SECTION 00 91 13

ADDENDUM NO. 2

NOTICE is hereby given to prospective Bidders of the following information, clarifications, and modifications to the Bidding Documents. The Bidding Documents remain unchanged except as indicated below. Bidders must acknowledge receipt of this Addendum in the Bid Form and comply with the requirements for submission of Bids as set forth in the Bidding Documents.

The answers below are provided in response to questions and comments submitted by prospective Bidders.

Where do we carry the electrical service on our bid?

> Answer: Work not specifically described or designated as an item, shall be considered incidental to all items, and shall not be measured separately for payment. The electrical service shall be carried in Items #30 and #31.

Question received from Arrow Concrete Products, Inc. regarding the precast concrete culvert and transition structure.

> Answer: The culvert shall be 2' high and a minimum 6.5' wide. Larger culvert width dimensions and larger transition structure dimensions shall be allowed as approved by the Engineer upon review.

NOTICE is hereby given that the Bidding Documents have been modified and replacement pages are issued herewith.

> Replacement pages provided in **Attachment No. 1** have an Issue Date of October 11, 2016, contain reference to "ADDENDUM NO. 2" in the footer, and text changes identified by double-underline for additions and ~~Strikeout~~ for deletions.

Replacement pages (with text changes)	**Provided for purposes of double-sided printing only - no changes (front or back of replacement page)**
03 41 01-1	

This Addendum and items listed above are provided to Bidders as a paper copy via United Parcel Service and in a single Portable Document Format (.PDF) file via email. **BIDDERS ARE REQUESTED TO ALLOW FOR ELECTRONIC "READ RECEIPT" AND CONFIRM RECEIPT OF THE ELECTRONIC FILE VIA A REPLY EMAIL.**

Prepared and Issued by Woodard & Curran (Engineer) on behalf of:

Town of Westbrook, Connecticut

ATTACHMENT NO. 1: SPECIFICATION REPLACEMENT PAGES

SECTION 03 41 01

PRECAST CONCRETE CULVERT AND TRANSITION STRUCTURE

PART 1 – GENERAL

1.01 SUMMARY

A. Section Includes

A. Provide a precast concrete box structure with interior dimensions of 2’ high, minimum 6.5’ wide and approximately 90’ in length; an 8’ by 8’(minimum) square transition structure; and a precast headwall and wingwalls at the outlet end as shown on the drawings and in accordance with this Section, the applicable reference standards listed in Article 1.03 and the Drawings. Dimensions depicted on the Contract Documents are the minimum dimensions required. Larger dimensions shall be allowed as approved by the Engineer upon review.

B. The excavation of the existing inland wetland and removal and disposal of all unsuitable material within the footprint of the proposed culvert, as necessary.

C. Installing precast concrete box culvert, precast concrete headwall, transition structure, footings, excavation, bracing, backfill, grading, regrading, backfill material, subbase material and loam.

D. Temporary sheet piling, dewatering and diversion of the stream and necessary flow control measures during construction, field verification of dimensions and grades, erosion and sedimentation control including turbidly curtain to complete construction of the culvert as shown on plans and as directed by the Engineer.

1.02 PRICE AND PAYMENT PROCEDURES

A. Measurement and payment requirements: per Division 01 General Requirements.

1.03 REFERENCES

A. Reference Standards

A. American Association of State Highway and Transportation Officials (AASHTO)

a. AASHTO HB-17 Standard Specifications for Highway Bridges

b. AASHTO T 111 Standard Method of Test for Mineral Matter or Ash in Asphalt Materials

B. ASTM International (ASTM)

a. ASTM A48/A48M Standard Specification for Gray Iron Castings

b. ASTM A615/A615M Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement

c. ASTM A1064/1064M Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete

d. ASTM C32 Standard Specification for Sewer and Manhole Brick (Made from Clay or Shale)

e. ASTM C33/C33M Standard Specification for Concrete Aggregates

f. ASTM C144 Standard Specification for Aggregate for Masonry Mortar

g. ASTM C150/C150M Standard Specification for Portland Cement

h. ASTM C207 Standard Specification for Hydrated Lime for Masonry Purposes

i. ASTM C260/C260M Standard Specification for Air-Entraining Admixtures for Concrete

j. ASTM C478 Standard Specification for Precast Reinforced Concrete Manhole Sections

k. ASTM C494/C494M Standard Specification for Chemical Admixtures for Concrete

l. ASTM C857 Standard Practice for Minimum Structural Design Loading for Underground Precast Concrete Utility Structures

m. ASTM C890 Standard Practice for Minimum Structural Design Loading for Monolithic or Sectional Precast Concrete Water and Wastewater Structures

n. ASTM C990 Standard Specification for Joints for Concrete Pipe, Manholes and Precast Box Sections Using Preformed Flexible Joint Sealants

o. ASTM D113 Standard Test Method for Ductility of Bituminous Materials

p. ASTM D1227 Standard Specification for Emulsified Asphalt Used as a Protective Coating for Roofing

q. ASTM D4 Standard Test Method for Bitumen Content

r. ASTM D6/D6M Loss on Heating of Oil and Asphaltic Compounds

s. ASTM D71 Standard Test Method for Relative Density of Solid Pitch and Asphalt (Displacement Method)

