



**STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION**



**2800 BERLIN TURNPIKE, P.O. BOX 317546
NEWINGTON, CONNECTICUT 06131-7546**

Phone: 860-594-3128

October 7, 2016

Subject: Project No. 17-182

F.A.P. No. 0006(113)

Widening of U.S. Route 6 from Carol Drive to Peggy Lane in the Town of Bristol.

NOTICE TO CONTRACTORS:

This is to notify all concerned and especially the prospective bidders that the bid opening for the subject project is still scheduled for September 28, 2016 at 2:00 P.M. in the Conference Room of the Department of Transportation Administration Building, 2800 Berlin Turnpike, Newington, Connecticut.

Addendum No. 2 is attached

This Addenda is necessary to revised contract documents.

The Department has established a general mailbox to receive contractor questions. Please send all future questions to DOTContracts@ct.gov

Philip J. Melchionne

For: Gregory D. Straka

Contracts Manager

Division of Contracts Administration

OCTOBER 6, 2016
WIDENING OF U.S. ROUTE 6 FROM CAROL DRIVE TO PEGGY LANE
FEDERAL AID PROJECT NO. 0006(113)
STATE PROJECT NO. 17-182
CITY OF BRISTOL

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 No’s. 24, 28, 29, 32, 36, 39 and 41

SPECIAL PROVISIONS

REVISED SPECIAL PROVISIONS

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

- ITEM NO. 0949606A – ROOT BARRIER
- ITEM NO. 0969064A – CONSTRUCTION FIELD OFFICE, LARGE
- ITEM NO. 1300002A – RELOCATION OF WATER MAINS

CONTRACT ITEMS

REVISED CONTRACT ITEMS

<u>ITEM NO.</u>	<u>DESCRIPTION</u>	<u>ORIGINAL QUANTITY</u>	<u>REVISED QUANTITY</u>
<u>0507567</u>	<u>MANHOLE FRAME AND COVER</u>	<u>105 EA</u>	<u>35 EA</u>
<u>0507758</u>	<u>REST MANHOLE (STORM)</u>	<u>24 EA</u>	<u>42 EA</u>
<u>0507771</u>	<u>RESET CATCH BASIN</u>	<u>75 EA</u>	<u>150 EA</u>
<u>0924002</u>	<u>CONCRETE DRIVEWAY RAMP</u>	<u>1,474 CY</u>	<u>330 CY</u>
<u>1001001</u>	<u>TRENCHING AND BACKFILLING</u>	<u>2,070 LF</u>	<u>2,400 LF</u>
<u>1008115A</u>	<u>2” RMC IN TRENCH</u>	<u>2,570 LF</u>	<u>2,900 LF</u>
<u>1010001</u>	<u>CONCRETE HANDHOLE</u>	<u>15 EA</u>	<u>18 EA</u>

The Detailed Estimate Sheet does not reflect these changes.

The Bid Proposal Form has been revised to 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 #0949606A - ROOT BARRIER

Description: This work shall consist of furnishing and placement of root barrier for the purpose of redirecting the root growth of proposed or existing trees away from new pavement. Root Barrier shall be installed con-currently with the sidewalk sub-base.

Materials:

The following products are acceptable, Century Root Barriers: Roll Barrier or Deep Water Panels DWP Series, 1404 North Kraemer, Suite B, Anaheim, CA 92806 (Phone 1-800-480-8084), or approved equal. The dimensions of the Root Barrier shall be as shown on the plans, and be made of injection-molded interlocking modular panels, or roll stock.

Description

- a. Up to 50 % post-consumer, high-impact polyethylene with UV inhibitor.
- b. Thickness: Minimum .060 inch.
- c. Factory installed, independent, interlocking joiner strips.
- d. Reinforcing Ribs: ½” deep raised vertical ribs 6” on center.
- e. Flexible Top Safety Edge, 3/8” wide T-Shaped.
- f. Base Flange: 1/8 inch wide, external ground anchoring base flange.
- g. Color: Black.

Properties

- h. Tensile Stress, ASTM D 638: 3,600 psi to 4,200 psi.
- i. Tensile Modulus, ASTM D 638: 150,000 psi

Construction Methods:

The root barrier shall be installed as recommended by the manufacturer for the specific use, purpose intended, or as otherwise approved by the Engineer. The root barrier shall be installed in the approximate locations and finished grades shown on the plans and details, or as directed by the Engineer. The contractor shall examine the areas where new trees and root barrier to be installed and notify the engineer if conditions are not acceptable. Final limits shall be determined in the field after the proposed sidewalk has been staked. The root barrier is to be installed in a continuous length in a narrow trench dug adjacent to the pavement with the top edge flush or slightly below the finished ground surface. The barrier must not be torn or pierced.

