AUGUST 27, 2018

REPLACEMENT OF BRIDGE NO. 00315 U.S. ROUTE 1 OVER NOROTON RIVER

FEDERAL AID PROJECT NO. 0001(347)
STATE PROJECT NO. 0135-0307

CITY OF STAMFORD AND TOWN OF DARIEN

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. 22, 23, 33, 34, 37, 38, 44, 45, and 48.

SPECIAL PROVISIONS
NEW SPECIAL PROVISION
The following Special Provision is hereby added to the Contract:

- ITEM #1301081A – 6” DUCTILE IRON PIPE (WATER MAIN)

This Special Provision was added to the Contract by adding it to the revised Special Provision for items #1301805A – INSTALL 12” WATER MAIN AND APPUR TENANCES and item #1301772A – INSTALL 16” WATER MAIN AND APPUR TENANCES.

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

- ITEM #05014411A – POST-TENSIONING OF SUPERSTRUCTURE (SITE NO.1)
- ITEM #1301805A – INSTALL 12” WATER MAIN AND APPUR TENANCES
- ITEM #1301772A – INSTALL 16” WATER MAIN AND APPUR TENANCES
CONTRACT ITEM  
NEW CONTRACT ITEM  

<table>
<thead>
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<th>ITEM NO.</th>
<th>DESCRIPTION</th>
<th>UNIT</th>
<th>QUANTITY</th>
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<td>6” DUCTILE IRON PIPE (WATER MAIN)</td>
<td>L.F.</td>
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DELETED CONTRACT ITEM(S)  

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<td>2765 S.Y.</td>
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PLANS  
REVISED PLANS  
The following Plan Sheets are hereby deleted and replaced with the like-numbered Plan Sheets: 02.01.A2, 05.02.A2, 05.12.A2, 05.16.A2, 05.20.A2, 05.21.A2, 05.40.A2, and 08.02.A2. 

The Bid Proposal Form has been revised to reflect these changes. 

The Detailed Estimate Sheets do not reflect 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.
ITEM #0514411A – POST-TENSIONING OF SUPERSTRUCTURE

Work under this item shall conform to the requirements of Form 817, Section 5.14 amended as follows:

5.14.01 - Description: Replace this section in its entirety:

Work under this item shall consist of furnishing, fabricating, delivering to the site, and installing transverse post tensioning ties in the prestressed concrete bridge deck units at locations indicated on the plans, including but not limited to all transverse tie strands, anchorage hardware, devices, mortar, additional plates, protective caps, grease, protective sleeves, ducts, supplementary steel reinforcing and grout, and all other necessary materials and equipment to complete the work in accordance with the sequence indicated on the plans.

5.14.02 - Materials: Add the following:

The materials for post tensioning of the prestressed deck units shall conform to the requirements of CTDOT Form 817 Article M.14.01 amended as follows:

Transverse Tie Strands: Add the following to this section:

Reused post-tensioning ties shall be deemed structurally sound by the Contractor. It is the Contractor’s responsibility to inspect existing post tensioning steel and determine whether it is structurally sound and capable of safely being tensioned to loads shown on Contract plans. The transverse steel strands shall be free of corrosion, etching, pitting, or scaling of the surface.

Anchorage Assembly: All units comprising an anchorage assembly shall be capable of developing the ultimate strength of the attached tendons without visible deformation, and shall be furnished complete with all necessary fittings. All steel plates or structural shapes that are required for distributing the end anchorage loads shall conform to the requirements of CTDOT Form 817 Article M.06.01.

The anchorage assembly shall be designed so that the maximum bearing stress on concrete at service load conforms to the requirements of Division I, Article 9.21.7.2 AASHTO Standard Specifications for Highway Bridges, 17th edition.

