ADDENDUM #5

PROJECT: FY2020 WASTEWATER TREATMENT FACILITY UPGRADES

ACTION: Contract Documents and Specification Changes

DATE: August 8, 2022

ORIGINAL BID DATE: July 14, 2022

REVISED BID DATE: August 11, 2022

The following questions, comments, and clarifications are for the above referenced plans and/or contract documents:

1) The contract time for the project shall be revised from 330 days to 510 days to allow for the long equipment lead times being quoted by several vendors.

2) Drawing S2.1 – The note in the bottom left corner refers to specification sections 03932 and 03934, which were inadvertently left out of the set. These two sections are attached.

All bidders shall acknowledge receipt of all addenda issued where indicated on the bid sheets. (SECTION 00410 - BID FORM, Page 2)

ATTENTION

ALL BIDDERS SHALL MARK IN THE SPACE PROVIDED ON THE BID SHEET(S) TO INDICATE RECEIPT OF THIS ADDENDUM.

BIDDERS ARE ADVISED THAT IT IS THEIR RESPONSIBILITY TO VERIFY THAT ANY AND ALL ADDENDA HAVE BEEN RECEIVED PRIOR TO SUBMISSION OF THE BID. IN CASE ANY BIDDER FAILS TO ACKNOWLEDGE RECEIPT OF ANY SUCH ADDENDA IN THE SPACE PROVIDED ON THE BID FORM, THE BID WILL NEVERTHELESS BE CONSTRUED AS THOUGH THE BIDDER HAS RECEIVED AND ACKNOWLEDGED ALL SUCH ADDENDA, AND THE SUBMISSION OF THE BID WILL CONSTITUTE ACKNOWLEDGEMENT AND RECEIPT OF SAME.

SECTION 03932
CONCRETE REPAIR & REHABILITATION

PART 1 – GENERAL

1.1 Submittals:

A. Submit to owner & Engineer of Record for review prior to purchase.

B. Product Data: Manufacturer's data sheets on each product to be used, including:

1. Preparation instructions and recommendations,

2. Storage and handling requirements and recommendations, and

3. Installation methods.

1.2 Payment/ Pricing Procedures

A. Payment shall be negotiated with the owner and finalized prior to commencing work.

B. Pricing shall be based on the approved repair materials and quantities estimated based on the report & repair details provided.

C. Provide additional line item unit pricing (per linear foot and cubic yard) for repair of additional cracks and spalls discovered during the course of the project. Repair of cracks or other damage not shown in the report is subject to approval of the Engineer of Record and owner's representative.

PART 2 – PRODUCTS

2.1 Materials:

A. Structural Repair Mortar:

1. Approved products (Vertical/Overhead Applications):
   a. Five Star Structural Concrete V/O, by Five Star Products.
   b. SikaTop 123 Plus polymer modified structural repair mortar with integral corrosion inhibitor, by Sika Corp.

2. Approved products (Form & Pour Applications):
   a. Five Star Structural Concrete, by Five Star Products.
   b. SikaTop 111 Plus polymer modified structural repair mortar with integral corrosion inhibitor.

C. Reinforcing for dowels shall conform to ASTM A615, Grade 60, having a minimum yield strength of 60 ksi.

D. A bonding agent/corrosion inhibitor shall be used to coat all new reinforcing added.

1. Approved products (Vertical/Overhead Applications):
   c. Five Star Bonding Adhesive, by Five Star Products.
   d. Sika Armatec 110 EpoCem epoxy-cementitious bonding agent, by Sika Corp.

E. Delivery, Storage, and Handling:

1. Store products in manufacturer's unopened packaging until ready for installation.

2. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

2.2 Mix Designs:

A. Mixing Materials: Make batches small enough to ensure placement before binder sets. Mix materials in accordance with manufacturer's recommendations.

PART 3 – EXECUTION

3.1 Preparation:

A. Location of the repair areas: Sound the items requiring this work and mark the estimated limits of damaged/spalled areas for repair work as indicated in the report.

3.2 Shoring:

A. Contractor shall provide any and all necessary shoring required to support elevated walkways or other structures.

B. Shoring shall remain in place until repair material has reached a minimum compressive strength of 3000 psi.

3.3 Removal of concrete:

A. Remove deteriorated concrete in marked areas as outlined in the engineer’s report. Concrete shall be removed until sound material is encountered.