Method of Measurement: This work shall be measured by the actual number of linear feet of “Root Barrier”, of the size indicated or authorized by the Engineer completed and accepted.

Basis of Payment: Payment for this work will be made at the contract unit price per linear foot for root barrier complete in place, which price shall include all materials, labor, tools, and equipment necessary for each type of installation.

Pay Item

Root Barrier

Pay Unit

L .F.

ITEM #0969064A - CONSTRUCTION FIELD OFFICE, LARGE

Description: Under the item included in the bid document, adequate weatherproof office quarters with related furnishings, materials, equipment and other services, shall be provided by the Contractor for the duration of the work, and if necessary, for a close-out period determined by the Engineer. The office, furnishings, materials, equipment, and services are for the exclusive use of CTDOT forces and others who may be engaged to augment CTDOT forces with relation to the Contract. The office quarters shall be located convenient to the work site and installed in accordance with Article 1.08.02. This office shall be separated from any office occupied by the Contractor. Ownership and liability of the office quarters shall remain with the Contractor.

Furnishings/Materials/Supplies/Equipment: All furnishings, materials, equipment and supplies shall be in like new condition for the purpose intended and require approval of the Engineer.

Office Requirements: The Contractor shall furnish the office quarters and equipment as described below:

Description \ Office Size	Small	Med.	Large	Extra Large
Minimum Sq. Ft. of floor space with a minimum ceiling height of 7 ft.	400	400	1000	2000
Minimum number of exterior entrances.	2	2	2	2
Minimum number of parking spaces.	7	7	10	15

Office Layout: The office shall have a minimum square footage as indicated in the table above, and shall be partitioned as shown on the building floor plan as provided by the Engineer.

Tie-downs and Skirting: Modular offices shall be tied-down and fully skirted to ground level.

Lavatory Facilities: For field offices sizes Small and Medium the Contractor shall furnish a toilet facility at a location convenient to the field office for use by Department personnel and such assistants as they may engage; and for field offices sizes Large and Extra Large the Contractor shall furnish two (2) separate lavatories with toilet (men and women), in separately enclosed rooms that are properly ventilated and comply with applicable sanitary codes. Each lavatory shall have hot and cold running water and flush-type toilets. For all facilities the Contractor shall supply lavatory and sanitary supplies as required.

Windows and Entrances: The windows shall be of a type that will open and close conveniently, shall be sufficient in number and size to provide adequate light and ventilation, and shall be fitted with locking devices, blinds and screens. The entrances shall be secure, screened, and fitted with a lock for which four keys shall be furnished. All keys to the construction field office shall be

furnished to the Department and will be kept in their possession while State personnel are using the office. Any access to the entrance ways shall meet applicable building codes, with appropriate handrails. Stairways shall be ADA/ABA compliant and have non-skid tread surfaces. An ADA/ABA compliant ramp with non-skid surface shall be provided with the Extra-Large field office.

Lighting: The Contractor shall equip the office interior with electric lighting that provides a minimum illumination level of 100 foot-candles at desk level height, and electric outlets for each desk and drafting table. The Contractor shall also provide exterior lighting that provides a minimum illumination level of 2 foot-candles throughout the parking area and for a minimum distance of 10 ft. on each side of the field office.

Parking Facility: The Contractor shall provide a parking area, adjacent to the field office, of sufficient size to accommodate the number of vehicles indicated in the table above. If a paved parking area is not readily available, the Contractor shall construct a parking area and driveway consisting of a minimum of 6 inches of processed aggregate base graded to drain. The base material will be extended to the office entrance.

Field Office Security: Physical Barrier Devices - This shall consist of physical means to prevent entry, such as: 1) All windows shall be barred or security screens installed; 2) All field office doors shall be equipped with dead bolt locks and regular day operated door locks; and 3) Other devices as directed by the Engineer to suit existing conditions.

Electric Service: The field office shall be equipped with an electric service panel to serve the electrical requirements of the field office, including: lighting, general outlets, computer outlets, calculators etc., and meet the following minimum specifications:

- A. 120/240 volt, 1 phase, 3 wire
- B. Ampacity necessary to serve all equipment. Service shall be a minimum 100 amp dedicated to the construction field office.
- C. The electrical panel shall include a main circuit breaker and branch circuit breakers of the size and quantity required.
- D. Additional 120 volt, single phase, 20 amp, isolated ground dedicated power circuit with dual NEMA 5-20 receptacles will be installed at each computer workstation location.
- E. Additional 120 volt, single phase, 20 amp, isolated ground dedicated power circuit with dual NEMA 5-20 receptacles will be installed, for use by the Telephone Company.
- F. Additional 120-volt circuits and duplex outlets as required meeting National Electric Code requirements.
- G. One exterior (outside) wall mounted GFI receptacle, duplex, isolated ground, 120 volt, straight blade.
- H. After work is complete and prior to energizing, the State's CTDOT electrical inspector, must be contacted at 860-594-2240. (Do Not Call Local Town Officials)
- I. Prior to field office removal, the CTDOT Office of Information Systems (CTDOT OIS) must be notified to deactivate the communications equipment.