Mortar: Mortar for the filling the pockets shall conform to the requirements of non-shrink grout per CTDOT Form 817 Article M.03.05. Water used for mixing shall conform to the requirement of CTDOT Form 817 Article M.03.01. Chlorides and nitrates shall not be used. The water shall be potable. The water content of the grout shall be kept as low as possible for filling the pockets, however the water cement ratio (by mass) shall not exceed 0.44. Admixtures, if used, shall not contain chlorides in excess of .005 percent of the mass of the cement used. Nor shall it contain fluorides, sulphates or nitrates. The Contractor may substitute a grout mix especially manufactured for grouting prestressed tendons, conforming to the requirements stated herein.
5.14.03 - **Construction Methods:** This section shall be amended as follows:

1. **Shop Drawings:** Replace this section in its entirety:

Before construction, the Contractor shall submit shop drawings to the Engineer for approval in accordance with CTDOT Form 817 Article 1.05.02-3. These drawings shall include the following information:

   a. Complete details of the method, materials, and equipment the Contractor proposes to use in the post tensioning operation. Such details shall outline the method and sequence of stressing, jacking force, and effective force for each tendon and give complete specifications and details of the prestressing steel strands and anchorage devices and other data pertaining to the post tensioning operation.
   
   b. The size of the anchorage assemblies and pockets required shall be detailed.
   
   c. Plastic caps and grease to be provided shall be specified.
   
   d. Methods for achieving the initial and final post tensioning force in each tie.

Design computations for the proposed method of post tensioning shall be submitted with the shop drawings and shall include but not be limited to the following information:

   a. Jacking force for each tendon.
   
   b. Effective force for each tendon.
   
   c. Anchorage bearing stress at service load.
   
   d. Jacking sequence.
   
   e. All other computations required for the system of post tensioning being used.

Approval of shop drawings must be obtained prior to the placing of tie strands and anchorage assemblies.

Deviations from post tensioning requirements and details shown on the plans will not be permitted unless details of such deviations are submitted and approved in advance of use. The approval by the Engineer of any proposed method, materials, or equipment shall not be construed as relieving the Contractor, in any respect, of full responsibility for successfully completing the post tensioning operations in accordance with the requirements of these special provisions.

16. **Methods and Equipment:** Replace this section in its entirety:

The Contractor shall be solely responsible for the adequacy of his post tensioning scheme and for all details of plant, falsework, materials, equipment, and other means and methods necessary to carry it out. The Contractor's responsibility includes the investigation of erection stresses, required details for end anchorages and installation of the strands and anchorages. The results of this investigation, including computations, shall be submitted to the Engineer. The Contractor is also responsible for
determining the structural adequacy of the existing post-tensioning steel strands if he chooses to reuse the existing strands.

**5.14.04 - Method of Measurement:** Replace this section in its entirety:

Post-tensioning of Superstructure, being paid for on a lump sum basis, will not be measured for payment.

**5.14.05 - Basis of Payment:** Replace this section in its entirety:

This work will be paid for at the contract lump sum price for “Post-tensioning of Superstructure”, as shown on the plans, completed and accepted, including all materials, equipment, tools, and labor incidental thereto.

<table>
<thead>
<tr>
<th>Pay Item</th>
<th>Pay Unit</th>
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<td>Post-Tensioning of Superstructure</td>
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ITEM 1301081A – 6” DUCTILE IRON PIPE (WATER MAIN)

ITEM #1301805A – INSTALL 12” WATER MAIN AND APPURTENANCES

ITEM #1301772A – INSTALL 16” WATER MAIN AND APPURTENANCES

Description:

Work under this section shall include all labor, tools, and equipment necessary for installing 6”, 12” and 16” ductile iron water mains on this project including all appurtenances, complete in place, as shown on the drawings or as directed by the Aquarion Representative, and in accordance with the Aquarion Standard Details.

Contractor shall have the pipe supplier prepare and shall submit to the Aquarion Water Company a "LAYING SCHEDULE" of all pipe and accessories to be furnished and installed under this Contract. No work shall be undertaken until the laying schedule has been submitted to and approved by the Aquarion Water Company.

Work under this section shall include all labor, tools, materials, and equipment necessary for:

- obtaining road opening permit
- coordination of Call-Before-You-Dig mark out
- saw-cutting of the roadway, sidewalks, or driveways
- traffic control equipment (signs, barriers, etc.)
- traffic control coordination, including scheduling of policemen and flagmen
- furnishing and maintaining lighting
- mobilization and demobilization
- clearing and grubbing
- excavation for pipeline trenches as measured from the existing grade to the trench subgrade
- installing thrust blocks
- furnishing, installing, operating and maintaining a dewatering system
- furnishing, installing and removing sheeting, bracing and trench boxes
- furnishing, stockpiling, loading, hauling, placing and compacting pipe bedding material
- backfill and compaction of pipeline trenches
- stockpiling, loading, hauling and legally disposing of surplus material
- unloading and storage of pipe, fittings, valves, and other appurtenances
- stringing of pipe
- installing pipe, fittings, joint restraints, hardware and restrained joint pipe
- asphalt and concrete pavement removal and disposal (including necessary saw cutting)
- removal and restoration of walls, fences, signs and any other structures which must be removed to carry out the work
- removal of topsoil and sod; restoration of area to original condition upon completion of work
- care and protection of existing pipes, utilities, and other structures
- piling and storage of excavated materials
- removal of and stacking of gate or butterfly valves at locations determined by the Aquarion Representative
- all other work shown, specified, or required for installing the water main, except that which is specifically included for payment under other items of this Contract.

Pressure testing of newly installed water main will be paid for under item 1301900A – Hydrostatic Pressure Test. Concrete and rebar for all thrust blocks will be paid for under Item 1304111A – Class “C” Concrete.

All public or private monuments, iron pipes or other types of property line and geodetic markers damaged or disturbed by operations under this Contract shall be reset by a licensed land surveyor, all at no additional cost to Aquarion or the State.

All water mains and appurtenances shall be installed in accordance with these Special Provisions and the Aquarion Relocation Plans and Details.

**Materials:**

The Contractor shall furnish materials based on the List of Approved Materials contained in Item #1301078A of these special provisions. Additional materials, if required, shall be provided by the Contractor and shall be ordered by the Contractor from the Contractor’s material supplier. Additional materials must be approved by the Aquarion Representative at the site in order to be invoiced. There shall be no administrative mark up on additional materials ordered. A copy of all material invoices shall be given to Aquarion for review.

The Contractor shall furnish all pipe, fittings, appurtenances, and other materials to the project site.

Leftover or unused materials that are to be returned to the Contractor’s material supplier for credit shall be stockpiled in a neat and orderly fashion on pallets by the Contractor. These materials shall be picked up and removed from the site as soon as possible after the job ends. The Aquarion Representative shall be present for the pickup of these materials and shall agree on which materials can be returned for credit with the Contractor’s material supplier. The Aquarion Representative and the Contractor’s material supplier shall document the materials on a credit form.

The Contractor shall remove and properly dispose of all trash and debris, including leftover materials that cannot be returned for credit.
Construction Methods:

Pipe coating that is damaged during shipment or placement shall be touched up in the field with two (2) coats of an asphaltic coating fully resistant to water and chemicals. Materials used for interior surfaces shall be acceptable for use in a potable drinking water supply and shall not impart any odors to the pipe and water.

At all changes in direction and dead ends a concrete thrust block and an approved length of restrained joints/pipe will be required utilizing the following chart for determining the number of joints to be restrained:

### NUMBER OF RESTRAINED JOINTS AND LENGTHS

(100 psi, Cohesive Granular Soils, Ductile Iron Pipe)

<table>
<thead>
<tr>
<th>Pipe Size</th>
<th>90° Bend</th>
<th>45° Bend</th>
<th>22 1/2° Bend</th>
<th>11 1/4° Bend</th>
<th>Dead End</th>
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<td>F(8)</td>
<td>F(4)</td>
<td>F+6(112)</td>
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</table>

Notes:

1. **F + (any number listed in table)** - Means fitting plus (the number of joints listed) on either side of the fitting.

2. **(Any number listed in parentheses)** - Means the number of feet on either side of the fitting that must be restrained, i.e. no short pieces.

3. **For pressure greater than 100 psi. Aquarion will determine the number of restrained joints.**

Mechanical joint locking gaskets may be used to restrain pipe joints and shall be Field Lock 350, Sure Stop 350, or approved equal and in accordance with ANSI/AWWA C111-12/A21.11
Standards, latest revision.

**Installing Ductile Iron Pipe**

All pipe installation shall conform to AWWA C600 Standards, latest revision, unless otherwise modified by these specifications.

