SPECIAL PROVISIONS
CONSTRUCTION DOCUMENTS

PEQUOT AVENUE DRAINAGE IMPROVEMENTS
NEW LONDON, CONNECTICUT

MMI #2389-43

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Prepared for:

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SPECIAL PROVISIONS

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INTRODUCTION TO THE SPECIAL PROVISIONS

The State of Connecticut, Department of Transportation, Standard Specifications for Roads, Bridges, Facilities and Incidental Construction, Form 817, and supplements thereto dated January 2018 (otherwise referred to collectively as "Form 817"), is hereby made part of this contract. The Standard Specifications as defined below shall apply to the various items of work which constitute the construction contemplated under this Contract except as amended, supplemented or replaced by the Special Provisions of this Contract and as described herein.

Within the Standard Specifications and Special Provisions of this Contract, the following definitions shall apply:

1. Standard Specifications: Shall mean the State of Connecticut Department of Transportation, Bureau of Highways, "Standard Specifications for Roads, Bridges, Facilities and Incidental Construction, Form 817, and supplements thereto dated January 2018.

   CTDOT, District, State, Department, Commissioner: City of New London or its Engineer, Construction Manager, Inspector or other authorized representative or agent of the Owner.

   Inspector/Engineer: Engineer, Construction Manager, Inspector or other authorized representative or agent of the Owner.

   Laboratory: The Contractor will be responsible for conducting and paying for the asphalt testing only (Refer to Section 4.06 of the Standard Specifications). The Laboratory chosen by the Contractor shall be CTDOT approved. For all other materials the inspector (municipal staff or consultant) will be tasked with collecting samples and providing those samples to the City or its consultant.

2. Applicable Safety Code: Shall mean the latest edition including any and all amendments, revisions, and additions thereto of the Federal Department of Labor, Occupational Safety and Health Administration's "Occupational Safety and Health Standards" and "Safety and Health Regulations for Construction", the State of Connecticut Labor Department, "Construction Safety Code", or State of Connecticut "Building Code", whichever is the more stringent for the applicable requirement.

3. Items: Reference within the text of these Specifications to Items numbers with the suffix "A" are Special Provision Items within this Contract. Sections or Articles referred to with a number without the suffix "A" refer to the Standard Specifications defined above.

4. Local Regulatory Agency(ies): is defined as the governing body or authority having jurisdiction over or responsibility for a particular activity within the Scope of this Contract. They may be as specifically defined within the Special Conditions or Special Provisions, otherwise, the Contractor shall be responsible to determine same in the local area of the Contract and should be cognizant of the limit of jurisdiction within the project area.

5. These Specifications, where used in the text of the Special Provision Items, shall mean the Special Provisions of this Contract.

Payment will only be made for items in the Bid Proposal. Other items may be included in the Standard or Technical Specifications but payment for those items not listed in the Bid Proposal will be included in the cost of other items of work. Bid Proposal Items may have alphanumeric designations consistent with applicable sections or articles in the Standard or Technical Specifications.

In the case of any conflicts between the Special Provisions, Plans, and Standard Specifications, the order of governance in order of descending authority shall be as follows:

1. Special Provisions, 2. Plans, 3. Standard Specifications.

NOTICE TO CONTRACTOR - ALL-INCLUSIVE DRAINAGE

ADDED SECTIONS:

2.86 – DRAINAGE TRENCH EXCAVATION

ROCK IN DRAINAGE TRENCH EXCAVATION

5.86 – CATCH BASINS, MANHOLES AND DROP INLETS

6.86 – DRAINAGE PIPES

DRAINAGE PIPE ENDS

This Contract contains the above-noted Special Provisions for all-inclusive drainage, developed to replace the following Sections in their entireties:

- Section 5.07 – *Catch Basins, Manholes and Drop Inlets*
- Section 6.51 – *Culverts*
- Section 6.52 – *Culvert Ends*

The Section 5.86 and 6.86 items include excavation and bedding material in the drainage structure, pipe and pipe end unit prices.

Section 2.05 *Trench Excavation* may be included for miscellaneous trenching, where necessary, but will not be used with all-inclusive drainage items.

Other Standard Specifications, Supplemental Specifications or Special Provisions may contain references to Articles or Subarticles from previous versions of Sections 5.07, 6.51 and 6.52 which are no longer valid.