Heating, Ventilation and Air Conditioning (HVAC): The field office shall be equipped with sufficient heating, air conditioning and ventilation equipment to maintain a temperature range of 68°-80° Fahrenheit within the field office.

Telephone Service: The Contractor shall provide telephone service with unlimited nation-wide calling plan. For a Small, Medium and Large field office this shall consist of the installation of two (2) telephone lines: one (1) line for phone/voice service and one (1) line dedicated for the facsimile machine. For an Extra-Large field office this shall consist of four (4) telephone lines: three (3) lines for phone/voice service and one (1) line dedicated for facsimile machine. The Contractor shall pay all charges.

Data Communications Facility Wiring: Contractor shall install a Category 6 568B patch panel in a central wiring location and Cat 6 cable from the patch panel to each PC station, Smart Board location, Multifunction Laser Printer/Copier/Scanner/Fax, terminating in a (Category 6 568B) wall or surface mount data jack. The central wiring location shall also house either the data circuit with appropriate power requirements or a category 5 cable run to the location of the installed data circuit. The central wiring location will be determined by the CTDOT OIS staff in coordination with the designated field office personnel as soon as the facility is in place.

For Small, Medium and Large field offices the Contractor shall run a CAT 6 LAN cable a minimum length of 25 feet for each computer to LAN switch area leaving an additional 10 feet of cable length on each side with terminated RJ45 connectors. For an Extra-Large field office the Contractor shall run CAT 6 LAN cables from workstations, install patch panel in data circuit demark area and terminate runs with RJ45 jacks at each computer location. Terminate runs to patch panel in LAN switch area. Each run / jack shall be clearly labeled with an identifying Jack Number.

The Contractor shall supply cables to connect the Wi-Fi printer to the Contractor supplied internet router and to workstations as needed. These cables shall be separate from the LAN cables and data Jacks detailed above for the Department network.

The installation of a data communication circuit between the field office and the CTDOT OIS in Newington will be coordinated between the CTDOT District staff, CTDOT OIS staff and the local utility company once the Contractor supplies the field office phone numbers and anticipated installation date. The Contractor shall provide the field office telephone number(s) to the CTDOT Project Engineer within 10 calendar days after the signing of the Contract as required by Article 1.08.02. This is required to facilitate data line and computer installations.

Additional Equipment, Facilities and Services: The Contractor shall provide at the field Office at least the following to the satisfaction of the Engineer:

Furnishing Description	Office Size			
	Small	Med.	Large	Extra Large
	Quantity			
Office desk (2.5 ft x 5 ft) with drawers, locks, and matching desk chair that have pneumatic seat height adjustment and dual wheel casters on the base.	1	3	5	8
Standard secretarial type desk and matching desk chair that has pneumatic seat height adjustment and dual wheel casters on the base.	-	-	-	1
Personal computer tables (4 ft x 2.5 ft).	2	3	5	8
Drafting type tables (3 ft x 6 ft) and supported by wall brackets and legs; and matching drafters stool that have pneumatic seat height adjustment, seat back and dual wheel casters on the base.	1	1	1	2
Conference table, 3 ft x 12 ft.	-	-	-	1
Table – 3 ft x 6 ft.	-	-	-	1
Office Chairs.	2	4	8	20
Mail slot bin – legal size.	-	-	1	1
Non-fire resistant cabinet.	-	-	2	4
Fire resistant cabinet (legal size/4 drawer), locking.	1	1	2	3
Storage racks to hold 3 ft x 5 ft display charts.	-	-	1	2
Vertical plan racks for 2 sets of 2 ft x 3 ft plans for each rack.	1	1	2	2
Double door supply cabinet with 4 shelves and a lock – 6 ft x 4 ft.	-	-	1	2
Case of cardboard banker boxes (Min 10 boxes/case)	1	1	2	3
Open bookcase – 3 shelves – 3 ft long.	-	-	2	2
White Dry-Erase Board, 36” x 48”min. with markers and eraser.	1	1	1	1
Interior partitions – 6 ft x 6 ft, soundproof type, portable and freestanding.	-	-	6	6
Coat rack with 20 coat capacity.	-	-	-	1
Wastebaskets - 30 gal., including plastic waste bags.	1	1	1	2
Wastebaskets - 5 gal., including plastic waste bags.	1	3	6	10
Electric wall clock.	-	-	-	2
Telephone.	1	1	1	-
Full size stapler 20 (sheet capacity, with staples)	1	2	5	8
Desktop tape dispensers (with Tape)	1	2	5	8
Rain Gauge	1	1	1	1

