



**STATE OF CONNECTICUT  
DEPARTMENT OF TRANSPORTATION**



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November 17, 2016

Subject: FAP Nos. 0843(236), 0843(234) & 0843(235)  
Project Nos. 63-699, 63-700 & 63-701: Rehabilitation of Multiple Bridges I-84 East and West Bound, City of Hartford.

**NOTICE TO CONTRACTORS:**

This is to notify all concerned and especially the prospective bidders that the bid opening for the subject project has been previously postponed Two (2) additional weeks from November 9, 2016 to November 23, 2016 at 2:00 P.M. in the Conference Room of the Department of Transportation Administration Building, 2800 Berlin Turnpike, Newington, Connecticut.

**Addendum No. 3 is attached**

Please send all future questions to <http://dot-contractsqanda.ct.gov/Default.aspx>

*Philip J. Melchionne*

For: Gregory D. Straka  
Contracts Manager  
Division of Contracts Administration

**NOVEMBER 16, 2016**  
**REHABILITATION OF MULTIPLE BRIDGES I-84 EASTBOUND & WESTBOUND**  
**FEDERAL AID PROJECT NOS. 0843(236), 0843(234), 0843(235)**  
**STATE PROJECT NOS. 63-699, 63-700, 63-701**  
**CITY OF HARTFORD**

**ADDENDUM NO. 3**

The Addendum addresses the following questions and answers contained on the “CT DOT QUESTIONS AND ANSWERS WEBSITE FOR ADVERTISED CONSTRUCTION PROJECTS”:

Question and Answer Nos. 19, 39, 63, 64, 70, 72, 75, 78.

**SPECIAL PROVISIONS**

**REVISED SPECIAL PROVISIONS**

The following Special Provisions are hereby deleted in their entirety and replaced with the attached like-named Special Provisions:

- CONTRACT TIME AND LIQUIDATED DAMAGES
- NOTICE TO CONTRACTOR – PROPRIETARY ITEMS
- ITEM #0601070A – CLASS “S” CONCRETE
- ITEM #0601118A – BRIDGE DECK CONCRETE
- ITEM #0603726A – EMBEDDED GALVANIC ANODES

**PLAN SHEETS**

**REVISED PLAN SHEETS**

The following revised Plan Sheets are hereby added to the Contract:

- SHEET NO. 01.02.01.A3 LIST OF REVISIONS
- SHEET NO. 01.08.087.A3 SUBSTRUCTURE REPAIR – DETAILS 1
- SHEET NO. 01.08.107.A3 DECK END REPAIR DETAILS - 1
- SHEET NO. 01.08.110.A3 DECK END REPAIR DETAILS - 4
- SHEET NO. 01.08.111.A3 PARAPET RETROFIT
- SHEET NO. 02.04.11.A3 SUBSTRUCTURE REPAIR - DETAILS 1
- SHEET NO. 02.04.31.A3 DECK END REPAIR DETAILS - 1
- SHEET NO. 02.04.32.A3 DECK END REPAIR DETAILS - 2
- SHEET NO. 02.04.33.A3 PARAPET RETROFIT
- SHEET NO. 03.04.09.A3 SUBSTRUCTURE REPAIR – DETAILS 1
- SHEET NO. 03.04.27.A3 DECK END REPAIR DETAILS – 1
- SHEET NO. 03.04.28.A3 DECK END REPAIR DETAILS - 2
- SHEET NO. 03.04.29.A3 PARAPET RETROFIT

The Bid Proposal Form and Detailed Estimate Sheets are not affected by these changes.

There will be no change in the number of calendar days due to this Addendum.

The foregoing is hereby made a part of the contract.

## **CONTRACT TIME AND LIQUIDATED DAMAGES**

In order to minimize the hazard, cost and inconvenience to the traveling public, pollution of the environment and the detriment to the business area, it is necessary to limit the time of construction work, which interferes with traffic as specified in Article 1.08.04 of the Special Provisions.

