perma Patch VO: www.daytonsuperior.com.
 - m. Five Star Products, Inc.; Five Star Structural Concrete V/O: www.fivestarprouducts.com.
 - n. Kaufman Products Inc.; Patchwell V/O: www.kaufmanproducts.net.
 - o. Kaufman Products Inc.; Patchwell Deep Light: www.kaufmanproducts.net.
 - p. Koster American Corporation; Koster Repair Mortar: www.kosterusa.com.
 - q. Prospec, an Oldcastle brand; RubCrete: www.prospec.com.
 - r. Prospec, an Oldcastle brand; BlendCrete: www.prospec.com.
 - s. The QUIKRETE Companies; QUIKRETE® FastSet Repair Mortar: www.quikrete.com.
 - t. SpecChem, LLC; RepCon V/O: www.specchemllc.com/sle.
 - u. SpecChem, LLC; SpecPatch: www.specchemllc.com/sle.
 - v. SpecChem, LLC; Duo Patch: www.specchemllc.com/sle.
 - w. SpecChem, LLC; Precast Patch: www.specchemllc.com/sle.
 - x. SpecChem, LLC; Precast Patch 5: www.specchemllc.com/sle.
 - y. Stauf USA LLC; Quick Feather Float QFF-560: www.staufusa.com.
 - z. W.R. Meadows, Inc.; Meadow-Patch T1, Meadow-Patch T2, Meadow-Patch 5, or Meadow-Patch 20: www.wrmeadows.com/sle.
 - aa. Meadow-Crete GPS: www.wrmeadows.com/sle.
 - ab. _____.
 - ac. _____.

- ad. Substitutions: See Section 01 60 00 - Product Requirements.
- E. Cementitious Repair Mortar, Form and Pour/Pump Grade: Flowable, one- or two-component, factory-mixed, polymer-modified cementitious mortar; in-place material resistant to freeze/thaw conditions.
1. Mixed with water in proportions as recommended by manufacturer.
 2. Integral corrosion inhibitor.
 3. Manufacturers:
 - a. ARDEX Engineered Cements; ARDEX FDM: www.ardexamericas.com.
 - b. ARDEX Engineered Cements; ARDEX FDX: www.ardexamericas.com.
 - c. ARDEX Engineered Cements; ARDEX FP: www.ardexamericas.com.
 - d. Dayton Superior Corporation; Civil/Structural FPX : www.daytonsuperior.com.
 - e. Dayton Superior Corporation; Perma Patch FP: www.daytonsuperior.com.
 - f. Five Star Products, Inc.; Five Star Structural Concrete: www.fivestarprouducts.com.
 - g. Kaufman Products Inc.; Patchwell Deep: www.kaufmanproducts.net.
 - h. SpecChem, LLC; Duo Patch; www.specchemllc.com/sle.
 - i. SpecChem, LLC; RepCon H-350; www.specchemllc.com/sle.
 - j. W.R. Meadows, Inc.; Meadow-Crete FNP: www.wrmeadows.com/sle.
 - k. W.R. Meadows, Inc.; Meadow-Crete FNP Extended: www.wrmeadows.com/sle.
 - l. _____.
 - m. _____.
 - n. Substitutions: See Section 01 60 00 - Product Requirements.
- F. Cementitious Pavement Repair Mortar: Fast hardening, flowable; composed of cement, sand, and additives; capable of setting in cold weather conditions without the aid of chloride- or gypsum-based accelerators; in-place material resistant to freeze/thaw conditions.
1. Dry Material: Complies with ASTM C928/C928M.
 2. Integral corrosion inhibitor.
 3. Time To Open To Traffic: 6 hours, maximum.
 4. Time to Top-Coating: 4 hours, maximum.
 5. Manufacturers:
 - a. ARDEX Engineered Cements; ARDEX TRM: www.ardexamericas.com.
 - b. Dayton Superior Corporation; HD 50 : www.daytonsuperior.com.
 - c. Dayton Superior Corporation; Pave Patch 3000: www.daytonsuperior.com.
 - d. Kaufman Products Inc.; Duracrete II: www.kaufmanproducts.net.
 - e. Kaufman Products Inc.; Duracrete II FT: www.kaufmanproducts.net.
 - f. Kaufman Products Inc.; Duracrete II VOFT: www.kaufmanproducts.net.
 - g. The QUIKRETE Companies; QUIKRETE® Fiber-Reinforced Deck Mix: www.quikrete.com.
 - h. SpecChem, LLC; RepCon 928: www.specchemllc.com/sle.
 - i. SpecChem, LLC; RepCon 928 FS: www.specchemllc.com/sle.
 - j. W.R. Meadows, Inc.; Futura-15: www.wrmeadows.com/sle.
 - k. W.R. Meadows, Inc.; Futura-45 or Futura-45 Extended: www.wrmeadows.com/sle.
 - l. _____.
 - m. _____.
 - n. Substitutions: See Section 01 60 00 - Product Requirements.
- G. Cementitious Hydraulic Waterstop: Very fast setting, low slump, hand formable, and capable of stopping active water leaks; in-place material resistant to freeze/thaw conditions.
1. Manufacturers:
 - a. Dayton Superior Corporation; Waterstop : www.daytonsuperior.com.
 - b. Kaufman Products Inc.; SurePlug - regular set: www.kaufmanproducts.net.
 - c. Kaufman Products Inc.; HiCap: www.kaufmanproducts.net.
 - d. SpecChem, LLC; SpecPlug or Super SpecPlug; www.specchemllc.com/sle.
 - e. W.R. Meadows, Inc.; Meadow-Plug or Meadow-Patch 5: www.wrmeadows.com/sle.
 - f. _____.