Business telephone system for three lines with ten handsets, intercom capability, and one speaker phone for conference table.	-	-	-	1
Mini refrigerator - 3.2 c.f. min.	1	1	1	1
Hot and cold water dispensing unit. Disposable cups and bottled water shall be supplied by the Contractor for the duration of the project.	1	1	1	1
Microwave, 1.2 c.f. , 1000W min.	1	1	1	1
Fire extinguishers - provide and install type and *number to meet applicable State and local codes for size of office indicated, including a fire extinguisher suitable for use on a computer terminal fire.	*	*	*	*
Electric pencil sharpeners.	1	2	2	2
Electronic office type printing calculators capable of addition, subtraction, multiplication and division with memory and a supply of printing paper.	1	1	2	4
Small Multi-Function Laser Printer/Copier/Scanner/Fax combination unit, network capable, as specified below under <u>Computer Hardware and Software</u> .	1	1		
Large Multi-Function Laser Printer/Copier/Scanner/Fax combination unit, network capable, as specified below under <u>Computer Hardware and Software</u> .			1	1
Field Office Wi-Fi Connection as specified below under <u>Computer Hardware and Software</u>	1	1	1	1
Wi-Fi Printer as specified below under <u>Computer Hardware and Software</u> .	1	1	1	1
Digital Camera as specified below under <u>Computer Hardware and Software</u> .	1	1	3	3
Video Projector as specified below under <u>Computer Hardware and Software</u> .	-	-	-	1
Smart Board as specified below under <u>Computer Hardware and Software</u> .	-	-	-	1
Infrared Thermometer, including annual third party certified calibration, case, and cleaning wipes.	1	1	1	2
Concrete Curing Box as specified below under Concrete Testing Equipment.	1	1	1	1
Concrete Air Meter and accessories as specified below under Concrete Testing Equipment as specified below. Contractor shall provide third party calibration on a quarterly basis.	1	1	1	1
Concrete Slump Cone and accessories as specified below under Concrete Testing Equipment.	1	1	1	1
First Aid Kit	1	1	1	1

Flip Phones as specified under <u>Computer Hardware and Software.</u>	-	-	2	-
Smart Phones as specified under <u>Computer Hardware and Software.</u>	-	-	-	-

The furnishings and equipment required herein shall remain the property of the Contractor. Any supplies required to maintain or operate the above listed equipment or furnishings shall be provided by the Contractor for the duration of the project.

Computer Hardware and Software: Field Office Wi-Fi Connection, Wi-Fi Printer, Digital Camera(s), Flip Phones, Smart Phones, Multifunction Laser Printer/Copier/Scanner/Fax, Video Projectors, and Smart Board(s) as well as associated hardware and software, must meet the requirements of this specification as well as the latest minimum specifications posted, as of the project advertising date, at Departments web site <http://www.ct.gov/dot/cwp/view.asp?a=1410&q=563904>

Within 10 calendar days after the signing of the Contract but before ordering/purchasing the Wi-Fi Printer (separate from the Multifunction Laser Printer/Copier/Scanner/Fax), Field Office Wi-Fi, Digital Camera(s), Flip Phones, Smart Phones, Multifunction Laser Printer/Copier/Scanner/Fax, Video Projector(s) and Smart Board(s) as well as associated hardware, the Contractor must submit a copy of their proposed order(s) with catalog cuts and specifications to the Administering CTDOT District for review and approval. The Wi-Fi Printer, Wi-Fi Router, Flip Phones, Smart Phones, digital cameras, Projector(s) and Smart Board(s) will be reviewed by CTDOT District personnel. The Multifunction Laser Printer/Copier/Scanner/Fax will be reviewed by the CTDOT OIS. The Contractor shall not purchase the hardware, software, or services until the Administering CTDOT District informs them that the proposed equipment, software, and services are approved. The Contractor will be solely responsible for the costs of any hardware, software, or services purchased without approval.

The Contractor and/or their internet service provider shall be responsible for the installation and setup of the field office Wi-Fi, Wi-Fi printer, and the configuration of the wireless router as directed by the Department. Installation will be coordinated with CTDOT District and Project personnel.