There will be four assessments for liquidated damages and they will be addressed in the following manner:

1. For this contract, an assessment per day for liquidated damages, at a rate of Two Thousand (\$2,000.00) Dollars per day shall be applied to each calendar day the work runs in excess of the Four Hundred Eighty Five (485) allowed calendar days for the contract.
2. For this contract, an assessment per hour for liquidated damages shall be applied to each hour, or any portion thereof, in which the Contractor interferes with normal traffic operations during the restricted hours given in Article 1.08.04 of the Special Provisions. The liquidated damages shall be as shown in the following tables entitled "Liquidated Damages Per Hour" for each hour, or any portion thereof, in which the Contractor interferes with normal traffic operations during the restricted hours.

For the purpose of administering this contract, normal traffic operations are considered interfered with when:

- A. Any portion of the travel lanes or shoulders is occupied by any personnel, equipment, materials, or supplies including signs. Placement of traffic drums and cones in the shoulders to protect formwork during parapet modification work will not be considered as an interference to normal traffic operations.
  - B. The transition between the planes of pavement surfaces is at a rate of one inch in less than fifteen feet longitudinally.
3. IMS Equipment Installations

For this Contract, an assessment per day for liquidated damages, at a rate of Two Thousand Dollars (\$2,000) per day shall be applied to each calendar day that the CCTV Cameras are not operational after 12 months of the approval of the Camera Assembly submission. The CCTV Camera Sites included in this Contract are the following:

CCTV Camera Site No. 153 (I-84 WB at Sigourney St.)

The contractor shall refer to the “Notice to Contractor – IMS Installation Qualifications”, “Notice to Contractor – IMS Installation” and Item No. 11122250A Equipment Operations special provisions for terms and conditions.

4. CTfastrak Busway Operations

Should all construction equipment, materials and debris not be removed from the CTfastrak roadways by the time indicated in the row of the Table “CTfastrak Operations Shutdown Times” labeled “Clear By” in the “Notice to Contractor – Coordination with CTfastrak”, the Contractor shall be penalized \$2,000 per hour (or portion thereof) per direction of roadway in liquidated damages.

## **NOTICE TO CONTRACTOR – PROPRIETARY ITEMS**

The Contractor is hereby notified that the following item shall be furnished by the specific manufacturer specified below or an equivalent manufacturer. The Contractor will be allowed to substitute any of the listed manufacturers with an equivalent, State approved manufacturer to eliminate delay.

<u>Item No.</u>	<u>Item</u>	<u>Manufacturer</u>
1108704A	Optical Video/Data Transmitter	Optelecom, Incorporated
1108704A	Rack Mount Optical Video/Data Receiver	Optelecom, Incorporated
1108862A	Optical Termination Patch Panel	Corning Incorporated
1112210A	Camera Assembly	American Dynamics, Incorporated
0603726A	Embedded Galvanic Anodes	Vector Corrosion Technologies, Inc
0602032A	Deformed Steel Bars – High Strength	Cascade Steel Rolling Mills, Inc

**ITEM #0601070A – CLASS “S” CONCRETE**

**Description:**

Work under this item shall conform to Section 6.01—Concrete for Structures as supplemented and amended to provide for a Class “S” superplasticized concrete.

**6.01.01—Description:** Add the following:

Class “S” concrete, may be used to fill and repair voids in horizontal and vertical surfaces of concrete areas greater than one inch (1”) deep (exclusive of deck slabs and concrete pavement), as detailed on the plans or as directed by the Engineer.

Work under this item shall consist of locating and removing loose concrete, deteriorated concrete, and concrete overlaying hollow areas; patching these areas, as well as spalled and scaled areas, with Class “S” Concrete formed to the original contour. The work shall also include perimeter sawcutting, sandblasting and cleaning areas to be patched and filled. The work shall include sandblasting, cleaning, and priming any exposed reinforcing steel, prior to placing the concrete. Locating areas of concrete in need of repair shall be performed during a hands-on inspection of the existing structure. Labor, materials, and equipment necessary to complete the hands-on inspection, and to provide access for the Resident Engineer to perform a hands-on inspection to verify the extent of repairs is incidental to this work.

At locations where access to substructure is obstructed by pier protection, such as guide rail, timber guards, or other means, the work to remove and reinstall protective elements in kind is incidental to this item.

This work includes placement of welded wire fabric or reinforcement in patch areas to the limits identified on the plans.

