MAY 6, 2019
REHABILITATION OF BRIDGE NO. 02169 I-84 OVER LOWER RUBY BROOK
FEDERAL AID PROJECT NO. 0845(054)
STATE PROJECT NO. 0160-0150
TOWN OF WILLINGTON

ADDENDUM NO. 2

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

Question and Answer Nos. 21, and 22

SPECIAL PROVISIONS
REVISED SPECIAL PROVISIONS

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

- MILESTONE LIQUIDATED DAMAGES PROVISIONS
- ITEM NO.0601522A – 14' X 10' PRECAST CONCRETE BOX CULVERT

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.

MILESTONE LIQUIDATED DAMAGES PROVISIONS

In order to minimize the hazard, cost and inconvenience to the traveling public, pollution of the environment and the detriment to area businesses, it is necessary to limit the time of construction work for Stage 1, which interferes with traffic on I-84 as specified in Article 1.08.04 of the Special Provisions.

The time allowed for the completion of all construction work shall be based upon the completion date listed in the Contract. The Contractor shall develop construction schedules which allow completion of all required work within the time frame allowed.

There will be no additional time allotment for weekends or holidays. The Contractor will be allowed to work any time periods which are not specifically disallowed in the Contract. Traffic disruptions will be permitted only during periods which the specifications allow.

The Contractor shall note the "Complete Stage 1 and Stage 2 Construction No Later Than" milestone date below which is the deadline to avoid causing a delay to returning I-84 to full operation.

Complete Stage 1 and Stage 2 Construction No Later Than **June 28, 2020**

Assessment of Milestone Liquidated Damages:

Prior to beginning physical work on the Project, the Contractor shall furnish to the Engineer for approval a Critical Path Method (CPM) schedule that details all of the day-to-day operations necessary to complete the above tasks during Stages 1 and 2.

The schedule shall include:

- activity descriptions, activity durations and interdependence between activities, where applicable. The activities are to be described so that the work is readily identifiable and the progress on each activity can be readily measured and monitored during the noted timeframe.
- the anticipated number of shifts, the hours per shift, and the anticipated number of personnel staffed per shift
- anticipated submittal and approval dates
- anticipated material delivery dates

Accompanying the CPM schedule shall be the following, as applicable:

- description of any special resources, including back up equivalent resources
- Contingency plans for mechanical failure
- M&PT plans
- Quality Management Plans (QMP)

Milestone Liquidated Damages Terms and Conditions

If the Contractor fails to complete, as accepted by the Engineer, the above-listed tasks and corresponding milestone within the Stage 1 and 2 timeframe as defined above, or by an adjusted Date, if the adjustment was warranted as defined below, the Contractor will be assessed a Milestone Liquidated Damage charge of $17,500 (Seventeen Thousand Five Hundred Dollars) on the first minute after the defined timeframe period has expired, and shall be assessed additional liquidated damage charges at the rate of $17,500 (Seventeen Thousand Five Hundred Dollars) per day thereafter until the tasks and corresponding milestone are complete and accepted by the Engineer. The maximum assessment of Milestone Liquidated Damages shall not be capped and shall be considered separate from any Liquidated Damages assessed to the Contractor for failure to complete the Project on time per Article 1.08.09 of the Standard Specifications including Supplemental Specifications Dated July 2018.

Any and all costs or detrimental effects incurred by the Contractor in accelerating the work in an attempt to meet the Milestone "Complete Stages 1 and 2 Construction No Later Than", regardless of the effects of any delay, disruption, inefficiency or other detrimental effect including, but not limited to, the deletion of Contract work, the issuing of construction orders, the execution of supplemental agreements, the discovery of differing site conditions, the adding of extra work to the Contract, the emergence of right-of-way conflicts, problems with the obtaining or the terms of permits, action or inaction by persons or entities working on the project or by third parties, delays in the process of reviewing or approving shop drawings, expansion of the physical limits of the Project, the effects of weather conditions on Project activities, the occurrence of weekends or holidays, the suspension of any Project operation, or other events, forces or factors that affect highway construction work, shall be solely the Contractor's responsibility, and may not be used as the basis for any claim by the Contractor for additional compensation.