After the approval of the hardware and software, the Contractor shall contact the designated representatives of the CTDOT administering District, a minimum of 2 working days in advance of the proposed delivery or installation of the Field Office Wi-Fi Connection, Wi-Fi Printer, Digital Camera(s), Flip Phones, Smart Phones, Multifunction Laser Printer/Copier/Scanner/Fax, Video Projectors and Smart Board(s), as well as associated hardware, software, supplies, and support documentation.

The Contractor shall provide all supplies, paper, maintenance, service and repairs (including labor and parts) for the Wi-Fi printers, copiers, field office Wi-Fi, fax machines and other equipment and facilities required by this specification for the duration of the Contract. All repairs

must be performed with-in 48 hours. If the repairs require more than a 48 hours then an equal or better replacement must be provided.

Once the Contract has been completed, the hardware and software will remain the property of the Contractor.

First Aid Kit: The Contractor shall supply a first aid kit adequate for the number of personnel expected based on the size of the field office specified and shall keep the first aid kit stocked for the duration that the field office is in service.

Rain Gauge: The Contractor shall supply install and maintain a rain gauge for the duration of the project, meeting these minimum requirements. The rain gauge shall be installed on the top of a post such that the opening of the rain gauge is above the top of the post an adequate distance to avoid splashing of rain water from the top of the post into the rain gauge. The Location of the rain gauge and post shall be approved by the Engineer. The rain gauge shall be made of a durable material and have graduations of 0.1 inches or less with a minimum total column height of 5 inches. If the rain gauge is damaged the Contractor shall replace it prior to the next forecasted storm event at no additional cost.

Concrete Testing Equipment: If the Contract includes items that require compressive strength cylinders for concrete, in accordance with the Schedule of Minimum Testing Requirements for Sampling Materials for Test, the Contractor shall provide the following equipment.

- A) Concrete Cylinder Curing Box – meeting the requirements of Section 6.12 of the Standard Specifications.
- B) Air Meter – The air meter provided shall be in good working order and meet the requirements of AASHTO T 152.
- C) Slump Cone Mold – Slump cone, base plate, and tamping rod shall be provided in like-new condition and meet the requirements of AASHTO T119, Standard Test Method for Slump of Hydraulic-Cement Concrete.

All testing equipment will remain the property of the Contractor at the completion of the project.

Insurance Policy: The Contractor shall provide a separate insurance policy, with no deductible, in the minimum amount of five thousand dollars (\$5,000) in order to insure all State-owned data equipment and supplies used in the office against all losses. The Contractor shall be named insured on that policy, and the Department shall be an additional named insured on the policy. These losses shall include, but not be limited to: theft, fire, and physical damage. The Department will be responsible for all maintenance costs of Department owned computer hardware. In the event of loss, the Contractor shall provide replacement equipment in accordance with current Department equipment specifications, within seven days of notice of the loss. If the Contractor is unable to provide the required replacement equipment within seven days, the Department may provide replacement equipment and deduct the cost of the equipment from monies due or which may

become due the Contractor under the Contract or under any other contract. The Contractor's financial liability under this paragraph shall be limited to the amount of the insurance coverage required by this paragraph. If the cost of equipment replacement required by this paragraph should exceed the required amount of the insurance coverage, the Department will reimburse the Contractor for replacement costs exceeding the amount of the required coverage.

Maintenance: During the occupancy by the Department, the Contractor shall maintain all facilities and furnishings provided under the above requirements, and shall maintain and keep the office quarters clean through the use of weekly professional cleaning to include, but not limited to, washing & waxing floors, cleaning restrooms, removal of trash, etc. Exterior areas shall be mowed and clean of debris. A trash receptacle (dumpster) with weekly pickup (trash removal) shall be provided. Snow removal, sanding and salting of all parking, walkway, and entrance ways areas shall be accomplished during a storm if on a workday during work hours, immediately after a storm and prior to the start of a workday. If snow removal, salting and sanding are not completed by the specified time, the State will provide the service and all costs incurred will be deducted from the next payment estimate.

Method of Measurement: The furnishing and maintenance of the construction field office will be measured for payment by the number of calendar months that the office is in place and in operation, rounded up to the nearest month.

There will not be any price adjustment due to any change in the minimum computer hardware and software requirements.

Basis of Payment: The furnishing and maintenance of the Construction Field Office will be paid for at the Contract unit price per month for "Construction Field Office, (Type)," which price shall include all material, equipment, labor, service contracts, licenses, software, repair or replacement of hardware and software, related supplies, utility services, parking area, external illumination, trash removal, snow and ice removal, and work incidental thereto, as well as any other costs to provide requirements of this specified this specification.