- g. _____.
 - h. Substitutions: See Section 01 60 00 - Product Requirements.
- H. Exterior Self-Leveling Concrete Topping: Portland cement-based; suitable as wear surface topping in exterior and wet locations as well as underlayment for applied materials.
- 1. Compressive Strength: 4300 pounds per square inch, minimum, at 28 days, when tested in accordance with ASTM C109/C109M, air cured.
 - 2. Flexural Strength: 1000 pounds per square inch, minimum, at 28 days, when tested in accordance with ASTM C348.
 - 3. Manufacturers:
 - a. Kaufman Products Inc.; SureFlow 042: www.kaufmanproducts.net.
 - b. _____.
 - c. Substitutions: See Section 01 60 00 - Product Requirements.
- I. Pre-Blended Concrete Mix for Small Projects: Construction-grade Portland cement uniformly blended with aggregates and other approved concrete ingredients, requiring only the addition of water.
- 1. Compressive Strength: 4000 pounds per square inch, minimum, at 28 days, when tested in accordance with ASTM C39/C39M.
 - 2. Manufacturers:
 - a. The QUIKRETE Companies; QUIKRETE® Fast Set Concrete Mix: www.quikrete.com.
 - b. The QUIKRETE Companies; QUIKRETE® Concrete Mix: www.quikrete.com.
 - c. The QUIKRETE Companies; QUIKRETE® Crack Resistant Concrete Mix: www.quikrete.com.
 - d. The QUIKRETE Companies; QUIKRETE® 5000 Concrete Mix: www.quikrete.com.
 - e. _____.
 - f. _____.
 - g. Substitutions: See Section 01 60 00 - Product Requirements.

2.03 EPOXY PATCHING AND REPAIR MATERIALS

- A. Manufacturers:
- 1. Adhesives Technology Corporation: www.atcepoxy.com.
 - 2. Dayton Superior Corporation: www.daytonsuperior.com.
 - 3. Chase Construction Products: www.chasecorp.com.
 - 4. Kaufman Products Inc.: www.kaufmanproducts.net.
 - 5. SpecChem, LLC: www.specchemllc.com/sle.
 - 6. Sto Corp: www.stocorp.com.
 - 7. W.R. Meadows, Inc: www.wrmeadows.com/sle.
 - 8. _____.
 - 9. _____.
 - 10. Substitutions: See Section 01 60 00 - Product Requirements.
- 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. Manufacturers:
 - a. Adhesives Technology Corporation; Crackbond LR-321: www.atcepoxy.com.
 - b. Dayton Superior Corporation; Sure Patch: www.daytonsuperior.com.
 - c. Dayton Superior Corporation; Sure Fil J52: www.daytonsuperior.com.
 - d. Dayton Superior Corporation; Sure Seal LV/LM: www.daytonsuperior.com.
 - e. Dayton Superior Corporation; Pro-Flex: www.daytonsuperior.com.
 - f. Kaufman Products Inc.; SurePoxy Mortar, SurePoxy HMLV, or SurePoxy HMLV Class B: www.kaufmanproducts.net.
 - g. The QUIKRETE Companies; QUIKRETE® FastSet Anchoring Epoxy: www.quikrete.com.