C. Federal Specifications (FED)

a. FED SS-S-210A Sealing Compound, Preformed Plastic, for Expansion Joints and Pipe Joints

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination, Sequencing, and Scheduling: per Division 01 General Requirements.

1.05 SUBMITTALS

A. Submit in accordance with the Division 01 General Requirements.

B. Shop Drawings

A. Precast Concrete Structures, including construction details, dimensions, reinforcement, placement, openings, wing walls/head walls, anchoring, cut off walls, and other supporting documentation deemed necessary by the Engineer, stamped by a structural professional engineer licensed in the state of Connecticut.

C. Product Data

A. Joint Sealant

B. Anchorage Hardware

C. Streambed Construction

D. Any other appurtenant data.

D. Design Data

A. Structural design calculations sealed by a professional Engineer licensed in the state of Connecticut, and submitted a minimum of 2 weeks prior to scheduled manufacture. These will be reviewed for consistency with Project intent.

B. Closeout and Maintenance Material Submittals: per Division 01 General Requirements.

E. Stream Bypass

F. 1. Plans, sequencing and supporting documentation describing the means and methods to be used to bypass stream flow during construction.

1.06 QUALITY ASSURANCE

A. Provide in accordance with Division 01 General Requirements.

B. The materials covered by this Specification are intended to be standard materials of proven ability as manufactured by reputable concerns. Materials shall be designed

and constructed in accordance with Industry Practice, and shall be installed in accordance with the manufacturer's recommendations. The Specifications call attention to certain features, but do not purport to cover all details entering into the construction of the materials.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Provide in accordance with Division 01 General Requirements.

B. Products shall be shipped, stored, and handled in a manner consistent with the written recommendations of the manufacturer so as not to degrade quality, serviceability, and appearance. Any unit found to be defective, either before or after installation, shall be removed from the Project Site and replaced with a sound unit.

C. The manufacturer shall furnish at no additional expense to the Owner, the services of the respective manufacturer’s representatives of the precast concrete units, for such lengths of time as may be necessary to properly instruct the Contractor's personnel in the proper handling, installation, and jointing of the precast concrete units in accordance with the printed recommendations of the manufacturer.

1.08 SITE CONDITIONS

A. Existing Conditions: per Division 01 General Requirements.

PART 2 – PRODUCTS

2.01 PRECAST CONCRETE STRUCTURES

A. General

A. Precast structures shall have the inside dimensions as shown on the Drawings. Interior dimensions of the boxed culvert shall be 2’ high by 6.5’ wide, with a clear span. Sections shall be minimum 8’ in length unless a different length is required in accordance with the design or manufacturer’s recommendations.

B. Each culvert section shall be monolithically cast, with metal or metal faced forms, as a four-sided box section with open ends. The inside surfaces of the culvert shall be smooth with 45° chamfered fillets monolithically cast in all four inside corners. The quality of materials, the process of manufacture and the finished box sections shall be subject to inspection by the Engineer.

C. Where required, preformed joint filler shall be glued to the concrete surface by means of an adhesive in accordance with the manufacturer's recommendations. The adhesive shall be in accordance with AASHTO-M220.

D. All areas indicated in the drawings to be grouted shall be made with a non-shrinking, nonmetallic grout. The concrete surface shall be cleaned and roughened; and then shall be kept continuously moist for 24 hours immediately prior to the application of grout to prevent flash setting. Grout shall be kept moist for a period of seven days.

E. Non-shrink grout for filling the voids between the opening in the precast box culvert section and fastening systems for curtain walls and copings shall be "Non-Corrosive Five Star Grout", made by U.S. Grout Corp., Old Greenwich Connecticut; Master Flow 713 grout made by Master Builders, Cleveland, Ohio; F-100 Grout made by Sauereisen Cements Co., Pittsburgh, Pennsylvania; Upcon made by Upco Co., Cleveland, Ohio. or an approved equal.