Pay Item
Construction Field Office, (Type)

Pay Unit
Month

ITEM #1300002A – RELOCATION OF WATER MAINS

DESCRIPTION

The proposed drainage system is in conflict with the existing water services/main. The Contractor shall relocate water mains as required to install proposed drainage system and as shown on the Contract Drawings. The work shall include furnishing and installing ductile iron pipe and fittings as shown on the Drawings or as ordered and in conformance with these specifications. All piping 4-inches and greater, including large service connections, shall be relocated in accordance with this section. Large service connections to be relocated are as follows:

Large Water Service Table		
Street	Number	Existing Service
Farmington Avenue	1175	8-inch C.I.
Farmington Avenue	1197	6-inch D.I.
Farmington Avenue	1200	8-inch D.I.
Farmington Avenue	1235	8-inch C.I.
Farmington Avenue	1264	4-inch D.I.
Farmington Avenue	1325	8-inch D.I.
Farmington Avenue	1379	6-inch D.I.
Farmington Avenue	1379	8-inch D.I.
Farmington Avenue	1400	4-inch D.I.
Farmington Avenue	1400	10-inch D.I.
Farmington Avenue	1425	6-inch D.I.
Farmington Avenue	1444	8-inch D.I.
Sheila Court	--	8-inch D.I.

Abbreviations:

C.I.: cast iron

D.I.: ductile iron

REFERENCED ITEMS

None

REQUIRED SUBMITTALS

Six (6) sets of the manufacturer's literature and/or shop drawings for the materials of this section shall be submitted for approval. The Contractor shall furnish detailed drawings as follows and no work shall be fabricated until they have been approved by the Engineer:

MATERIALS

Pipe: All ductile iron pipe, 6-inch, 8-inch, 12-inch or 16-inch diameter, shall be Class 52 or better, tyton or mechanical joint, cement-lined, conforming to ANSI/AWWA C151/A21.51,as

amended, with two bronze wedges per joint and accessories, as manufactured by one of the following: Atlantic States Pipe, U.S. Pipe Co., or McWane, Inc.

Bristol Water Department (BWD) shall determine all water main sizes and joint types. Only one brand of pipe shall be used for the project. Push-on joints for such pipe shall be in accordance with ANSI/AWWA C111/A 21.11, as amended. SBR gaskets shall be used in accordance with ANSI/AWWA C111/A21.11, as amended. Pipe and fittings shall be furnished with approved joint restraining appurtenances as specified herein, or as indicated on the drawings, to keep the piping from pulling apart under pressure. All joint accessories shall be furnished with each pipe and fitting and shall be plainly identified as to pipe size.

Fittings: Tees, bends, and other fittings shall be ductile iron, cement lined with mechanical joint ends, complete with accessories and conforming to ANSI/AWWA C153/A21.53, as amended. SBR gaskets shall be used in accordance with ANSI/AWWA C111/A21.11, as amended. Glands shall be ductile iron. Bolts and nuts shall be high strength alloy.

Lining and Coating: The inside of pipe and fittings shall be given a cement lining and asphaltic seal coat in accordance with AWWA C104. The thickness of the lining shall be double that specified in AWWA C104. The outside of pipe and fittings shall be coated with the standard asphaltic coating specified under the appropriate AWWA Standard Specification for pipe and fittings. Machined surfaces shall be cleaned and coated with a suitable rust preventative coating at the shop immediately after being machined

Joint Restraints: All mechanical joints shall be restrained using an EBAA Iron, Inc. MEGALUG 1100 Series or approved equal wedge style restraint. All bell joint restraints shall be EBBA Iron, Inc. 1700 Series Bell Restraint or approved equal. All joints on mains shall be restrained a minimum of 40 feet prior to and after any bends, caps, or plugs. Field Lok gaskets or manufacturer equivalent will not be accepted.

Concrete thrust blocks may only be used for 6-inch, 8-inch, 10-inch, or 12-inch pipe where use of a joint restraint system is not feasible. Anchors and thrust blocks shall be Class “A” concrete conforming to Article M.03.01. Use of concrete thrust blocks shall be installed with the minimum bearing area (in square feet) against undisturbed material in accordance with the following:

Size of Main	90° Bends, Tees, Caps and Plugs	45° Bends and Wyes	22-1/2° Bends	11-1/4° Bends
4-, 6- & 8-inch	5	4	2	2
10- & 12-inch	12	9	5	2

Tie rods may only be used for 6-inch, 8-inch, 10-inch, or 12-inch pipe where use of a joint restraint system is not feasible. Bolts shall have adequate length to allow nuts on both sides of the gland. Tie bolts shall have the same diameter as the tie rods and be in accordance with the following:

Pipe Size	Tie Rod	
	Number	Diameter
6	2	1/2"
8	2	3/4"
10	2	3/4"
12	4	3/4"

Location of restrained joints shall be based on Table 1, as shown on the construction plans or provided by the Engineer. All joints that occur within the restrained length listed in Table 1, for the specific application, shall be restrained. For example, for a 90° bend, 8-inch unwrapped pipe, the restrained length required is 33 feet. Therefore, all joints within 33 feet of the 90° bend must be restrained.