- h. SpecChem, LLC; SpecPoxy 1000, SpecPoxy 2000, SpecPoxy 3000 or SpecPoxy 3000 FS: www.specchemllc.com/sle.
 - i. 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/sle.
 - j. _____.
 - k. _____.
 - l. Substitutions: See Section 01 60 00 - Product Requirements.
- C. Epoxy Injection Adhesive:
- 1. Manufacturers:
 - a. Adhesives Technology Corporation; Crackbond LR-321: www.atcepoxy.com
 - b. Dayton Superior Corporation; Sure Inject J56: www.daytonsuperior.com.
 - c. Dayton Superior Corporation; Sure Inject J56 SLV: www.daytonsuperior.com.
 - d. Dayton Superior Corporation; Pro-Poxy 50 : www.daytonsuperior.com.
 - e. Dayton Superior Corporation; Pro-Poxy 100 : www.daytonsuperior.com.
 - f. Kaufman Products Inc.; SurePoxy HMLV, SurePoxy HMLV Class B, or SurePoxy HMSLV: www.kaufmanproducts.net.
 - g. SpecChem, LLC; SpecPoxy 1000; www.specchemllc.com/sle.
 - h. W.R. Meadows, Inc.; Rezi-Weld LV, Rezi-Weld LV State, Rezi-Weld (IP), or Rezi-Weld Gel Paste: www.wrmeadows.com/sle.
 - i. _____.
 - j. _____.
 - k. Substitutions: See Section 01 60 00 - Product Requirements.
- D. Epoxy Bonding Adhesive: Non-sag, two-part, 100 percent solids; recommended by manufacturer for purpose and conditions under which used.
- 1. Non-Load-Bearing Applications: ASTM C881/C881M Type I, II, IV, or V, whichever is appropriate to application.
 - 2. Load-Bearing Applications: ASTM C881/C881M Type IV or V, whichever is appropriate to application.
 - 3. Other Applications: ASTM C881/C881M Type as appropriate to application.
 - 4. Manufacturers:
 - a. ARDEX Engineered Cements; ARDEX ArdiBond AP: www.ardexamericas.com.
 - b. Adhesives Technology Corporation; Crackbond LR321: www.atcepoxy.com.
 - c. Adhesives Technology Corporation; Crackbond SLV-302: www.atcepoxy.com.
 - d. Adhesives Technology Corporation; Ultrabond 2100: www.atcepoxy.com.
 - e. Adhesives Technology Corporation; Ultrabond 2100 LPL: www.atcepoxy.com.
 - f. Adhesives Technology Corporation; Crackbond LR321 LPL: www.atcepoxy.com.
 - g. Dayton Superior Corporation; Sure Bond J58 : www.daytonsuperior.com.
 - h. Dayton Superior Corporation; Sure Bond J58 LPL : www.daytonsuperior.com.
 - i. Dayton Superior Corporation; Pro-Poxy 200: www.daytonsuperior.com.
 - j. Kaufman Products Inc.; SurePoxy HM Gel: www.kaufmanproducts.net.
 - k. SpecChem, LLC; SpecPoxy 2000: www.specchemllc.com/sle.
 - l. SpecChem, LLC; SpecPoxy 3000: www.specchemllc.com/sle.
 - m. SpecChem, LLC; SpecPoxy 3000 FS: www.specchemllc.com/sle.
 - n. W.R. Meadows, Inc.; Rezi-Weld Gel Paste: www.wrmeadows.com/sle.
 - o. W.R. Meadows, Inc.; Rezi-Weld Gel Paste State: www.wrmeadows.com/sle.
 - p. W.R. Meadows, Inc.; Rezi-Weld 1000: www.wrmeadows.com/sle.
 - q. _____.
 - r. _____.
 - s. Substitutions: See Section 01 60 00 - Product Requirements.

2.04 POLYURETHANE PATCHING AND REPAIR MATERIALS

- A. Manufacturers:
 - 1. Adhesives Technology Corporation: www.atcepoxy.com.