Ductile iron pipe shall be laid to a minimum depth of 4’-6” to the top of the pipe as shown on the Typical Trench Detail, unless otherwise directed by the Aquarion Representative. Where the pipeline crosses existing utilities, a vertical clearance of twelve inches (12") minimum shall be maintained, except for sanitary sewers where if the water main is within ten (10) horizontal feet of the sewer, the water main must be at least eighteen inches (18") above the sewer. The pipe between bell holes shall bear continuously on approved material. If the Contractor excavates below the required limit, the trench bottom shall be brought to the required grade with an approved material as specified in these specifications at the Contractor's expense. In laying pipe, the deflections given in AWWA Standard C600 latest revision shall not be exceeded.

All pipe, valves and fittings shall be lowered carefully into the trench by means of mechanical equipment in such a manner as to prevent them from being damaged. The insides of all bells and outsides of spigots shall be wiped clean and dry and shall be free from oil or grease. During the laying of the pipe, extra care shall be taken to see that no dirt, debris, tools, clothing, or other illicit materials are allowed to be left in the pipe.

After the pipe is laid in the trench, the spigot end shall be centered in the bell and pushed into the bell. Under no circumstances shall pipe be laid where there is water in the trench. The Contractor shall install and joint the pipe in accordance with the manufacturer's instructions. The joints shall be made continuous by the installation of metal wedges per the manufacturer’s instructions.

Aquarion will establish the location of the centerline of the pipeline. The Contractor shall establish bench marks and offsets, as necessary, a suitable distance from the work to be done so that proper lines and grades for the work may be maintained. The Contractor shall, to the best of their ability, protect all survey points from damage.

The Contractor shall be responsible for placing the pipe accurately to the established lines and grades as shown on the drawings or as directed by the Aquarion Representative.

When necessary to cut pipe in the field, the cutting shall be done such that neither the pipe nor the lining shall be damaged and such that a smooth, right angle cut is made. A machine designed for this purpose shall be used for the cutting.

It shall be the Contractor’s sole responsibility to procure and maintain a suitable storage area for tools, materials, and equipment necessary to perform the work. The Contractor is responsible for all costs associated with the storage of equipment and materials and shall not invoice these costs
to Aquarion or the State. The storage area obtained by the Contractor shall not obstruct or interfere with pedestrian or vehicle movement, and shall not occupy any space within the public right-of-way, except with specific permission by Aquarion or the State.

Materials shall be stored so as to insure the preservation of their quality and fitness for the work. When considered necessary, they shall be placed on wooden platforms and covered or stored in a suitable building. The Contractor shall not use the storage area for bulk storage of hazardous materials (e.g., gasoline, solvents, oil, etc.). Stored materials shall be located so as to facilitate prompt inspection. The Contractor shall be present to unload piping and other materials delivered to the jobsite prior to the Contractor’s planned mobilization to the project.

Excavation

The excavation defined herein shall be deemed earth excavation, which shall include the removal of all material other than rock. The extent of trenching and excavation, including rock, shall be in accordance with the Typical Trench Detail, and shall be 4” below the bottom of the pipe in earth and 6” below the bottom of the pipe in rock. The depth of trench may be increased or decreased at the discretion of the Aquarion Representative as required to avoid obstructions.

Hand excavation shall be employed whenever, in the opinion of the Aquarion Representative, it is necessary to excavate around and/or expose existing utilities.

Excavated material, to the limits other than the limits defined for Removal of Unsuitable Material that is deemed unsuitable material for use as bedding material or backfill above 12” above the top of the pipe by the Aquarion Representative, shall be removed from the site and properly disposed of.

Special care shall be taken to excavate accurately to grade. If the trench is over-excavated, it shall be brought to grade, at the Contractor's expense, by refilling with approved material in compacted layers, each layer not to exceed 6" in thickness if the depth is less than 12” or 12” in thickness if the depth is greater than 12”.

Where the bottom of the trench, below the limit of excavation for placement of bedding material, is found to be unstable or to contain material which, in the judgment of the Aquarion Representative, should be removed, the Contractor shall excavate and remove such material to the width and depth as shown on the Typical Trench Detail, as directed by the Aquarion Representative. This excavated material shall be paid for as Excavation and Disposal of Unsuitable Material (Water Main) (see Typical Trench Detail for vertical limit). Before the pipe is installed, the subgrade shall be prepared by refilling with bedding material, in compacted layers, each layer not to exceed 6” in thickness if the depth is less than 12” or 12” in thickness if the depth is greater than 12”. The layers shall be thoroughly compacted so as to provide a uniform and continuous bedding for the pipe. This material shall be paid for under Additional Backfill Material (see Typical Trench Detail for vertical limit of Suitable Material).
Rock Excavation

Rock excavation and replacement with Additional Backfill Material, including bedding material, is specified under other sections of these specifications.