Flexible Couplings: Flexible couplings shall be Smith Blair 441, epoxy coated coupling, or approved equal. Flexible couplings shall be only utilized where the existing water main is oversized.

Inspection: All pipe and fittings shall be subject to inspection by the Engineer after delivery to the job site and may also be subject to inspection at the foundry by a representative of the BWD.

Trench Backfill: Trench backfill materials shall meet the following requirements.

Native Backfill: Native backfill shall consist of granular soil excavated on site meeting the approval of the Engineer. Materials shall be of such a nature that they will form a stable dense fill. Materials shall not contain stones larger than 6-inch, vegetation, masses of roots, individual roots more than 12-feet long or more than 1/2-inch in diameter, trash, clays, or plastic fines. Organic matter shall not exceed two percent (2%). Non-plastic fines (silts) shall not exceed 20 percent (20%).

Class “B” Backfill: Class “B” backfill shall be granular, well graded friable soil; free of rubbish, ice, snow, tree stumps, roots, clay and organic matter; with 20 percent (20%) or less passing the No. 200 sieve; no stone greater than two-third (2/3) loose lift thickness, or six inches, whichever is smaller.

Crushed Stone: Crushed stone shall conform to the requirements of Article M.02.01-1, Grading A, CDOT Form 816 and Sub article M.02.02-2(a), CDOT Form 816, for loss on abrasion.

Sand: Sand shall conform to the requirements of Article M.03.01-2, CDOT Form 816.

Coarse Sand: Coarse sand shall conform to the requirements of Article M.05.02-2, CDOT Form 816.

Utility Identification Tape: Utility identification tape shall be 3-inch wide detectable, designed to withstand extended underground exposure, colored blue and be durably imprinted with an appropriate warning indicating the presence of the buried pipe. The tape shall be constructed of a

metallic core bonded to plastic layers. The metallic tracer tape shall be a minimum 5-mil thick and must be locatable at a depth of 18 inches with ordinary pipe locaters.

Filter fabric: Fabric shall conform to Article M.08.01-26.

CONSTRUCTION METHODS

General: The work shall be installed by a person with a valid Connecticut P-1 or P-7 license.

Prior to pipe-laying, the Contractor shall dig test pits where the new pipe connects to the present water main to ascertain the location, elevation and cross sectional dimensions of the present mains.

The Contractor shall perform all excavation and installation of the water main and appurtenances. The depth of the trench, to pipe bedding, shall be 5-feet 6-inches unless otherwise approved

The interior of all pipe, fittings and specials shall be thoroughly cleaned of all foreign matter before being lowered into the trench, and shall be kept clean during laying operations by plugging or other approved method. The full length of each section of piping shall rest solidly upon the pipe bed, with recesses excavated to accommodate bells and joints. Any pipe that has the grade or joint disturbed after laying shall be taken up and relaid. Pipe shall not be laid in water, or when trench or weather conditions are unsuitable for the work, except by permission of the Engineer. Water shall be kept out of the trench until the joints have been completed. Any section of pipe found to be defective before or after laying shall be replaced by the contractor with sound pipe without additional expense to the owner. All bends, tees, and such other locations indicated or as directed shall be restrained to prevent the pipe, pipe fittings and appurtenances from being blown off the lines when under pressure.

Where connections are made between new work and existing work, the connections shall be made using the specials and fittings specified, as indicated or as required. All connections between new work and existing work shall only be coordinated and installed in a manner acceptable to The Bristol Water Department. The locations of connection between new and existing work are shown on the drawings.

The system may not be shut down for more than 4 hours, with prior authorization from the Bristol Water Department. The Contractor shall coordinate with Bristol Water Department for shut down times. The Contractor shall note that some shut downs may need to occur at night.

Pipe: Each pipe shall be handled into the trench carefully and in a workmanlike manner. The contractor shall furnish all slings & straps to permit satisfactory support of all parts of pipe when it is being handled. The contractor shall take all necessary precautions to prevent movement of pipe in the event of the trench flooding. Any length of pipe broken or damaged due to mishandling or negligence on the part of the contractor shall be replaced at no cost to the owner.