B. Precast Materials

A. Concrete

a. Concrete compressive strength shall be 5,000 psi after 28 days.

b. Minimum concrete thickness shall be 6 inches.

c. Portland cement shall be Type II conforming to ASTM C150/C150M.

d. Fine aggregate shall consist of natural sand conforming to ASTM C33/C33M.

e. Coarse aggregate shall consist of 1/2-inch maximum, well-graded crushed stone conforming to ASTM C33/C33M.

f. Air entrainment admixture shall conform to ASTM C260/C260M. The air-entrained content shall be not less than 4 percent or greater than 7 percent.

g. A super plasticizer shall be used and shall conform to ASTM C494/C494M Type F. Concrete shall be placed at a slump of between 5 and 8 inches.

B. Reinforcement

a. Wire fabric shall conform to the requirements of ASTM A1064/1064M.

b. Reinforcing bars shall be new billet steel, deformed, conforming to the requirements of ASTM A615/A615M, Grade 60.

c. Minimum clear concrete cover to reinforcement shall be 1-1/2 inches.

C. Design Loads

A. Vehicle Loads

a. Except as otherwise specified, the design shall meet the requirements of AASHTO HB-17, including a HL-93 vehicle load.

b. A lateral vehicle surcharge load of 125 psf shall be applied.

B. Lateral Pressure

a. The equivalent lateral fluid pressure shall be 100 psf/lf below flood or design groundwater elevation, and 60 psf/lf above such elevation. The specified lateral vehicle surcharge load shall be added to this load.

C. Water & Wastewater Structures Design Load

a. Except where higher loads are specified, water and wastewater structures shall be designed for the loads prescribed in ASTM C890.

D. Utility Structures Design Load

a. Except where higher loads are specified, utility structures shall be designed for the loads prescribed in ASTM C857.

D. Joints

A. Concrete sections shall be provided with bell and spigot, or tongue-in-groove ends to ensure proper connection of the joints.

B. Each joint shall be sealed with a butyl rubber sealant. A compatible primer shall be applied as recommended by the manufacturer. Sealant shall be Conseal CS-102 (CS-202 when the temperature during installation is less than 30 degrees F) by Concrete Sealants, Inc., Kent Seal #2 by Hamilton Kent, Pro-Stik by Press-Seal Gasket Corporation, or approved equal, and shall be applied in accordance with the manufacturer's recommendations. Sealant properties shall be as follows

a. AASHTO T 111: 30 percent minimum ash content

b. ASTM C990

c. ASTM D4: 50 percent minimum hydrocarbon content

d. ASTM D6/D6M: 2 percent maximum volatile matter

e. ASTM D71: specific gravity between 1.15 - 1.50

f. ASTM D113: 5.0 minimum

g. ASTM D217: 55-100 mm at 77 degrees F

h. FED SS-S-210A: No deterioration, no cracking and no swelling after 30 days immersion in 5 percent solutions of HCl, H2SO4, NaOH, KOH, and H2S.

2.02 DAMPPROOFING

A. Dampproofing shall be Hydrocide 700 Mastic as made by Sonneborn, Karnak 920 Anti Hydro Mastic Emulsion, or approved equal, conforming to ASTM D 1227.

2.03 PIPE CONNECTIONS

A. Pre-molded elastomeric sealed joints shall be used at the joints between the pipe and precast sections. Pre-molded elastomeric sealed joints shall be A-Lok, Res-Seal, Press-Wedge II, Lock Joints Flexible Manhole Sleeve, Kor-N-Seal Joint Sleeve, or equal.

2.04 BRICK

A. Brick shall conform to ASTM C32/C32M, and shall be new, first quality, whole, sound brick.

B. Grade MS brick shall be used for setting manhole frames.

2.05 MORTAR

A. Mortar shall be composed of one part portland cement and 2 parts sand with 20 percent hydrated lime.

B. Portland cement shall conform to ASTM C150/C150M. Sand shall conform to ASTM C144/C144M. Hydrated lime shall conform to ASTM C207/C207M.

2.06 ANCHORAGE HARDWARE

A. Hardware for fastening the precast structure to fasten precast segments together for buoyancy shall be stainless steel.

2.07 SOURCE QUALITY CONTROL

A. Provide in accordance with Division 01 General Requirements.

PART 3 – EXECUTION

3.01 DEWATERING AND STREAM BYPASS

A. Prevent surface water and subsurface or groundwater from flowing into excavations and from flooding project site and surrounding area.

B. Do not allow water to accumulate in excavations. Remove water to prevent softening of foundation bottoms, undercutting foundations, and soil changes detrimental to stability of subgrades and foundations. Provide and maintain pumps, sumps, suction and discharge lines, and other dewatering system components necessary to convey water away from excavations.

C. Dispose of water in accordance with the requirements of all local, State and Federal codes and in accordance with Project dewatering permits.