Unauthorized Excavation

All unauthorized excavations outside the lines and grades shown and specified shall be at the expense of the Contractor and the Contractor shall refill them with approved material, in a manner as specified at his own expense. All backfill for unauthorized excavations shall be compacted in 12” lifts.

Storage and Disposal of Excavated Materials

Materials removed from the trenches shall be stored in such a manner that they will not interfere unduly with pedestrian or vehicular traffic. Sufficient material suitable for backfill shall be stored and hauled as necessary to replace excavated material that is unsuitable for backfill. Excess excavated material shall be removed and legally disposed of away from the site by the Contractor on the same day as the backfill has been placed.

Bedding Material

Bedding material shall be free from soft, thin, elongated, laminated, friable, micaceous, or disintegrated pieces, mud, loam, organic matter, wood, clay, or other deleterious material, and frozen material.

Bedding material shall be used for backfilling trenches under, along and over the pipe to a level of 12” above the top of the pipe, as shown on the drawings or as directed by the Aquarion Representative, and shall be bank run gravel, ¾” crushed stone, processed aggregate base, or native material.

The Contractor must properly bed the pipe with bedding material and shall take care in doing so. The Contractor shall place bank run gravel, ¾” crushed stone, processed aggregate base, or native material under, along and over the pipe as bedding material to the minimum depth as shown on the Typical Trench Detail or as directed by the Aquarion Representative. Native material is acceptable as bedding material as long as it meets the requirements of these specifications. The bedding material shall be spread in layers and shall be compacted in place at the proper grade to provide a solid uniform bed for the pipe or structure for the full width and length of the bottom of the excavation. Bell holes shall be carefully dug at the ends of the pipe to provide ample room for properly making and checking of joints and providing room for the minimum depth of compacted bedding material under the bell.
When the pipe has been bedded satisfactorily and the joint completed, the recess under the bell shall be refilled and tamped on each side of the pipe to hold it securely in place, care being taken not to disturb the position of the pipe during the process, and in such a manner that the bearing is distributed evenly over the entire length of the pipe.

Any material used for Bedding Material shall not have stones larger than 4”. No stones shall be in contact with the pipe or be within 4” of the pipe.

**Backfilling**

Unless otherwise specified or directed, all trenches and excavations shall be backfilled immediately after installation and inspection of the pipe.

The Contractor shall use suitable material from excess excavation from other portions of the work or from approved gravel pits. It shall be carefully deposited in uniform layers not exceeding twelve inches (12”) in depth, and unless otherwise permitted, each layer shall be carefully and solidly tamped and compacted with appropriate tools in 12” lifts in such a manner as to avoid disturbing the completed work.

Backfill for the excavation (above the limits of the bedding material) shall be with approved Additional Backfill Material, as specified under Item #1300151A of these specifications, free from organic matter. No stones larger than 12” shall be used in the trench as backfill from 12” above the top of the pipe to the surface. In depositing stones up to 12”, care must be taken not to damage the pipe or any structure. Stones which are used in backfilling shall be so distributed through the mass that all interstices are filled with fine material. Backfill shall be deposited in layers not exceeding 12” in depth and compacted.

Rock and other excavated materials from trenches and excavations may be used as backfill, provided individual pieces of rock are not larger than 12” and that they are placed so that voids are filled with the backfill material. No rock or other excavated materials from trenches and excavations shall be placed within 12” from the top of the pipe.

Backfilling within 2’ of structures shall be uniformly deposited on all sides and, unless otherwise permitted, solidly compacted in such manner as to avoid damaging the structure or producing unequal pressures thereon.

When sheeting is drawn, all cavities remaining in or adjoining the trench shall be solidly backfilled and compacted. When sheeting is permitted to be left in place, all cavities behind such sheeting shall be solidly backfilled and compacted.

If the material from the trench excavation is considered, in the opinion of the Aquarion Representative, to be unsuitable for use as backfill, the Aquarion Representative shall order the
Contractor to furnish suitable Additional Backfill Material for backfill to the limits shown on the Typical Trench Detail. The removal and disposal of this material, if not suitable for backfill, down to the lower vertical limit of the bedding material is included in the linear foot price of the pipe installation. See the Typical Trench Detail for the vertical limits of Additional Backfill Material and bedding material.