The Contractor shall not perform any repair work without prior approval of the Engineer for location, limits and types of repairs. The Contractor’s schedule shall include adequate time for the Resident Engineer to verify and approve the proposed work.

The Class “S” Concrete for patching shall be tinted to match the existing concrete color at all exterior surfaces.

**6.01.02—Materials:** Add the following

Portland Cement Materials: shall conform to Section M.03 as modified herein.

**M.03.01 – Component Materials** is supplemented as follows

**1—Coarse Aggregate:** is supplemented with the following:

**(c) Gradation:** Course aggregate for the Class “S” concrete shall meet the following gradation requirements:

For Class “S”: The required grading shall be obtained by using 100% 3/8-inch coarse aggregate.

**3—Cement:** Add the following: Type I or II Portland Cement shall be used for Class “S” concrete.

**5—Admixtures:** add the following:

**(c) - Superplasticizing Admixtures:** The superplasticizer shall be a high-range water reducer (HRWR) capable of increasing the slump of the mix from approximately 2.5” to 7” upon the addition of the amount recommended by the respective manufacturer. The HRWR shall conform to ASTM C494 Type F or Type G and shall be approved by the Engineer. The use of this material shall be in strict accordance with the respective manufacturer’s written instructions and procedures.

**M.03.02 – Mix Design Requirements** is supplemented as follows:

**2. Non-Standard ConnDOT Mix Designs:** include Class “S” superplasticized concrete requirements as follows:.

The Class “S” concrete shall have a minimum 3,000-psi compressive strength at 28 days.

<u>Type</u>	<u>Proportion By Wt.</u>	<u>Water per Bag</u>	<u>Cement Factor</u>
Class “S”	1:2.16:2.20	Gals.. Max. 5.7	<u>Bags/Cubic Yard.</u> 7.0

**M.03.04 —Curing Materials:** is supplemented as follows:

**(3) Liquid Membrane-Forming Compound:** replace this section with the following:

No liquid membrane-forming compound shall be used for Class “S” concrete.

**6.01.03—Construction Methods:** is supplemented with the following text.

Where this specification deviates from the Standard Specifications, Form 816, the intent of this text shall govern.

**4—Acceptance Testing and Test Specimens:** Add the following:

**(a) Temperature, Air Content and Slump:** Add the following:

Class “S” concrete shall contain not less than 6.5 percent and not more than 8.5 percent entrained air at the time of placement.

Class “S” concrete shall have a slump range of 2 to 4 inches prior to the addition of the HRWR and form 6 to 8 inches slump after the addition of the HRWR. The addition rates of the air-entraining admixture (A.E.A.) and the HRWR will vary. Frequent field testing of the air content and slump prior to and after addition of the HRWR will be the determining factor of actual addition rates for each admixture.

**3-Transportation and Delivery of Concrete:** Add the following:

**(c) Mixing Concrete:**

For hand mixing of Class “S” concrete, the Contractor shall provide scale(s) approved by the Engineer in which cement and aggregate can be accurately weighed for the required mix proportions.

The Contractor shall also have measuring graduates marked in ounces for the proportioning of the A.E.A. and the HRWR. Do Not mix the A.E.A. and the HRWR together before adding to the mix; the resultant solution will not work. Do not add the A.E.A. and the HRWR at the mixer simultaneously; these admixtures must be added separately in the mixing cycle. All manufactured materials shall be stored, mixed and used in strict accordance with the written recommendations of the respective manufacturers.

**9--Curing Concrete:** Replace part (a) as follows:

**(a) Curing Methods:**

1. **Forms-In-Place Method:** Formed surfaces of Class “S” concrete shall be cured by retaining the forms in place without loosening. Water shall be applied to the forms until for the duration of the seven (7) day curing period at a frequency determined by the Engineer.

Add the following:

**14--Material Storage:** The Contractor shall store and maintain the A.E.A and the HRWR materials in clean original containers as delivered by the manufacturer.