The following Standard Specifications Sections or Supplements contain references to Articles or Subarticles from Section 2.05 which shall remain in effect:

- Section 2.06 – *Ditch Excavation*
- Section 5.06 – *Retaining Walls, Endwalls and Steps*
- Section 7.51 – *Underdrains and Outlets*

'Rock in Drainage Trench Excavation' is now defined in Section 2.86. 'Rock in Trench Excavation' will remain in Section 2.05 and may be used with trenching not associated with all-inclusive drainage items.

Any references to Articles beginning with "5.07," "6.51," or "6.52" shall refer to the pertinent topic or materials in the new Special Provisions contained herein.

ITEM #0202451A - TEST PIT

02.02.01 - Description:

The Contractor shall excavate test pits to locate or examine utilities, subsurface structures, soils, groundwater, drains, pipes, rock, or any other obstacles or conditions when ordered by the Engineer or indicated on the Contract Drawings.

The Contractor shall notify the Engineer when test pits will be made in a specific area, for any purpose.

This work shall include sawcutting of bituminous concrete pavement (if required), excavation of material, satisfactory stockpiling or disposal of surplus or unsuitable material, dewatering, recording of required information, backfilling and compaction, and placement of temporary pavement patch (if required). Work shall be done in conformance with all applicable safety codes and applicable sections of these specifications.

02.02.03 - Construction Methods:

Unless otherwise specified, the Contractor shall dig the test pits as indicated on the Contract Drawings or as directed by the Engineer, and notify the Engineer of the results prior to the start of ANY other excavation work. The Contractor shall notify the Engineer of any conflicts which may require design revisions, relocations and/or adjustment. No work shall be started within these areas of conflict until authorized by the Engineer.

For test pits in the existing paved road, the pavement shall be neatly sawcut prior to digging the test pits. Test pits shall be a minimum of 2 ft. x 2 ft. for shallow (2-3 ft. deep) utilities and a maximum of 6 ft. x 10 ft. for deep (8-10 ft. deep) or hard to find utilities. All material except pavement removed from the test pit shall be used to backfill the test pit after the subsurface conditions have been measured and verified. The top two inches of test pits in the paved roadway shall be repaved with Class 2 bituminous concrete (temporary) that has been thoroughly compacted to match the existing road grade, unless otherwise approved by the Engineer.

Test pit excavations shall have neat, clean-cut and vertical sides; hand-digging shall be employed when required by the Engineer or by law or statute. Excavation of test pits shall be accomplished by such means as are required to ensure that any underground utilities or structures that may be encountered are not damaged. It shall be the Contractor's sole responsibility for any damages incurred during the excavation operations. Any such damages shall be repaired or replaced by the Contractor (if permitted) to the satisfaction of the Engineer at the Contractor's own expense. Where the repair and/or replacement must be done by the Owner, any and all costs thereof shall be borne by the Contractor.

Protect each pit with steel plates, other coverings, fences, barriers or other appropriate materials as deemed necessary. Do not backfill test pits until authorized. Compact backfill materials to 95% to the subgrade elevation or as otherwise directed. The surface of the test pit area shall be restored as directed by the Engineer.

The Contractor shall measure and record the sizes, configurations, exact horizontal and vertical locations of all utilities, pipes or other obstacles uncovered in the various pits dug under this section. Existing utility information determined by the test pits shall be added to the as-built drawings.

02.02.04- Method of Measurement:

Test pits shall be measured by the number of test pits excavated, as directed by the Engineer. The volume of material excavated or time required to dig test pits, the sawcutting of bituminous concrete pavement, and the placement of temporary pavement patch shall not be measured for payment, but the cost thereof shall be included in the contract unit price for this item.

02.02.05 - Basis of Payment:

This work will be paid for at the contract unit price per each excavated "Test Pit", which price shall include excavation, sheeting, shoring, dewatering, disposal of unsuitable or excess material, compacted backfill, bituminous pavement, sawcutting, pavement repair, all utility costs, all equipment , tools, labor, and work incidental thereto.

Description	Unit
Test Pit	EA

ITEM #0204503A – DEWATERING

02.04.01 - Description:

Dewatering shall consist of all equipment and work necessary to plan, design, implement, maintain, and remove a system to collect, manage, and satisfactorily dispose of groundwater and surface water in the vicinity of the Contractor's operation.

02.04.02 - Materials:

The Contractor shall furnish all materials, equipment, labor, and incidentals required to carry out all dewatering necessary during construction.