**Trench Bracing, Sheeting and Trench Boxes**

Where trench conditions are found to consist of material which is unstable to such a degree that it cannot be removed and replaced with an approved material without creating an occupational hazard, the Contractor shall utilize trench bracing, sheeting or trench boxes to support the trench. The Contractor must conform to all applicable State and OSHA standards for trench conditions. The Contractor shall be held accountable and responsible for the amount of all trench bracing, sheeting, and trench boxes used and for all damages to persons or property resulting from the improper quality, strength, placing, maintaining, or removing of the trench bracing, sheeting, or trench boxes. When trench bracing, sheeting, or trench boxes are removed, care shall be taken not to disturb the newly installed pipe, appurtenances, or existing utilities and structures.

Trench bracing is defined as planks placed against opposite sides of the excavation and is held in place by timber struts or some extendable brace.

Sheeting is defined as continuous sheet piling of either steel or wood with whalers or shoring. No sheeting is to be left in place unless expressly permitted by the Aquarion Representative.

All materials necessary for trench bracing, sheeting, or trench boxes shall be provided by the Contractor and included in this section.

All construction methods necessary to install and maintain trench bracing, sheeting, or trench boxes shall conform to OSHA Standards.

**Dewatering**

The Contractor shall provide all necessary pumps, drains, well point systems, and other means for removing water from the trenches and from other parts of the work. Before pipes are laid or structures built, the trenches and excavations shall be free from water and, if necessary, suitable drainage facilities shall be provided and maintained. Any drainage system used by the Contractor shall be subject to the approval of the Aquarion Representative. Subgrade damaged by failure to properly dewater will be repaired and replaced at the Contractor's expense.

Water from the trenches and excavations shall be disposed of in such a manner as will neither cause injury to public health nor to public or private property, nor to the work completed or in progress.
Thrust Blocks

Concrete for thrust blocks shall be Class “C” Concrete. Thrust blocks shall be in accordance with these specifications and the Standard Details. Thrust blocks are required at all tees, bends and dead ends.

Warning Tape

In accordance with "Call Before You Dig" (CBYD) regulations, all underground utilities must be identified with warning tape during the pipe installation. The Contractor shall provide a suitable continuous length of warning tape located above the pipe, as shown on the Typical Trench Detail. The minimum separation between the facility and warning tape shall be 2’. The warning tape shall be 3” wide (minimum), 4.0 MIL polyethylene film, blue in color in accordance with the APWA National Color Code, durable, designed to withstand extended underground exposure, and marked with the words "Water Main" durably imprinted in accordance with acceptable standards. Warning tape will be supplied by the Contractor. Warning tape should be installed on all excavations regardless of the length of the water main being exposed.

Safety Procedures for Storing Pipe

- Pipe will always be blocked to prevent it from rolling or falling.
- Threaded pipe will be handled with care, because threads are sharp and can easily cause injury.
- Pipes larger than 2 inches in diameter will be stacked in storage with spacing strips between each row.
- Each row of stacked pipe will be arranged and blocked to prevent its rolling from the pile. All blocking should be of reasonably permanent material, such as chemically-treated wood.
- Pipe will always be withdrawn from the top row.
- In pipe storage areas where pipe material is handled by a crane, workers will be conversant with the signals used by operators and be careful to stay clear of the load's path. Standard signals should be used.
- Storage area shall be maintained in a safe condition at all times. Repairs to the storage area shall be made whenever necessary.

The Contractor will conform to all applicable State and OSHA standards for pipe line safety. AWWA-M3, "Safety Practice for Water Utilities" will be enforced.

During the progress of the work, all roads shall be kept open for the passage of traffic and pedestrians and shall not be unnecessarily obstructed unless authorized by the authority having jurisdiction over same. Driveways, sidewalks and crossings shall be closed as short a time as possible while pipe is being placed, and passage shall be restored as soon as possible thereafter by
properly placed backfill or approved bridging. The Contractor shall take such measures at their own expense as may be necessary to keep the roads open for traffic, and shall give advance notice to the Connecticut Department of Transportation, town public works department, local police and state police as required.

