

MICHIGAN STATE U N I V E R S I T Y

INFRASTRUCTURE PLANNING AND FACILITIES PLANNING, DESIGN AND CONSTRUCTION

May 3, 2023

TITLE OF PROJECT: Parking Ramp No. 1 – Shaw and Various Ramps – Parking Ramp Annual Maintenance

PROJECT ISSUE DATE: April 21, 2023

PROJECT NUMBER: CP23009

ADDENDUM NO: 01

GENERAL

This Addendum is issued prior to receipt of Proposals to amend the Contract Documents identified as Parking Ramp No. 1 – Shaw and Various Ramps – Parking Ramp Annual Maintenance. Except as otherwise specifically mentioned, the general character of the work required by this Addendum shall be the same as originally specified, and all incidentals required in connection with the work hereinafter described shall be included even though not specifically mentioned. When an item is mentioned with additional specifications given, reference shall be made to the original specifications.

Drawing(s) accompanying this Addendum include: N/A

☒ No drawings accompany this Addendum

TRADES – N/A

| <u>ITEM NO.</u> | <u>DESCRIPTION</u> |
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| 01 | Work Item 3.12 Floor Repair – Stair Stringer Repair Clarification <ul style="list-style-type: none">i. Refer to Sheet R-501 and Spec Section 020010 Work Items<ul style="list-style-type: none">1. Clarification – The intent of Work Item 3.12 is to perform shallow depth concrete slab edge repair at cast-in-place concrete stair slabs (treads/risers). Sawcut patch perimeters and remove spalled or delaminated concrete materials beyond the fractured surface to 4” +/- in depth. Clean and protect exposed reinforcement and repair cavity per specification section, “Surface Preparation for Patching”. Install formwork as required and place new repair mortar to match original construction. See specification section, “Prepackaged Repair Mortar”. Refer to drawing sheet R-501 for similar concrete repair detailing. |
| 02 | Added Spec Section – 033760 Prepackaged Repair Mortar <ul style="list-style-type: none">i. Refer to Specifications<ul style="list-style-type: none">1. Add spec section 033760 Prepackaged Mortar (attached) to the bidding documents |
| 03 | Work Item 25.5 Drain Grate Replacement Allowance Clarification <ul style="list-style-type: none">ii. Refer to Spec Section 020010 Work Items<ul style="list-style-type: none">1. Clarification – Work Item 25.5 Drain Grate Allowance will be pre-filled in at a cost of \$3000.00 for each ramp on the bid form. Contractors should |

refer to the “Work Items” specification section 020010 for information on all work items. Specifically for WI 25.5 Drain Grate Replacement Allowance (020010-23), it indicates replacement of damaged floor drain grating where damaged during construction or as directed by Engineer in the field. **This is for individual replacement as needed.** Essentially, if a grate is damaged and the Owner and/or Engineer decide to have it replaced, the contractor will need to provide a cost for replacement and, if approved, it can be billed against the allowance amount.

04

Work Item 25.6 Mechanical – Clean Existing Drains and Piping Clarification

iii. Refer to Spec Section 020010 Work Items

1. Clarification – Work Item 25.6 Mechanical – Clean Existing Drains and Piping indicates that work includes drains, piping, etc. It also indicates a minimum 4000 psi jetting, and other requirements.

SECTION 033760 – PREPACKAGED REPAIR MORTAR

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 01 Specification Sections apply to this Section.

1.2 SUMMARY

- A. This Section includes the provision of all labor, materials, supervision and incidentals necessary to prepare deteriorated or damaged concrete surfaces and install concrete repair mortar to formed horizontal, vertical and overhead surfaces to restore original surface condition and integrity. Repairs to be form and pour/pump. All cementitious materials shall have an integral corrosion inhibitor.
- B. Related Sections: Following Sections contain requirements that relate to this Section:
 - 1. Division 01 Section "Submittal Procedures."
 - 2. Division 02 Section "Work Items."
 - 3. Division 02 Section "General Concrete Surface Preparation."
 - 4. Division 02 Section "Surface Preparation for Patching."
 - 5. Division 07 Section "Joint Sealants."