02.04.03 - Construction Methods:

It is the Contractor's responsibility to determine the expected groundwater generation rate from the construction activities, to select the appropriate groundwater management method, and to size the system capacity to meet the dewatering needs. Excavations must be kept dry to provide a stable, workable base condition until all work built thereon is completed and backfilled.

The Contractor shall, throughout the duration of the contract, maintain ample provisions to prevent floatation of pipelines and other structures and shall be responsible for any damage caused by dewatering or lack of dewatering.

Contractor shall provide shop drawings and engineering calculations signed and sealed by a Professional Engineer licensed by the State of Connecticut for review by the Engineer at least 30 days prior to the start of construction. Submitted material shall include, at a minimum, the following:

1. Plans, sections, and details clearly describing each dewatering system to be installed and which show water collection sump locations and pump and discharge layouts.
2. Contingency plans addressing potential emergencies including, but not limited to, power failures and overflows.
3. A list of required equipment, including standby equipment and power supply.
4. Source of electric power, if required, to be furnished by the Contractor under this item.

Dewatering of excavations through the use of a sump and pumping system in the bottom of the excavation and inside the limits of excavation is allowed provided that groundwater migration from outside those limits of excavation is controlled and loss of fines from the soil are prevented. The Contractor must maintain the integrity and stability of the bottom of the excavation, the excavated slopes (if any), and the existing structures and buried utilities outside the limits of excavation.

The Contractor shall provide continuous pumping if required to maintain dry work areas.

Pumped water from the drainage excavation shall be discharged in accordance with the requirements of the Contract Documents.

The Contractor shall completely remove the dewatering system upon satisfactory completion of the work requiring the dewatering system.

02.04.04 - Method of Measurement:

This work, being a lump sum item, will not be measured for payment.

02.04.05 - Basis of Payment:

Payment for this work will be at the Contract lump sum price for "Dewatering" and shall include all testing, shop drawings, engineering calculations, power sources, requirements for proper discharge of pumped water, equipment, tools, and labor incidental to the completion of this item.

Pay Item	Pay Unit
Dewatering	LS

ITEM #0210306A - TURBIDITY CONTROL CURTAIN

02.10. 01 - Description:

This work consists of furnishing, constructing, installing, maintaining, relocating, and ultimately removing turbidity curtains to minimize the drift of suspended sediment in the river. Construction of the turbidity curtains shall be as indicated and as directed by the Engineer.

Submit the following in accordance with Form 817 Article 1.05.02.

1. Product Data: the manufacturer's drawings and technical specifications to the Engineer for approval

02.10.02 - Materials:

A. Curtain: The curtain shall be a synthetic material coated with suitable elastomeric or polymeric compound and have a high resistance to weathering, hydrocarbons, fresh and salt water, and temperature extremes. The material shall have a tensile strength of not less than 200 lb (890 N) when measured lengthwise or crosswise. Seams, if required, shall be either vulcanized, welded, or sewn and shall develop the full strength of the material.

B. Flotation Units: Flotation units shall be flexible, buoyant units contained in a flotation sleeve or collar attached to the turbidity curtain. Buoyancy provided by the flotation units shall be sufficient to support the required width of the turbidity curtain and maintain a freeboard of at least 3" (75 mm) above the water surface level.

C. Load Lines: Load lines shall be fabricated into the top and bottom of the turbidity curtain. The top load line shall consist of woven webbing or vinyl sheathed steel cable and shall have a minimum breaking strength of 10,000 lb (44.6 kN). The bottom loadline shall consist of a 3" (6 mm) galvanized steel chain incorporated into the bottom hem of the turbidity curtain to act as ballast. The load lines shall have suitable devices which develop the full breaking strength for connecting to load lines in adjacent sections.

D. Fasteners: Fasteners shall be either 5/8" (16 mm) long brass or copper staples, or 17 gage (1.37 mm) galvanized or aluminized steel tie wires long enough to securely attach the fabric to the posts.

E. Anchors: Anchors shall be standard marine-type boat anchors. The Contractor shall use Danforth type anchors for sandy bottoms, or kedge or mushroom type anchors for mud bottoms. The size, weight, and overall number of the anchors shall be sufficient to hold the turbidity curtain in its intended location. Alternate anchoring methods such as heavy concrete weights, driven pilings, or stakes may be used if approved, prior to use, by the Engineer. Such alternative materials shall be sufficient for holding Turbidity Control Curtains in place.

F. Rope: Rope shall be polypropylene, 5/8" (16 mm) diameter, with a minimum

breaking strength of 800 lb (3.6 kN).