Warning signs shall be provided along all roads where work is in progress. The Contractor shall notify and make all arrangements with the Connecticut Department of Transportation, town public works department, local police and state police for direction of traffic past the equipment, machinery, or construction operations. Barricades and lights shall be provided to protect traffic. Where trenches have been cut in road shoulders on which traffic may pass at times, warning signs shall be placed at frequent intervals and maintained until the shoulder is safe for travel. All such work and operations shall be in accordance with the requirements of the Connecticut Department of Transportation, public works department, local police and state police.

Should the Contractor or their employees neglect to set out and maintain barricades or lights, as required in these specifications, Aquarion may immediately and without notice, arrange for furnishing, installing and maintaining barricades or lights, and any other precaution deemed necessary. The cost thereof shall be borne by the Contractor and may be deducted from any amount due or to become due to the Contractor under these specifications.

The Contractor shall be held responsible for any damages that may have to be paid as a consequence of the Contractor's failure to protect the public.

The Contractor must follow the most recent Connecticut Department of Transportation Traffic Control Pattern as issued by the Connecticut Department of Transportation.

Before starting any work, the Contractor shall arrange with the municipal or state officials having jurisdiction for the use of routes of travel for hauling materials, including surplus earth and rock that will result in minimum inconvenience to the traveling public. Routes of travel so scheduled shall be adhered to throughout the course of the work, unless otherwise approved.

The Contractor shall take all necessary precautions to prevent and abate nuisance caused by dust arising from his operations. Approved methods applicable to various parts of the work such as application of water spray or calcium chloride shall be used. This also applies to maintaining temporary paving nuisance free until permanent paving is placed.

The Contractor shall provide, erect and maintain all necessary barricades, danger signals and signs, provide a sufficient number of watchmen and take all necessary precautions for the protection for the work and workmen and for the safety of the public.

Handling and Distribution of Pipe, Valves and Fittings
Pipe shall be handled and supported with woven fiber pipe slings, or approved equals. Hooks, chains, wire rope, or any other device that may cause damage to the pipe during handling and support shall not be used. Care shall be taken when handling the pipe so as not to cut, gouge, or scratch the pipe in any way.

The pipe, valves and fittings shall be handled and protected during loading, transporting, and unloading operations in such manner as to avoid damage. Pipe, specials, and valves shall be unloaded by lifting with hoists or skidding so as to avoid shock or damage. Under no circumstances shall they be dropped nor shall they be permitted to roll against pipe already on the ground. Insofar as practicable, each piece of pipe shall be delivered and unloaded near the place where it is to be installed and where it will not interfere with excavation operations, traffic, or adjacent property owners and may be readily inspected by the Aquarion Representative. If this is not possible, the pipe, valves and fittings shall be stored in a safe area as close to the job site as possible. The Contractor is responsible for identifying a location (staging area) for storage of pipe, valves, fittings, excavated material and borrow material. The Contractor is responsible for delivering all materials to said location. The Contractor is responsible for stringing pipe along the intended pipeline route. All damaged pipe, valves and fittings will be rejected by the Aquarion Representative and such rejected pipe, valves and fittings shall be removed from the site by the Contractor. In the event of slight damage to the coating or lining, Aquarion may permit the damage to be repaired at the site. Such repairs shall be made at the Contractor's expense. Once the Contractor receives shipment of pipe, valves and fittings, the Contractor shall be responsible for replacing any materials that may be stolen from the Contractor’s storage area.

Cleaning and Inspection of Pipe, Valves and Fittings

The insides of the pipes, valves and fittings shall be thoroughly cleaned before laying and shall be kept clean until accepted in the completed work. Whenever the work is interrupted, all open ends of pipe shall be temporarily closed by watertight plugs. No trench water shall be permitted to enter the pipe. All pipe and special castings shall be carefully examined for defects and no pipe or special casting shall be laid which is known to be defective. If any such pipe or casting is discovered to be defective after placement, it shall be removed and replaced with a sound pipe or casting by the Contractor at his own expense.

Clearing and Grubbing

The Contractor shall remove all trees, brush, shrubs, and debris where encountered in the line of work only to the extent necessary for the prosecution of the work.

Unless otherwise specified, all brush and trees shall be cut within six inches (6") of the ground.