B. If additional damaged/spalled concrete that is not identified in the report is found after the removal of deteriorated concrete, contractor shall notify owner’s representative for inspection by engineer of record.

C. Make ½ inch deep saw cuts in the sound concrete surrounding the damaged areas. Reduce depth of saw cuts to avoid reinforcing as needed.

D. Remove all damaged and shattered concrete.

E. Remove concrete from below and around all reinforcing such that the walls of the newly formed cavity are a minimum of ¾" clear of all reinforcing. This undercutting is critical to the long-term success of the repair.

F. The surface of the cavity should be rough to ensure bonding.

3.4 Cleaning:

A. Remove all loose materials by dry sweeping.

B. Clean by sandblasting, grinding, or water blasting.

C. Sandblast clean all exposed reinforcing steel and concrete surfaces before placing new concrete.

D. Remove dust, dirt, and loosely bonded material resulting from cleaning.

3.5 Placement of reinforcing:

A. Mark & record all reinforcing encountered during concrete removal.

B. Clean all oxidized reinforcing to a white metal.

C. If the existing reinforcing is found to exhibit signs of corrosion (other than a superficial coating of rust), it shall be reinforced by adding a dowel of equivalent diameter. (Any reinforcing damaged by the concrete removal process may also require a similar repair.)

D. Dowels shall be secured with the Hilti HY200, or Simpson SET XP, epoxy anchoring system. Required embedment depth of reinforcing will depend on the size and spacing of bars being placed. Coordinate embedment depth with engineer of record.

E. Dowels shall be located not more than 2" inches from the existing bar and shall be not less than 1½" clear of any exposed surface.

F. In cases of insufficient existing concrete cover, the minimum cavity depth shall be increased to accommodate the 1½" required cover, the bar diameter, and ¾" clearance.

3.6 Placing of patch material:

A. Apply structural repair mortar with a trowel. Use one type of structural repair mortar.

1. Coat the cleaned concrete & reinforcing using the manufacturer's recommended primer(s).

2. Apply repair mortar with trowel, taking care not to leave any air pockets.

3. Place repair mortar in lifts not exceeding 2" or the manufacturer's recommended application thickness per layer (whichever is less).

4. Roughen surface between lifts.

5. Allow lift to cure sufficiently before placing subsequent lifts.

6. Consult the manufacturer's recommendations for finishing.

B. Placing Epoxy Mortar for repair of Saw Kerfs:

1. Apply epoxy mortar to newly exposed loose and unsound materials.

2. Clean surfaces by sandblasting, scarifying or waterblasting.

3. Remove dust, dirt, and loosely bonded material resulting from cleaning.

4. Ensure surfaces are dry before application of epoxy mortar.

5. Install in accordance with manufacturer's written instructions.

C. Curing and Hardeners: Protect fresh concrete/mortar from premature evaporation. Cure all concrete and mortar in accordance with manufacturer's written instructions.

3.7 Workmanship:

A. Rebuild the areas to original shape, ± 1/8 inch.

B. Remove and repair if the patching fails to bond.

3.8 Concrete Placement In Hot/ Cold Weather: Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

PART 4 – INSPECTIONS

4.1. On-Site Inspections

A. Contractor shall perform the removal, cleaning, and repair of the first damaged area to be repaired in the presence of the engineer of record.

Each subsequent repair shall be inspected by the engineer of record prior to installing repair mortar.

B. Check each repaired area for cracks, spalls, popouts and loss of bond between each repaired area and surrounding concrete before application of exterior paint or finish.

C. Check each repaired area for voids by tapping with a hammer or steel rod and listening for dull or hollow sounds.

D. Immediately repair defects. Owner does not allow additional compensation for continual repair.

End of Section 03932

SECTION 03934
CONCRETE CRACK REPAIR

PART 1 – GENERAL

1.1 Submittals:

A. Submit under provisions of Section 01300.

B. Product Data: Manufacturer's data sheets on each product to be used, including:

1. Preparation instructions and recommendations,

2. Storage and handling requirements and recommendations, and

3. Installation methods.

1.2 Payment/ Pricing Procedures

A. Payment shall be negotiated with the owner and finalized prior to commencing work.

B. Pricing shall be based on the approved repair materials and quantities shown on the contract documents.

C. Provide additional line item unit pricing (per linear foot) for repair of additional cracks discovered during the course of the project. Repair of cracks or other damage not shown on the contract documents is subject to approval of the Engineer of Record and owner’s representative.