1.3 QUALITY ASSURANCE

- A. Work shall conform to requirements of ACI 301 as applicable except where more stringent requirements are shown on Drawings or specified in this Section.
- B. Testing Agency:
 - 1. Independent testing laboratory employed by Contractor and acceptable to Engineer.
 - 2. Accredited by AASHTO under ASTM C1077. Testing laboratory shall submit documented proof of ability to perform required tests.
- C. Sampling and testing of mortar shall be performed by ACI certified Concrete Field Technicians Grade I. Certification shall be no more than three years old.
- D. Testing Agency is responsible for conducting, monitoring and reporting results of all tests required under this Section. Testing Agency has authority to reject mortar not meeting Specifications.

- E. Testing Agency shall submit the following information for Field Testing of Concrete unless modified in writing by Engineer:
1. Project name and location.
 2. Contractor's name.
 3. Testing Agency's name, address and phone number.
 4. Mortar manufacturer.
 5. Date of report.
 6. Testing Agency technician's name (sampling and testing).
 7. Placement location within structure.
 8. Weather data:
 - a. Air temperatures.
 - b. Weather.
 - c. Wind speed.
 9. Date, time, and place of test.
 10. Compressive test data:
 - a. Cube number.
 - b. Age of mortar when tested.
 - c. Date and time of cube test.
 - d. Compressive strength.

1.4 REFERENCES

- A. "Standard Specification for Structural Concrete" (ACI 301) by American Concrete Institute, herein referred to as ACI 301, is included in total as specification for this structure except as otherwise specified herein.
- B. Comply with provisions of following codes, specifications and standards except where more stringent requirements are shown on Drawings or specified herein:
1. "Building Code Requirements for Structural Concrete" (ACI 318), American Concrete Institute, herein referred to as ACI 318.
 2. "Hot Weather Concreting" reported by ACI Committee 305.
 3. "Cold Weather Concreting" reported by ACI Committee 306.
 4. "Standard Specification for Curing Concrete" (ACI 308.1)
- C. Contractor shall have following ACI publications at Project construction site at all times:
1. "Standard Specifications for Structural Concrete (ACI 301) with Selected ACI and ASTM References," ACI Field Reference Manual, SP15.
 2. "Hot Weather Concreting" reported by ACI Committee 305.
 3. "Cold Weather Concreting" reported by ACI Committee 306.
- D. American Society for Testing and Materials (ASTM):
1. ASTM C109, "Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or 50-mm Cube Specimens)."

2. ASTM C31, "Test Method for Compressive Strength of Cylindrical Concrete Specimens."
3. ASTM C1583, "Standard Test Method for the Tensile Strength of Concrete Surfaces and the Bond Strength or Tensile Strength of Concrete Repair and Overlay Materials by Direct Tension (Pull-off Method)"

1.5 SUBMITTALS

- A. Make submittals in accordance with requirements of Division 01 and as specified in this Section.
- B. Contractor: At preconstruction meeting, submit procedures for demolition, surface preparation, material batching, placement, finishing, and curing of application. Provide procedure to protect fresh patches from severe weather conditions.
- C. Testing Agency: Promptly report all mortar test results to Engineer and Contractor. Include following information:
 1. See Article "Quality Assurance," paragraph "Testing Agency shall submit...."
 2. Strength determined in accordance with ASTM C109.
- D. See requirements of Division 01 Section, "Submittal Procedures," Part 1 heading, "Submittal Procedures," for limits to re-submittals.
- E. See requirements of Division 01 Section, "Submittal Procedures," Part 2 heading, "Requests for Information," for RFI constraints.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturer: Subject to compliance with requirements, provide products of one of following, only where specifically named in product category:
 1. BASF Building Systems (BASF), Shakopee, MN
 2. Euclid Chemical Corporation (Euclid), Cleveland, OH
 3. King Construction Products (King), Burlington, ON
 4. Mapei Corporation (MAPEI), Deerfield Beach, FL
 5. Sika Corporation (Sika), Lyndhurst, NJ.
 6. J.E. Tomes (Tomes), Blue Island, IL

2.2 MATERIALS

- A. Horizontal Repair and Form and Pour Mortar: Shall be prepackaged cementitious repair mortar capable of horizontal and form and pour partial depth applications, achieving a

minimum 3,000 psi compressive strength at 7 days and 5,000 psi compressive strength at 28 days per ASTM C39 as certified by manufacturer with maximum lineal shrinkage of 0.10% at 28 days. Extend per manufacturer's instructions as required for deeper placements.