Cutting and removal of cleared materials shall be carried out in such manner as to avoid injury to other trees and structures.
Burning shall not be permitted on the site.

Trees, stumps, brush, and debris shall be disposed of away from the site by the Contractor at no additional cost to Aquarion or the State.

Clean-Up

During progress of the work, the Contractor shall keep the construction areas in a neat condition, free from accumulations of waste material and rubbish.

On or before completion of the work and before acceptance and final payment shall be made, the Contractor shall clean and remove from the site and adjacent property, all surplus and discarded materials, rubbish and temporary structures, restore in an acceptable manner all property and leave the whole in a neat and presentable condition.

Periodically, as the work progresses and immediately after the work has been completed, the Contractor shall remove all excess materials from the area of the work. The area, in general, shall be kept clean and orderly and returned to a neat condition. The area of construction along roadways shall be swept with a broom, either by hand or mechanically, each day after completion of the day's work.

Trees, stumps, brush, and debris shall be disposed of by the Contractor off the site. Burning shall not be permitted.

Method of Measurement:

Work under this section shall be measured for payment per linear foot of ductile iron pipe installed, of the size required, complete in place, backfilled, tested and accepted.

The following shall not be measured separately for payment, but shall be included in the linear foot cost of the pipe installation:

- saw-cutting of existing pavement
- removal of asphalt and concrete pavement up to and including 6” in depth
- excavating to the depth necessary to install the pipe and bedding material
- stockpiling and storing of the excavated material if suitable for backfill
- removal and disposal of the excavated material if deemed unsuitable for backfill
- furnishing and installing bedding material up to 12” above the top of the pipe
- backfilling with native material if suitable for backfill
- compacting in 12” lifts
- bends, valves, reducers, sleeves, couplings and tees
- mechanical joint restraints, hardware, bolts, nuts, glands, and gaskets
- thrust block installation excluding concrete, which shall be measured for payment under Item #1304111A
- warning tape
- trench bracing, sheeting and trench boxes
- dewatering

Hydrants, if included in this project, shall be measured separately for payment under those appropriate Item Numbers.

Installation of bends, valves, reducers, sleeves, couplings, caps, plugs, mechanical joint restraints and hardware shall not be measured separately for payment, but shall be included in the linear foot cost of the pipe installation.

Bedding material furnished, installed, and compacted, to the bedding material limits shown on the Typical Trench Detail, shall not be measured separately for payment, but shall be included in the linear foot cost of the pipe installation.

Rock In Trench, Removal of Unsuitable Material, Class “C” Concrete, Additional Backfill Material, and Temporary and Permanent Pavement shall be measured separately for payment under those appropriate Item Numbers.

Repairs, due to errors in installation, completed by the Contractor in order to pass the Hydrostatic Test shall not be measured separately for payment.

**Basis of Payment:**

Work under this section will be paid for at the contract unit price bid per linear foot of “6” Ductile Iron Pipe (Water Main), “Install 12” Water Main and Appurtenances” or “Install 16” Water Main and Appurtenances” installed complete in place, backfilled with suitable material, tested and accepted.

Hydrants, if included in this project, will be paid for separately as indicated elsewhere in these special provisions.

No separate payment will be made for installing bends, valves, reducers, sleeves, couplings, tees, mechanical joint restraints and hardware, but the installation of these items will be included in the linear foot cost of the pipe installation.

No separate payment will be made for bedding material furnished, installed, and compacted, to the bedding material limits shown on the Typical Trench Detail, but will be included in the linear foot cost of the pipe installation.
Rock In Trench, Removal of Unsuitable Material, Class “C” Concrete, Additional Backfill Material, and Temporary Pavement Repair and Permanent Pavement Replacement will be paid for separately at the contract unit price under those appropriate Item Numbers.

No separate payment will be made for repairs, due to errors in installation, completed by the Contractor in order to pass the Hydrostatic Test.

<table>
<thead>
<tr>
<th>Pay Item</th>
<th>Pay Unit</th>
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<tbody>
<tr>
<td>6” Ductile Iron Pipe (Water Main)</td>
<td>LF</td>
</tr>
<tr>
<td>Install 12” Water Main and Appurtenances</td>
<td>LF</td>
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<td>Install 16” Water Main and Appurtenances</td>
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