D. Maintain stream flow at all times during construction. Contractor shall be responsible for means and methods.

3.02 PRECAST STRUCTURES

A. Precast structures shall be installed as shown on the Drawings. Precast sections shall be installed so that the entire structure is vertically plumb and aligned, and when not so, shall be removed and replaced. All erection holes shall be filled solid with non-shrink grout. The Contractor shall furnish and use suitable slings, hooks, and cables for the proper handling of the sections. All anchoring and fastening devices shall be provided by the Manufacturer for the proper and satisfactory installation of the units

B. The manufacturer shall supply all specific lifting devices for each piece to the successful installation contractor if needed on a temporary basis. The specific lifting devices shall be returned with the manufacturer representative that oversees the installation work for compliance

C. No cracked, warped, or broken units, or units which, in the opinion of the Owner or Engineer, show defects that might adversely affect the serviceability of the units, shall be used in the work. Defective units shall be removed from the site and shall be replaced by the Manufacturer with new and sound units at no additional expense to the Owner. Any additional costs associated with replacement of units as described in this section shall be the manufacturers responsibility to pay all costs associated with replacement of said units

D. Joints between precast sections and units shall be made in an approved manner to guarantee a leak-proof, watertight joint. Joint designs incorporating 0-rings and cement grout will not be accepted. Joint filler shall be provided as required and joint sealant shall be installed on both the interior and exterior sides of the joints. Joints shall be sealed with either cold-applied bituminous sealer, preformed plastic gaskets or flexible, watertight, rubber-type gaskets conforming to the requirements of Article M.08.01 of the CTDOT Specifications for Roads, Bridges, and Incidental Construction.

E. Where patching is permitted by the Owner and Engineer, the patches shall be made using the same material as used in the unit being patched and using a 2-part epoxy compound of a type to produce a proper bonding of the patch to the units.

F. Patching required due to damage during offloading staging or installation shall be responsibility of the Contractor.

G. Patching of imperfections at the plant by the Manufacturer shall require the Owner’s and Engineer’s approval before the unit is shipped from the manufacturer’s plant.

H. The engineer reserves the right to reject any precast sections and the rejected units shall be tagged and removed from the site immediately. The engineer may also require testing of concrete

I. Packing, Shipping, Handling, and Unloading

1) Provide that each shipment of precast concrete headwalls and culverts includes manufacturers' Certificate of Conformance

2) Inspect upon delivery and reject pipe immediately that does not conform to the specified requirements or has been damaged beyond repair and immediately remove from Site

J. The manufacturer shall furnish at no additional expense to the Owner, the services of the respective manufacturer's representatives of the precast concrete units, for such lengths of time as may be necessary to properly instruct the Contractor's personnel in the proper handling, installation, and jointing of the precast concrete units in accordance with the printed recommendations of the manufacturer. The manufacturer shall witness the complete installation of the box culverts, headwalls and certify they have been installed in accordance with the manufactures recommendations for the supplied products and ancillary items.

K. All precast concrete units shall be stored, handled, protected and delivered by the manufacturer to be installed and unloaded by the Contractor. The manufacturer shall be present to verify that all supplied units are installed in accordance with the printed recommendations of the manufacturer and in a manner to prevent overstressing, marring or damaging of the units. The manufacturer shall provide a written affidavit that they witnessed and approved the installation means and methods according to the manufactures recommendations

L. The Contractor shall be responsible for any damage to the existing utilities and properties adjacent to the proposed headwalls and culvert. Such damages shall be repaired by the Contractor to the satisfaction of the Engineer at no additional cost.

M. The Contractor shall be responsible for protecting the precast culverts against flotation or uplift during construction and shall be designed for buoyance resistance.

N. The precast concrete culvert section shall be shipped, handled, and installed in accordance with the manufacturer's recommendations. Unless otherwise directed by the Engineer, all precast concrete culvert sections shall be installed in bedding material in accordance with the details as shown in the plans and in conformance with these specifications. The precast concrete box culverts shall be placed in the dry.

3.03 APPLICATION OF DAMPPROOFING

A. Application of dampproofing shall be in accordance with the manufacturer's recommendations.

B. Application shall not be permitted in spaces exposed to inclement weather or when air temperatures are below 40 degrees F, or are expected to go below 40 degrees F within 24 hours after application.

C. Apply dampproofing at a rate of 4 to 6 gallons per 100 square feet. If applying 2 coats, each coat shall be 2 to 3 gallons per 100 square feet. First coat must be

allowed to dry prior to the application of the second coat. Coating must be continuous and free from breaks and pinholes.

3.04 FIELD QUALITY CONTROL

A. Provide in accordance with Division 01 General Requirements.

3.05 CLOSEOUT ACTIVITIES

A. Provide in accordance with Division 01 General Requirements.

3.06 CLEANING

A. Upon completion of all construction, and prior to final acceptance, all debris shall be removed from precast structures.

END OF SECTION