1. Acceptable cementitious repair materials for this Work are as follows:
 - a. "MasterEmaco S440," by BASF Corporation.
 - b. "Eucocrete," by Euclid.
 - c. "FA-S10 Concrete," by King.
 - d. "Planitop 11," by MAPEI.
 - e. "Sikacrete 211," by Sika.
 - f. Other types may be used only with Engineer's approval in writing prior to bidding.
 2. Acceptable polymer modified materials for this Work are as follows:
 - a. "MasterEmaco T310 CI" by BASF Corporation.
 - b. "Sika Repair 222 with Latex R," "SikaTop 111 Plus", or "Sikacrete 211 SCC+," by Sika
 - c. "Duraltop" by Euclid
 - d. Form-Flo P-38 by Tomes
 - e. Other types may be used only with Engineer/Architect's approval in writing prior to bidding.
- B. Rapid Strength Repair Mortar: Shall be prepackaged, cementitious repair mortar. Repair mortar shall be capable of application achieving a minimum 3,500 psi compressive strength at 1 day and 5,000 psi compressive strength at 28 days per ASTM C39 as certified by manufacturer. Extend per manufacturer's instructions as required for deeper placements.
1. Acceptable materials for this Work are as follows:
 - a. "MasterEmaco T430," by BASF Corporation.
 - b. "Speedcrete 2028," by Euclid.
 - c. "HP-S10 Concrete," by King.
 - d. "Planitop 18 ES" by MAPEI.
 - e. "Sikaquick 1000," by Sika.
 - f. "Aprisa P-80," by Tomes.
 - g. Other types may be used only with Engineer's approval in writing prior to bidding.
- C. Trowel Applied Repair Mortar: Shall be prepackaged, cementitious repair mortar capable of vertical/overhead application by trowel achieving a minimum 3,000 psi compressive strength at 7 days and 4,500 psi compressive strength at 28 days per ASTM C 109 as certified by manufacturer.
1. Acceptable materials for this Work are as follows:
 - a. "MasterEmaco N425," by BASF Corporation.
 - b. "Verticoat Supreme," by Euclid.
 - c. "Super-Top," by King.
 - d. "Planitop XS," by MAPEI
 - e. "Sikaquick VOH," by Sika.

- f. "CT-40 Do All Mortar," by Tomes.
- g. Other types may be used only with Engineer's approval in writing prior to bidding.

D. Section '033021' for concrete reinforcing and formwork requirements.

2.3 MATERIAL ACCESSORIES

A. Extended Open Time Epoxy Bonding Agent: Not applicable to project

PART 3 - EXECUTION

3.1 PREPARATION

A. Surface Preparation: Cavity surfaces shall be clean and dry prior to commencement of patch installation. Preparation of cavity to receive new mortar shall be in accordance with Section "Surface Preparation for Patching" and manufacturer's instructions.

3.2 INSTALLATION

A. Repair Mortar Bonding Grout:

1. If contractor chooses to use a mortar bonding grout, mix and apply repair/patching mortar bonding grout in strict accordance with manufacturer's recommendations.
2. If repair/patching mortar bonding grout dries, cavity shall not be patched until it has been cleaned again and prepared as specified in Section "Surface Preparation for Patching." Repair mortar/patching grout shall not be applied to more cavities than can be patched within 0.25 hr by available manpower.

B. Mortar Placement: Mortar materials shall be placed immediately following repair/patching mortar bonding grout application in strict accordance with manufacturer's instructions. Properly proportioned and mixed mortar material shall be placed using tools to consolidate mortar so that no voids exist within new material and continuous contact with base concrete is achieved. Fresh repair/patching mortar bonding grout is required between successive lifts of mortar material.