The Contractor is directed to follow the procedures of Article 1.08.08 of the Standard Specifications including Supplemental Specifications Dated July 2018 for any request presented to the Engineer for an adjustment of the Milestone "Complete Stages 1 and 2 Construction No Later Than" date or Milestone ". There will be no adjustment to the Milestone "Complete Stages 1 and 2 No Later Than" date for events, forces or factors, as noted above, that the Contractor was to have foreseen and included in the cost and schedule of the work.

ITEM #0601522A - 14' X 10' PRECAST CONCRETE BOX CULVERT

Description: Work under this item consists of furnishing and installing a precast concrete box culvert(s) as shown on the plans and as ordered by the Engineer. This item also includes all hardware, inserts, dowels for connections, reinforcing steel and joint materials as shown on the plans.

Work under this item shall also include furnishing, fabricating, and installing fish baffles within the installed precast concrete box culvert. The baffles are to be installed within the box sections as shown on the contract plans.

Materials:

- The concrete mix design shall meet the requirements of M.03.02, Class PCC05562, and shall be submitted to the Engineer.
- All reinforcing steel, including dowel bar mechanical connectors, shall be galvanized and shall meet the requirements of M.06.01.
- All threaded concrete inserts, lifting fixtures, and miscellaneous hardware cast into precast concrete components shall be galvanized in accordance with ASTM A153 or ASTM B695 Grade 50. All portions of the lifting and seating devices shall be recessed from the finished concrete surface.
- Non-shrink grout shall meet the requirements of M.03.05 and be suitable for submerged applications.

Structural non-shrink grout shall meet the requirements of M.03.05, obtain a mix design compressive strength no less than the adjacent concrete components and be suitable for submerged applications.

- Gaskets shall meet the requirements of ASTM D1056, C1677 or C990.
- Geotextiles shall be the "Separation (High Survivability)" type and shall be selected from the Department's Qualified Product List.
- The grouted sleeve system shall be galvanized and consist of a steel sleeve filled with non-shrink, high-early-strength grout that is capable of developing not less than 125% of the yield strength, F_y, of the bar reinforcement in tension and compression. The total slip of the bar within the splice sleeve of the connector after loading to 30.0 ksi in tension and relaxing to 3.0 ksi shall not exceed 0.01 in. between gage points clear of the splice sleeve. The grout used in the splice sleeve shall be as recommended by the grout sleeve manufacture.

Construction Methods:

1. **Submittals:** All submittals shall include a title sheet with the following:
    - Project number, town and crossing.
    - Bridge number, when shown on the plans.
    - Design code, as applicable.
    - Contact information for fabricator – contact information shall include name and address of the fabricator and the name of contact person with phone number and email address.

(a) Shop Drawings Submittal: Prior to fabrication, the Contractor shall submit an individually packaged set of shop drawings for each precast box culvert location to the Engineer for review, in accordance with the plans and 1.05.02. Each shop drawing package shall include details necessary for fabrication of each unique component, handling and installation of the precast concrete components, supporting documents for all materials incorporated into the precast concrete components and for other materials provided by the fabricator. The shop drawing package shall include:

- Plans and cross-sections of the box and headwall sections detailing the length, width, height and thickness of wall, floor and roof slabs.

(b) Working Drawings - Lifting and Seating Devices : Prior to fabrication, the `Contractor shall submit working drawings and supporting computations for the embedded lifting and seating devices required for the handling and installation of the precast concrete components at each box culvert location to the Engineer for review in accordance with 1.05.02. Prior to applying load to the embedded devices, the concrete shall attain the minimum concrete compressive strength associated with the safe working load of the device.