**15--Work Procedure:** Before any concrete is removed, the Engineer shall perform a hands on inspection to determine the exact limits and locations of all areas to be repaired under this item. The limits of each area to be repaired shall be suitably marked. The Contractor shall provide scaffolding or other access as required for the Engineer’s

inspection. The Contractor shall not perform any work without prior approval of the Engineer for locations, limits, and types of repairs.

The perimeter of each patch shall be saw cut to the depth shown on the plans. Care shall be taken not to cut existing reinforcement. In the event that reinforcement intended to remain is damaged, repair it at the Engineer's direction and at no additional cost to the Department.

Loose and deteriorated concrete shall be chipped away back to sound concrete. The exposed surfaces shall be thoroughly sandblasted and vacuumed immediately prior to forming.

Hollow areas in the existing concrete shall be completely exposed by chipping away back to sound concrete and thoroughly sandblasted and vacuumed immediately prior to forming.

Spalled and scaled areas shall be cleaned of all loose and deteriorated concrete. The exposed surfaces shall be thoroughly sandblasted and vacuumed immediately prior to forming.

All surfaces of exposed concrete and reinforcing steel shall be free of oil, solvent, grease, dirt, dust, bitumen, rust, loose particles and foreign matter. Prior to sandblasting of concrete and steel surfaces, all petroleum contamination on these surfaces shall be removed by appropriate solvent or detergent cleaning operations.

Extreme care shall be taken where reinforcing steel is uncovered not to damage the steel or its bond in the surrounding concrete. Pneumatic tools shall not be placed in direct contact with reinforcing steel. Maximum 15 pound size hammers shall be used for chipping and removal where existing reinforcing steel may be encountered. Exposed reinforcing shall remain in place except where specifically indicated for removal by direction of the Engineer. Exposed reinforcing steel shall be sandblasted in accordance with SSPC-SP6, Commercial Blast Cleaning, to remove all contaminants, rust and rust scale.

For this special provision, the depth of removal shall be minimum of 1" below or behind the reinforcing steel.

Where the existing reinforcing steel is severely corroded or damaged, it shall be cut out and replaced with new reinforcing steel of the same size and spacing. Where existing steel is determined by the Engineer to have insufficient cover, it shall be either replaced or adjusted as directed. New steel shall be attached behind existing steel with a minimum length for lap splices as required by AASHTO or as directed by the Engineer. Concrete shall be removed to a minimum depth of 1" behind the new steel.

When using sandblasting equipment, all work shall be shielded for the protection of the public.

All compressed air equipment used in cleaning shall have properly sized and designed oil separators to ensure the delivery of oil-free air at the nozzle.

Adequate measures shall be taken by the Contractor to prevent concrete chips, tools and/or materials from entering into adjacent roadway lanes or dropping to areas below the structure. All debris shall be promptly swept up and removed from the site. All materials removed shall be satisfactorily disposed of by the Contractor.

All excavated areas on vertical surfaces of concrete members shall be formed using forms coated with a plastic or similar film to preclude the use of form release agents. Forms and support systems shall be properly designed in accordance with M.6.01.03-3. Forms shall be so designed that placement access shall be allowed at the top of each respective formwork assembly for contiguous void areas.

Do not use bonding compounds before or during the placement of this concrete material unless approved by the Engineer.

Concrete surfaces against which this material is to be placed shall be sound, tight, and thoroughly roughened by the removal and sandblasting procedures specified above. The exposed concrete surfaces shall be dampened with fresh water immediately prior to placement of the fresh concrete by "hosing" down the areas behind the forms as thoroughly as possible.

Placement of the fresh concrete shall be in the maximum height lifts possible under the circumstances and all freshly placed concrete shall be consolidated during placement with adequately sized and effective vibrators.

Following curing and stripping, the exposed faces of new concrete shall be finished off with the use of the appropriate tools to blend in the physical appearance to the surrounding areas as much as possible.

Cured patches shall be sounded by the Engineer to detect the presence of any hollow spots. Such spots shall be removed and replaced by the Contractor at his expense until a patch acceptable to the Engineer is in place.

**6.01.04--Method of Measurement:** Add the following:

Measure "Class "S" Concrete" for payment by the actual volume in cubic yards of concrete placed and accepted by the Engineer. Wire fabric and reinforcing steel required to replace damaged or deteriorated existing reinforcement is incidental and will not be measured for payment.