2. Dayton Superior Corporation: www.daytonsuperior.com.
 3. _____.
 4. _____.
 5. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Polyurethane Repair Gel:
1. Manufacturers:
 - a. Adhesives Technology Corporation; Crackbond CSR: www.atcepoxy.com.
 - b. Dayton Superior Corporation; Rapid Resin Repair: www.daytonsuperior.com.
 - c. _____.
 - d. _____.
 - e. Substitutions: See Section 01 60 00 - Product Requirements.

2.05 ACCESSORIES

- A. Anchoring Adhesive: Self-leveling or non-sag as applicable.
1. Self-Leveling Polyester-Based Products:
 - a. W.R. Meadows, Inc.; Poly-Grip: www.wrmeadows.com/sle.
 - b. _____.
 - c. _____.
 - d. Substitutions: See Section 01 60 00 - Product Requirements.
 2. Self-Leveling Epoxy Products:
 - a. SpecChem, LLC; SpecPoxy 2000; www.specchemllc.com/sle.
 - b. W.R. Meadows, Inc.; Rezi-Weld 1000, Rezi-Weld (IP), or Rezi-Weld 3/2: www.wrmeadows.com/sle.
 - c. _____.
 - d. _____.
 - e. Substitutions: See Section 01 60 00 - Product Requirements.
 3. Non-Sag Epoxy Products:
 - a. Dayton Superior Corporation; Sure Anchor J50, Sure Anchor I J51, All Weather J51 AW, Pro-Poxy 300, Pro-Poxy 300 FAST, Pro-Poxy 400, or Pro-Poxy 500 : www.daytonsuperior.com.
 - b. SpecChem, LLC; SpecPoxy 3000 or SpecPoxy 3000 FS: www.specchemllc.com/sle.
 - c. W.R. Meadows, Inc.; Rezi-Weld Gel Paste or Rezi-Weld Gel Paste State: www.wrmeadows.com/sle.
 - d. _____.
 - e. _____.
 - f. Substitutions: See Section 01 60 00 - Product Requirements.
- B. Portland Cement: ASTM C150/C150M, Type I, grey.
- C. Sand: ASTM C33/C33M or ASTM C404; uniformly graded, clean.
- D. Water: Clean and potable.
- E. Reinforcing Steel: ASTM A615/A615M Grade 40 (40,000 psi) billet-steel deformed bars, unfinished.
- F. Reinforcing Steel: Deformed bars, ASTM A996/A996M Grade 40 (280), Type A.
1. Galvanized in accordance with ASTM A767/A767M, Class I.
 2. Epoxy coated in accordance with ASTM A775/A775M.
- G. Stirrup Steel: ASTM A1064/A1064M.
- H. Splicing Sleeves: _____ type.

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.
- 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.
 - 5. Alkaline cleaning agent applied for the least amount of time that is effective, followed by slight acid rinse and water rinse.
 - 6. Acidic cleaning agent applied for the least amount of time that is effective, followed by water rinse. Test acidic cleaning agents on mock-up surfaces prior to use.
 - 7. Abrasive blasting: Use only abrasive media that have been proven not to damage concrete by testing on mock-up.
- 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. Water washing pressure to over 100 psi.
 - 4. Steam-cleaning or steam-generated hot-water washing.
 - 5. Alkaline cleaning agents.
 - 6. Acidic cleaning agents.
 - 7. Abrasive blasting.

3.03 PAINT AND GRAFFITI REMOVAL

3.04 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 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/D1.4M.
 - 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.

3.05 CRACK REPAIR USING EPOXY ADHESIVE INJECTION

- A. Repair exposed cracks.
- B. Provide temporary entry ports spaced to accomplish movement of fluids between ports; no deeper than the depth of the crack to be filled or port size diameter no greater than the thickness of the crack. Provide temporary seal at concrete surface to prevent leakage of adhesive.

- C. Inject adhesive into ports under pressure using equipment appropriate for particular application.
- D. Begin injection at lower entry port and continue until adhesive appears in adjacent entry port. Continue from port to port until entire crack is filled.
- E. Remove temporary seal and excess adhesive.
- F. Clean surfaces adjacent to repair and blend finish.

3.06 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 over entire surface, terminating at a vertical change in plane on all sides.
- E. Trowel finish to match adjacent concrete surfaces.
- F. Damp cure for four days.

3.07 FIELD QUALITY CONTROL

- A. An independent testing agency, as specified in Section 01 40 00, will perform field inspection and testing.
 - 1. Test concrete for calcium chloride content during the execution of the Work.

END OF SECTION