C. Form and Pour/Pump Repair Mortar Placement: All vertical and overhead repair patches shall be formed and poured/pumped unless directed otherwise by engineer/architect. Mortar materials shall be placed [a minimum of 2 hours and no more than the Manufacturer's recommended open time after application of the extended open time epoxy bonding agent immediately following the bonding grout application]. Mix and apply in strict accordance with manufacturer's written instructions, to achieve a maximum 9" slump.

- D. Vertical and Overhead Repairs: Mortar materials shall be placed in strict accordance with manufacturer's instructions. Properly proportioned and mixed mortar material shall be placed using tools to consolidate mortar so that no voids exist within new material and continuous contact with base concrete is achieved. Supplemental wire mesh shall be required for delamination and spall repairs greater than two inches in depth. **Fresh bonding grout is required between successive lifts of patching material.**
- E. Finishing:
1. Apply a nonslip broom finish to top of floor patches and to exterior concrete platforms, steps, and ramps. Immediately after float finishing, slightly roughen trafficked surface by brooming with fiber-bristle broom perpendicular to main traffic route.
 2. Provide a surface finish similar to adjacent surfaces for vertical and overhead partial depth repairs.
 3. Finish formed surfaces similar to adjacent surfaces.

3.3 CONCRETE PROTECTION AND CURING

- A. Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 305R for hot-weather protection during placement. Keep concrete continually moist prior to final curing by evaporation retarder, misting, sprinkling, or using absorptive mat or fabric covering kept continually moist.
- B. Immediate upon conclusion of finishing operation cure concrete in accordance with ACI 308.1 for duration of at least **[three] [seven]** days by curing methods listed below. Provide additional curing immediately following initial curing and before concrete has dried.
1. During initial and final curing periods maintain concrete above 50°.
 2. Prevent rapid drying at end of curing period.
- C. Concrete surfaces to receive slab coatings or penetrating sealers shall be cured with moisture curing or moisture-retaining-cover curing.
- D. Curing Methods: Cure formed and non-formed concrete moisture curing, moisture-retaining-cover curing, curing compound, or a combination of these as follows:
1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
 - a. Water.
 - b. Continuous water-fog spray.
 - c. Absorptive cover, water saturated and kept continuously wet. Cover concrete surfaces and edges with 12-inch (300-mm) lap over adjacent absorptive covers.
 2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive.

Immediately repair any holes or tears during curing period using cover material and waterproof tape.

3. Curing compound: Apply curing compound in accordance with manufacturer's instructions.

3.4 FIELD QUALITY CONTROL

- A. Testing Agency: Owner shall engage a qualified independent testing and inspecting agency acceptable to the Engineer to sample materials, perform tests, and submit test reports during concrete placement according to requirements specified in this Article. Perform tests according to ACI 301.
- B. Testing Frequency: Perform one set of strength testing and one bond test for each product used for each day's work. Prepare samples in accordance with ASTM C31.
- C. Compressive Strength Concrete Testing: Determine strength at 3, 7, and 28 days. Each test shall consist of two 6-inch diameter cylinders or three 4-inch diameter cylinders. Testing shall be in accordance with ASTM C39.
- D. Compressive Strength Mortar Testing: Determine strength at 3, 7, and 28 days. Each test shall consist of three 2-inch cubes. Testing shall be in accordance with ASTM C109 using as placed mortar.
- E. Bond Testing: Bond testing shall be performed at 7 days in accordance with ASTM C1583.

3.5 EVALUATION AND ACCEPTANCE OF WORK

- A. Acceptance of Repairs (ACI 301):
 1. Acceptance of completed concrete Work will be according to provisions of ACI 301.
 2. Repair areas shall be sounded by Engineer and Contractor with hammer or rod after curing for 72 hours. Contractor shall repair all hollowness detected by removing and replacing patch or affected area at no extra cost to Owner.
 3. If shrinkage cracks appear in repair area when initial curing period is completed, repair shall be considered defective, and it shall be removed and replaced by Contractor at no extra cost.
 4. Patches shall be considered defective if average strength does not meet minimum strength at 28 days or if average bond strength does not meet minimum requirements of 150 psi.

END OF SECTION 033761

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