**6.01.05—Basis of Payment:** Add the following:

**1--Concrete:** Add the following

Class “S” concrete will be paid for at the contract unit price per cubic yard for “Class S Concrete,” complete in place, which price shall include performing hands-on inspection, providing access to the Engineer for hands-on inspection, locating and removing unsound material, sawcutting, sandblasting, cleaning, forming, placing, curing, stripping and finishing new concrete, and all materials, debris shields, access, equipment, tools, labor and clean-up incidental thereto. Welded wire fabric, as shown on the plans, is incidental to placement of the “Class S Concrete” patches and is included in the contract unit price.

Removal and reinstallation of existing column protection to allow access to patching areas is incidental to this item.

Pay Item

Class S Concrete

Pay Unit

Cubic Yard

## **ITEM #0601118A – BRIDGE DECK CONCRETE**

### **Description:**

Work under this item shall conform to Section 6.01—Concrete for Structures as supplemented and amended to provide for bridge deck concrete with 5,500 psi compressive strength.

**Materials:** Material shall comply with Section M.03 of the Standard Specifications as amended herein.

### **M.03.01 – Component Materials**

#### **1. Coarse Aggregate – Add the following:**

The maximum aggregate size shall be limited to 3/8”.

**M.03.02 – Mix Design Requirements** is supplemented as follows:

**2. Non-Standard ConnDOT Mix Designs:** The Contractor shall furnish the mix design to achieve the increased compressive strength requirement identified herein.

*Add the following:*

### **M.03.11 – Other Materials**

**Construction Methods:** This work shall be performed in accordance with the requirements of Section 6.01.03 of the Standard Specifications including sections specific to Bridge Decks.

Concrete Placement in Spans M-11, M-12, & M-13 shall be in accordance with sequence identified on the plans.

All surfaces of exposed concrete, reinforcing steel and structural steel shall be free of oil, solvent, grease, dirt, dust, bitumen, rust, loose particles and foreign matter. Prior to sandblasting of concrete and steel surfaces, all petroleum contamination on these surfaces shall be removed by appropriate solvent or detergent cleaning operations.

Extreme care shall be taken where reinforcing steel is uncovered not to damage the steel or its bond in the surrounding concrete. Pneumatic tools shall not be placed in direct contact with reinforcing steel. Maximum 15 pound size hammers shall be used for chipping and removal where existing reinforcing steel may be encountered. Exposed reinforcing shall remain in place except where specifically indicated for removal by direction of the Engineer. Exposed

reinforcing steel shall be sandblasted in accordance with SSPC-SP6, Commercial Blast Cleaning, to remove all contaminants, rust and rust scale.

**Method of Measurement:** Add the following:

Measure “Bridge Deck Concrete” for payment by the actual volume in cubic yards of concrete placed and accepted by the Engineer. Reinforcement is not measured as part of this item.

**Basis of Payment:** Bridge deck concrete will be paid for at the contract unit price per cubic yard for “Bridge Deck Concrete,” complete in place, which price shall include providing access to the Engineer for inspection, forming, placing, curing, stripping and finishing new concrete, and all materials, debris shields, access, equipment, tools, labor and clean-up incidental thereto. This work shall also include cleaning existing reinforcing bars intended to remain.

Pay Item

Bridge Deck Concrete

Pay Unit

Cubic Yard

## **ITEM #0603726A – EMBEDDED GALVANIC ANODES**

### **Description:**

This Section includes furnishing all labor, tools, materials, equipment and services necessary to properly install embedded galvanic anodes within newly placed patches.

Embedded galvanic anodes are designed to provide localized corrosion protection. When placed at the appropriate spacing along the perimeter of concrete patches or along the interface between new/existing concrete, the anodes mitigate the formation of new corrosion sites in the existing concrete in adjacent areas.

**Materials:** The galvanic anodes shall be Galvashield XP4, available through Vector Corrosion Technologies, Inc., Wesley Chapel, FL.