1.3 Quality Assurance

A. Qualifications:

1. Applicator: Minimum of 5 years experience in application of similar products on projects of similar size and scope.

a. Successful completion of a minimum of 3 projects of similar size and scope.

1.4 Safety/ Access:

A. Contractor shall coordinate work schedule with owner’s representative.

B. Contractor is responsible for maintaining an OSHA compliant workspace.

PART 2 – PRODUCTS

2.1 Materials:

A. Repair Material:

1. Repair material for pressurized crack injection shall be Concresive Standard LVI – Low Viscosity Epoxy Adhesive, by BASF.

B. Epoxy Gel

1. Epoxy Gel shall be SCB Concresive 1446 by BASF.

C. Pressurized injection equipment is to be provided by the contractor. Coordinate the size and type of all pressurized injection equipment with the manufacturer's representative. Coordinate port size and type with repair material manufacturer.

D. Delivery, Storage, and Handling:

1. Store products in manufacturer's unopened packaging, away from direct sunlight, extreme heat, or freezing temperatures, until ready for installation.

2. Precondition materials to 70 degrees (F) for 24 hours before use.

3. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of local authorities having jurisdiction.

2.2 Mix Designs:

A. Mixing Materials: Make batches small enough to ensure placement before batch sets. Mix materials in accordance with manufacturer's recommendations.

PART 3 – EXECUTION

3.1 Preparation:

A. Repair is suitable for use in cracks with visible gaps less than 3/16 inches wide.

B. Locate the repair areas as shown on the engineer's drawings.

3.2 Surface Cleaning:

A. Surface of cracks to be injected should be cleaned by mechanical means. Grinding and sandblasting are acceptable means of preparing the surface.

3.3 Setting injection ports:

A. Injection holes should be drilled with a rotary percussion bit.

B. Size and spacing of injection holes will depend upon the size of the crack and the pressure setting.

C. Provide injection holes on either side of the crack and angle to intersect the crack. Locate ports at regular intervals.

D. Stagger injection holes from side to side of crack so that at least half of the ports will intersect the crack.

E. Drilled holes should be cleaned with high pressure water.

F. Install injection ports in accordance with manufacturer's written instructions.

3.4 Cleaning:

A. Flush cracks with water to remove dust and contaminants.

B. Blow out water by injecting oil free air into the injection ports.

C. Allow cracks to drain and dry before epoxy injection is attempted.

3.5 Sealing Crack:

A. Apply a 2"-3" band of high strength epoxy gel 1/8" thick to surface of crack with a putty knife.

B. Allow epoxy seal to cure overnight before beginning injection.

3.6 Injecting Crack:

A. Contractor shall verify the ratio used to formulate the mixture at regular intervals while injecting cracks to be sure the correct ratio of materials is being dispensed. Check for set time and hardness.

B. Start epoxy injection at the bottom of a vertical crack and/or either end of a horizontal crack.

1. Each port should be injected until material begins to seep through the next port. Seal initial port.

2. Move to the next adjacent port and repeat until crack is full.

C. Curing: Allow crack injection material to cure in accordance with manufacturer's written instructions.

3.7 Removing injection ports:

A. Remove ports and fill holes with epoxy gel in accordance with manufacturer’s written instructions.

B. Surface seal may be removed with a grinder.

3.8 Workmanship:

A. Rebuild the areas to original shape, ± 1/16 inch.

B. Remove and repair if the patching fails to bond.

3.9 Placement in Hot/ Cold Weather: Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

PART 4 – INSPECTIONS

4.1. On-Site Inspections

A. Contractor shall perform the first crack injection in the presence of the engineer of record.

B. Check each repaired area for cracks.

C. Immediately repair defects. Owner does not allow additional compensation for continual repair.

End of Section 03934