

PART 1 – GENERAL

1.01 RELATED WORK SPECIFIED ELSEWHERE

The provisions and intent of the Contract, including the General Conditions, Supplementary Conditions, and General Requirements, apply to this work as if specified in this section. Work related to this section is described in:

- A. Section 05 50 00 – Metal Fabrications
- B. Section 35 59 13 – Marine Fenders

1.02 DESCRIPTION OF WORK

- A. The work includes furnishing all necessary material, labor, and equipment for the following shown on the drawings and described in the specifications.
 - a. Anchor Rods: install threaded anchor rods to secure mounting brackets to the wharf face.
 - b. Grout Pads: install grout pads beneath mounting brackets where grout pads are shown.
 - c. Pile Cap Spall Repair: install repair mortar and install rebar dowels as shown at pile cap spall repairs.

1.03 REFERENCE STANDARDS

- A. American Society for Testing Materials (ASTM), Standard Specifications and Standard Test Methods, designated by basic reference in this section (use the most current edition at the time of bid unless otherwise indicated).

1.04 QUALITY ASSURANCE

- A. Contractor shall provide all required testing by hiring a third-party materials lab to take samples and test. Reports shall be provided to the Engineer for review and acceptance.
- B. Provide at least one person who shall be present at all times during execution of the work, who shall direct all work performed, and who has at least five (5) years experience with the materials and the methods of installation necessary to meet the performance specifications.
- C. Dowel/anchor installers shall be trained and certified.

DIVISION 03 – CONCRETE
Section 03 60 00 – Grouting

- D. All testing shall be at the expense of the Contractor.

1.05 SUBMITTALS

- A. For each application, manufacturer's name, address, catalog cuts, and specifications for grout, epoxies, adhesives, admixtures, and proprietary products.
- B. Manufacturer's test certificates for grout compressive strength and non-shrink properties of proposed grout. Indicate the working time, fluid consistency, flow rate, volume change characteristics, and manufacturer's recommended installation temperatures.
- C. Doweling system manufacturer's instructions for preparation, placement, drilling holes, coring, installation of anchors and adhesive, and handling of cartridges, nozzles, and equipment.
- D. Doweling system manufacturer's ICC Evaluation Service - ES Reports and written letter of certification identifying the installer's qualifications to install the manufacturer's products.
- E. Anchor/ dowel Installer certifications.

PART 2 – PRODUCTS

2.01 GROUT PAD

- A. MasterFlow 649 manufactured by Master Builders or approved equal.

2.02 REPAIR MORTAR

- A. SikaQuick VOH manufactured by Sika Corporation or approved equal.

2.03 ANCHOR ROD AND REBAR DOWEL ADHESIVE

- A. HIT-RE 500 V3 by Hilti Corporation or approved equal.

2.04 BARE REBAR COATING

- A. Arimatec-110 EpoCem by Sika Corporation or approved equal.

PART 3 – EXECUTION

3.01 GENERAL

- A. Products shall be stored, mixed, placed, and cured in accordance with the manufacturer's published specifications. Surface shall be prepared in accordance with manufacturer's published specifications unless noted otherwise. In case of a discrepancy the stricter requirements, as determined by the Engineer, shall apply.

3.02 TESTING

- A. (6) total 2-inch grout cube compression test samples shall be collected from each batch of repair mortar or grout pad. (3) cubes shall be broken at 72 hours for MasterFlow 649 or 7 days for SikaQuick VOH. The other (3) cubes for both products shall be broken at 96 hours for MasterFlow 649 and 28 days for SikaQuick VOH. Provide test results to Engineer for approval.
- B. (25) of the mounting bracket anchor rods shall be tension tested after installation. Engineer will select the rods that are to be tested. If any anchors fail, additional anchors shall be tested until the Contractor can establish a consistent track record of passing tests, as determined by the Engineer. Any anchors that fail the test shall be replaced at the Contractor's expense. Engineer will provide Contractor the tension test load for the anchors. Anchors shall be tensioned to the prescribed load and held for 10 minutes. There shall be no drop in jacking load during the 10-minute period and no permanent anchor withdrawal displacement after the 10-minute period.

3.03 INSTALLATION

3.03.1 ANCHOR RODS

- A. See anchor adhesive manufacturer recommendations for other requirements, unless noted otherwise.
- B. All anchor holes shall be diamond cored and roughened to 1/8" amplitude. Holes shall be straight, square and true to the wharf face. Anchor rod holes shall be blown out with dry and oil-free compressed air for 5 seconds minimum each, with minimum pressure of 100psi. If saltwater has entered the rod hole it shall be rinsed for 7 seconds minimum with 3,000psi potable water and before installing adhesive.
- C. Anchor rods shall not protrude beyond the face of the mounting bracket front flange and shall have no sharp edges, if field-cut, that could damage the cone fender rubber if it compresses into the pipe recesses.

DIVISION 03 – CONCRETE
Section 03 60 00 – Grouting

- D. The anchor rod stick-out tolerance is minimal within each pipe recess. Contractor shall install anchor rods with the appropriate stick-out length at each location, that considers wharf face shape uniformity, to minimize cutting anchor rods to length after mounting bracket is installed.
- E. Anchor rod cutting, if any, shall be “cold cut”. A torch shall not be used. Bare steel shall be repaired with “hot-stick” and receive a coat of zinc rich primer, see Section 05 50 00 – Metal Fabrications.

3.03.2 GROUT PADS

- A. Apply grout pad material where shown on the drawings.
- B. Mounting bracket anchor rod nuts shall not be torqued until grout has cured for at least 4 days.
- C. See grout pad manufacturer recommendations for requirements, unless noted otherwise.

3.03.3 PILE CAP SPALL REPAIR

- A. Perform spall repair where shown on the drawings.
- B. Contractor shall plan tide cycles such that both the existing concrete to receive repair mortar and the newly placed repair mortar is not exposed to saltwater and is above the splash zone for at least 4 hours after finishing.
- C. Placement of repair mortar shall occur within 2 days of starting to remove concrete or installing rebar dowels, whichever begins first.
- D. Delaminated or unsound concrete shall be removed. Concrete around exposed reinforcement or anchor rods shall be removed to at least 1/2" deep or 1/2" beyond any visible corrosion, as determined by the Engineer, whichever is greater. Don't use jack hammer or chipping hammers larger than 16 lbs for concrete removal.
- E. Saw cut perimeter of repair area 1/2" deep as shown, perpendicular to concrete face.
- F. Concrete and reinforcement to remain shall not be damaged.
- G. Roughen exposed concrete surface to at least 1/4" amplitude.

DIVISION 03 – CONCRETE
Section 03 60 00 – Grouting

- H. Sand blast clean to near-white, SSPC-SP 10 from NACE No 2, exposed reinforcement after all concrete is removed.
- I. Bare reinforcement shall be primed with 2 coats of Sika® Armatec®-110 EpoCem or approved equal.
- J. #3 dowels shall be installed such that there is at least 3/4 inches of clearance between the 90-degree hook and existing concrete surface as shown. Dowels shall be ASTM A615 w/ $F_y = 60$ ksi. A minimum 2" cover for #3 dowels shall be provided.
- K. Clean all concrete surfaces using dry oil-free compressed air. Thoroughly rinse all surfaces to receive grout with 3,000 psi potable water, pre-wetting concrete surfaces, immediately prior to placing grout.
- L. Repair mortar shall be placed flush, square and true with the existing pile cap surfaces, and chamfers matched.
- M. See repair mortar manufacturer recommendations for other requirements, unless noted otherwise.

END OF SECTION