(c) Working Drawings - Installation of Precast Concrete Components: Prior to installation of the precast concrete components, the Contractor shall submit working drawings and supporting computations for the lifting and placement of the precast concrete components, to the Engineer for review in accordance with 1.05.02. Cranes shall be operated in accordance with the Connecticut Department of Public Safety regulations. The Contractor shall be responsible for verifying the weight of each lift. The working drawing submittal shall include, but not be limited to the following:

- Plan of the work area showing all structures, roads, railroad tracks, Federal and State regulated areas as depicted on the plans, overhead and subsurface utilities, property lines, or any other information relative to erection. No picks shall be allowed over vehicular, pedestrian, railway or vessel traffic.
- A detailed narrative describing the lifting and installation sequence.
- Manufacture’s data sheet for the crane(s) including the load/capacity chart. The capacity of the crane shall be adequate for the total lift/pick load including rigging, spreaders and other materials. In the area of railroads and navigable waterways, the capacity shall be as required by the regulatory authorities.
- Manufacturer’s data sheets and product data sheets for all rigging (slings, spreader bars, blocks, etc.), lifting devices, and other connecting equipment and hardware listing the number, type, size, arrangement and capacity of each.
- Location of each crane for each pick.
- Crane support measures, including any support beneath the outriggers such as bearing pads, crane mats, planking or special decking, or other means to transfer the crane’s total weight (including the lifted load) into the earth or structure beneath it.
- Delivery location of each component.
- Boom length and the lift and setting radius for each pick (or maximum lift radius).
- Pick point location(s) on each component.
- Lifting weight of each component including rigging (clamps, spreader beams, etc.)

(d) Product Data – Field Installed Materials: Prior to installation of the precast concrete components, the Contractor shall submit product data for field installed materials, such as non-shrink grout, geotextile, etc., not addressed in other submissions to the Engineer for review in accordance with 1.05.02.

2. Fabrication and Manufacture: The fabrication and manufacture of the precast concrete box sections shall meet the requirements of M.08.02-4 as supplemented by the following:

(a) Reinforcing Steel: Reinforcing steel shall be fabricated and installed in accordance with Articles 6.02.03-2 through 6.02.03-5. The welding of reinforcement is not permitted.

(b) Test Cylinders: During the casting of the sections, the Contractor shall cast a minimum of four 4 inch × 6 inch test cylinders in accordance with AASHTO T23 during each production run. Cylinders shall be cured under the requirements of ASTM C31 and shall be used to confirm that the concrete meets the requirements of M.03.02.

(c) Placing Concrete: Concrete shall not be deposited in the forms until the Contractor has inspected the reinforcing steel, including all other embedded components, and has documented such inspection.

Concrete shall not be deposited into the forms when the ambient temperature is below 40°F or above 100°F, unless adequate heating or cooling procedures have been previously approved by the Engineer. The concrete temperature shall be 60°F to 90°F at the time of placement.

Truck-mixed or transit-mixed concrete will not be allowed.

Production during the winter season, from November 15 to March 15 inclusive, will be permitted only on beds located in a completely enclosed structure of suitable size and dimension that provides a controlled atmosphere for the protection of the casting operation and the product.

Outside concreting operations will not be permitted during rainfall unless the operation is completely under cover.

The concrete shall be vibrated internally, or externally, or both, as needed to provide adequate flow and consolidation of the concrete. The vibration shall be provided in such a manner as to avoid displacement of reinforcing steel, forms, or other components. There shall be no interruption in the placement of concrete. Concrete shall be placed and vibrated sufficiently to produce a surface free from imperfections such as honeycombing, segregation, cracking, or checking.

Any deficiencies noted in the components may be cause for rejection.

(d) Finishing: All fins, runs, or mortar shall be removed from the concrete surfaces which will remain exposed. Form marks on exposed surfaces shall be smoothed by grinding. All exposed, outside concrete surfaces shall be given a grout clean-down finish in accordance with 6.01.03-10.

(e) Handling and Storage: Any sections damaged during storage, transportation or handling shall be repaired or replaced by the Contractor, at its own expense, as directed by the Engineer.

(f) Repairs: The Contractor shall submit to the Engineer, for review, any proposed methods or materials to be used in the repair of sections or defective surfaces. Box sections with defective area greater than 10% as determined by the Engineer will be rejected.

3. Fabrication Tolerances: Tolerances of forming precast concrete box sections shall be as follows:

(a) Internal Dimensions: The internal dimensions shall be within 1% of the design dimensions or within 1 1/2 inches, whichever is less.