Joints: Ends of the pipe shall be thoroughly cleaned before joint is made. The surface of the joint shall be painted with required lubricant applied in accordance with the manufacturer's directions. The lubricant shall be of type recommended by pipe manufacturer. Pipes shall be jointed in strict accordance with pipe manufacturer's directions and work shall be done by skilled workmen. If effective sealing of the joint is not attained, the joint shall be disassembled, thoroughly cleaned, a new gasket inserted and joint reassembled. Two bronze wedges to be installed at each joint, unless mechanical joint pipe is recommended.

No pipe or fittings shall be laid in water or on a frozen trench bottom or when, in the opinion of the Engineer, the trench conditions or the weather is unsuitable for such work.

Joint Restraint: EBBA 1700 Series Joint Restraint Harness shall be installed on all joints up to a minimum of 40 feet prior to and after all bends. Thrust blocks shall be used in conjunction with joint restraints to restrain water main or appurtenances where directed by the Owner.

During the course of work, if it is found that the hydrant valves are not restrained, the Contractor shall restrain the valve back to the hydrant tee using rods as shown on the Drawings and specified herein.

Deflection: Wherever curves are negotiated by deflecting successive lengths of pipe, the deflection of each length of pipe shall not exceed the manufacturer's recommendations. All mechanical joint bends shall be restrained using a multiple wedging action thrust restraint glands against the pipe which shall be EBAA Iron Inc. MEGALUG 1100 Series. Poured thrust blocks using 3000 psi concrete and rodding may be additionally required by the Bristol Water Department. Thrust blocks must be allowed to cure for a minimum of three days, before the water main can be filled. 90 degree bends will only be permitted with prior approval by the Bristol Water Department.

Testing: All water mains shall be hydrostatic tested for leakage at 200 psi for ½ hour and 135 psi for 1 ½ hours. Leakage shall be measured in gallons by pumping the water main back up to the required pressure at the end of the test and must not exceed allowable leakage specified in ANSI/AWWA C600-93 section 4.2.2 or its latest revision. In the event the leakage exceeds maximum allowable amount, the contractor shall take such steps that are required and necessary or as are directed by the Engineer to reduce leakage to below the allowable maximum amount and shall replace any and all defective joints or piping and the test shall be repeated until the leakage requirements are complied with. No leak shall be repaired with a wraparound or bell repair band. All visible leaks shall be repaired in any event.

All water used to fill, flush, and hydrostatic test the main must be potable water. Any water to be used from any water source other than the Bristol Water Department must be tested for bacteria by a State of Connecticut certified laboratory and test results must be submitted to the Bristol Water Department prior to use.

The contractor shall furnish all labor and equipment necessary for tests. The contractor shall make all necessary arrangements for obtaining supply, furnish all pumps, piping, hose, etc., and

remove same when work is completed. All work shall conform to AWWA C600-65 or the latest revision thereof. Tests shall be made by section or as directed by the Bristol Water Department. Air shall be expelled by filling the main slowly and permitting air to escape at the high points. Air bleeders shall be installed at all high points and in locations directed by the Engineer or Bristol Water Department.

All valves shall only be operated by Bristol Water Department personnel. All service connections shall be completely exposed and energized with water by the Bristol Water Department prior to backfill.

Chlorination: The Bristol Water Department will determine method of chlorination and provide necessary chlorine. It shall be the contractor's responsibility to dispose of all chlorinated water used to disinfect a water main. This shall be accomplished in accordance with the federal CLEAN WATER ACT and current Connecticut DEEP standards for disposal. Contract must assure water used for testing has chlorine residual of 5 mg/L. Testing water may then remain in system.

METHOD OF MEASUREMENT

This work will be measured for payment by the number of water mains that are relocated, including fittings, complete in place and accepted. No separate payment will be made by the owner to the contractor for testing.

BASIS OF PAYMENT

This work will be paid for at the contract unit price per water main relocated for "RELOCATION OF WATER MAINS" complete in place, which price shall include all piping, fittings, gaskets, and all materials, equipment, and labor required to complete the work. It shall also include the clearing, trenching and disposal of excavated materials, refilling trenches, furnishing the additional material for refilling, grading, sheeting, bracing, pumping, testing, and all work incidental thereto.

The cost of all excavation, disposing of excavated material, except that which is suitable for refilling, and furnishing other materials for refilling, unless otherwise specified, will be considered as having been included in the contract unit price.

PAY ITEM
1300002A

DESCRIPTION
Relocation of Water Mains

PAY UNIT
EA