Anodes shall consist of a minimum 5.6 oz (160 grams) of zinc in compliance with ASTM B418 Type II (Z13000) and ASTM B6 Special High Grade (Z13001) with iron content of 15 ppm or less cast around a pair of heat treated, uncoated steel tie wires and encased in a highly alkaline cementitious shell with a pH of 14 or greater. The anode shall contain no added sulfate nor shall it contain chloride, bromide or other constituents that are corrosive to reinforcing steel. Anode units shall be supplied with integral un-spliced wires with loop ties for directly tying to the reinforcing steel. Each anode unit shall have a volume no less than 12.5 cu.in.

Repair concrete shall be hydraulic cement-based material with a 28-day moist cured electrical resistivity less than 15,000 ohm-cm according to ASTM C 1760. Non-conductive repair materials such as magnesium ammonium phosphate concrete and epoxy mortars or bonding agents shall not be used. Concrete mixes containing high levels of supplementary cementitious materials such as silica fume, ground-granulated blast furnace slag, fly ash or metakaolin may not meet the resistivity requirement.

**Construction:** A technical representative of the manufacturer shall be notified of the scheduled installation of the anodes a minimum of 2 weeks in advance and be present to provide direction and assistance for the initial installations of anodes in concrete patches and succeeding anode installations until the Contractor becomes proficient in the work and to the satisfaction of the Engineer.

Perform all deteriorated concrete removal, patch work, and cleaning of reinforcing steel as governed elsewhere within these contract documents. Tools, equipment, and techniques used to prepare the patch locations for installation of the anodes shall be approved by the Engineer and the manufacturer's technical representative prior to the start of construction. Reinforcing steel shall be clean and securely fastened together with tie wire to provide good electrical conductivity.

The work for this item shall be performed in accordance with the manufacturer's product specification and installed per the project details and as recommended by the technical representative of the manufacturer. The Contractor shall supply a multimeter and shall test the connections between anodes and reinforcing steel or electrical continuity as directed by the technical representative. The Contractor shall place additional tie wires or re-tie connections as directed to provide continuity.

Install anodes and repair material immediately following preparation and cleaning of the steel reinforcement.

Galvanic anodes shall be installed along the perimeter of the repair or interface at a spacing of 20 in. as specified on the drawings. Anode spacing may be altered by the technical representative to account for variations in the reinforcing steel density, the level of chloride in the structure and the corrosivity of the local environment. Such changes in spacing shall be submitted for approval and shall only be permitted in writing by the Resident Engineer. Provide sufficient clearance between anodes and substrate to allow repair material to encase anode.

Secure the galvanic anodes as close as possible to the patch edge using the anode tie wires. The tie wires shall be wrapped around the cleaned reinforcing steel and twisted tight to allow little or no free movement.

Repair material shall fully encase the anode with a minimum concrete or mortar cover over the anode of 1 in. If less than 1 inch (25 mm) of concrete cover is expected, place anode beside or beneath the bar and secure it to clean reinforcing steel. If sufficient concrete cover exists, the anode may be placed along a single bar or at the intersection between two bars and secured to each clean bar.

Confirm electrical connection between anode tie wire and reinforcing steel by measuring DC resistance (ohm,  $\Omega$ ) or potential (mV) with a multi-meter. Electrical connection is acceptable if the DC resistance measured with multi-meter is less than 1  $\Omega$  or the DC potential is less than 1 mV.

Confirm electrical continuity of the exposed reinforcing steel within the repair area. If necessary, electrical continuity shall be established with steel tie wire. Electrical continuity between test areas is acceptable if the DC resistance measured with multi-meter is less than 1  $\Omega$  or the potential is less than 1 mV.

Prior to placing repair materials, pre-wet the concrete surface and the anodes to achieve a saturated surface dry condition. Do not soak the anodes for greater than 20 minutes.

**Method of Measurement:** This work will be measured for payment by the each anodes installed and accepted in accordance with these specifications, the contract plans and supplemental requirements of the manufacturer's technical representative.

**Basis of Payment:** This item will be paid for at the contract unit price each for “Embedded Galvanic Anodes”, complete in place, which price shall include all applicable technical representation and/or material application training, and all materials, equipment, tools, and labor incidental thereto.

<u>Pay Item</u>	<u>Pay Unit</u>
Embedded Galvanic Anodes	EA