(b) Slab and Wall Thickness: The slab and wall thickness shall be within 1/4 inch of the thicknesses shown in the design.

(c) Laying Length of Opposite Surfaces: Variations in laying lengths of two opposite surfaces of the box section shall be less than 1/8 inch/foot of internal span up to 3/4 inch maximum.

(d) Length of Section: The length of a section shall not vary from the designed length by more than 1/2 inch in any box section.

4. Pre-assembly of Box Sections: Box sections shall conform to all dimensions within tolerances specified herein. Adjacent sections shall be assembled without a gasket at the manufacturing plant to ensure that all tolerances are met prior to shipping. All sections that will be joined with mechanical connectors shall be pre-assembled, complete with fasteners, to confirm alignment. The Department shall be given at least 2 working days' notice to inspect and evaluate the sections prior to shipping.

5. Installation: The installation of the precast concrete box sections shall be in accordance with the plans and the following:

The installation of the precast concrete box sections shall proceed as required by the sequence of construction, stage construction plans, and the special provisions entitled "Prosecution and Progress" and "Maintenance and Protection of Traffic."

Prior to installing the inlet and outlet end box culvert sections, a bed of non-shrink grout shall be placed on the cut-off walls. The end box culvert sections shall be connected to the cut-off wall using galvanized dowels installed in cast or drilled holes and bonded with non-shrink grout.

All box culvert lap joints shall be sealed with rubber gaskets and must provide a silt-tight fit. A positive means, through the use of seating devices, shall be used for pulling each section against the adjacent section to assure a silt-tight joint. The gasket shall be uniformly compressed to a minimum of 1/2 of its uncompressed width. The joint opening between adjacent seated sections on all interior surfaces of the culvert shall be uniform and match the width shown on the plans. The interior surfaces on either side of the lap joints of

the adjacent seated sections shall form a smooth and continuous plane, free from irregularities.

(a) After its installation, any box section, as determined by the Engineer, not acceptable in vertical or horizontal alignment for any reason, including but not limited to settlement, displacement, excess camber or misfit, shall be removed by the Contractor and correctly installed, as directed by the Engineer and at the Contractor's expense.

(b) The lap joints on the exterior of the roof and the interior of the floor and the lap joints on the interior and exterior of the walls (full height on each side) shall be filled with non-shrink grout after seating the sections. The exposed portions of the lap joints within the haunches or fillets on the interior of the culvert sections shall also be filled with non-shrink grout. The non-shrink grout shall be finished smooth and flush with the adjacent concrete surface.

(c) All portions of the lifting and seating devices that extend to or beyond the finished concrete surface shall be removed. All fixtures or holes cast into the sections for lifting or seating shall be completely filled with non-shrink grout and finished smooth and flush with the adjacent concrete surface.

(d) The surface preparation, mixing, placing, curing, and finishing of the non-shrink grout shall follow the written instructions provided by the manufacturer of the grout. The Contractor shall furnish the Engineer with copies of the instructions.

(e) Prior to the passage of flowing water over the grout, the non-shrink grout shall attain a minimum compressive strength of 3,000 psi.

(f) Geotextile shall be placed over the roof and vertical joints of the culvert. The geotextile shall extend 12 inches to each side of the joint and shall be attached to the culvert with silicone caulk.

6. Erection Tolerances: The Contractor shall be responsible for ensuring the overall length of the box culvert meets the layout requirements on the plans within all acceptable tolerances as specified in the contract.

Method of Measurement: This work will not be measured in the field for payment; this work will be paid for by the linear foot of precast concrete box culvert as dimensioned on the plans, completed and accepted.

Basis of Payment: This work will be paid for at the Contract unit price per linear foot for "14' x 10' Precast Concrete Box Culvert," completed in place and accepted, which price shall include all equipment, materials, tools and labor incidental to the manufacture, shipping, repair and installation of the precast concrete box culvert, of the specified size(s) at the locations shown on the plans.

Pay Item	Pay Unit
14' x 10' Precast Concrete Box Culvert	l.f.