02.10.03 - Construction Methods:

A. General:

1. When assembling and installing a turbidity curtain, the Contractor shall follow the directions of the turbidity curtain manufacturer.
2. Unless otherwise directed by the Engineer, the Contractor shall begin installation at high tide from a shoreline anchorage and work along with the current in a downstream direction.
3. The turbidity curtain shall form a continuous vertical and horizontal barrier to suspended sediment. The bottom of the turbidity curtain shall rest in contact with the bottom of the river for the entire length of the turbidity curtain. The top of the turbidity curtain shall extend above the water surface with at least a 3" (75 mm) freeboard for all stages of water levels.
4. All construction activities which generate any sediment or turbidity into the river shall be contained within the turbidity curtain.

B. Installation of Floating Turbidity Curtain:

1. The turbidity curtain shall be floated into position, attached to the anchor lines, and then unfurled.
2. The Contractor shall securely attach curtain panel ends together using rope lashings. The top lashing shall be securely tied to the anchor line.
3. The Contractor shall place the anchors such that the turbidity curtain remains in the Plan location and none of the flotation devices are pulled under the water surface. If directed by the Engineer, the Contractor shall supply and place additional anchorage.

C. Maintenance of Turbidity Curtain:

1. Throughout the Project construction period, the Contractor shall maintain the turbidity curtain so that no sediment caused by the Project enters the river beyond the turbidity curtain.
2. All turbidity curtain damaged prior to installation, during installation, or during the life of the Contract shall be repaired or replaced to the satisfaction of the Engineer.
3. Turbidity curtains shall be adjusted or relocated as necessary during construction.

D. Removal of Turbidity Curtain:

1. The turbidity curtain shall remain in place until the Project is complete and the turbidity has settled to no more than what existed prior to the start of construction.
2. When directed by the Engineer, the turbidity curtain shall be furled in place, then released from its anchors and towed out of the water. The turbidity curtain

and all materials incidental to the construction of the turbidity curtain shall be removed in such a manner as to minimize turbidity to adjacent waters.

3. The turbidity curtain and related components shall become the property of the Contractor and shall be removed from the Project.

02.10.04 - Method of Measurement:

The quantity of floating and staked turbidity curtain will be measured, from edge to edge of the turbidity curtain along the support cable, as the actual number of linear feet of turbidity curtain placed and accepted.

Relocations of turbidity curtains will not be measured for payment. However, should relocation be required to facilitate completion of the work and additional length of turbidity curtain is required, the actual number of additional linear feet of turbidity curtain required, placed and accepted, will be measured for payment

02.10.05 - Basis of Payment:

The quantity of floating turbidity curtain will be paid for at the Contract unit price per linear foot for "Turbidity Control Curtain". Price and payment will constitute full compensation for furnishing, assembling, installing, maintaining, relocating, and removing the turbidity curtain and all materials incidental to the construction and installation of the turbidity curtain and for all labor, tools, equipment, and incidentals required to complete the work.

There will be no separate payment for relocation of turbidity curtains, regardless of the number of relocations necessary to complete the work.

Pay Item	Pay Unit
Turbidity Control Curtain	LF

ITEM #0219011A – SEDIMENTATION CONTROL AT CATCH BASIN

Description: This work shall consist of furnishing, installing, cleaning, maintaining and removing sedimentation control at catch basins at the locations and as shown on plans and as directed by the engineer.

Materials:

The sediment control device shall be manufactured from a specially designed woven polypropylene geotextile sewn by a double needle machine, using a high strength nylon thread. The sediment control device shall be manufactured by one of the following or an approved equal:

Siltsack®
SI Geosolutions:
www.sigeosolutions.com
(800)621-0444

Dandy Sack™
Dandy Products Inc.
P.O. Box 1980
Westerville, Ohio 43086
Phone: 800-591-2284
Fax: 740-881-2791
Email: dlc@dandyproducts.com
Website: www.dandyproducts.com

FLeXstorm Inlet Filters
Inlet & Pipe Protection
24137 W. 111th St - Unit A
Naperville, IL 60564
Telephone: (866) 287-8655
Fax: (630) 355-3477

The sediment control device will be manufactured to fit the opening of the catch basin or drop inlet. The sediment control device will have the following features: two dump straps attached at the bottom to facilitate the emptying of sack and lifting loops as an integral part of the system to be used to lift sack from the basin. The sediment control device shall have a restraint cord approximately halfway up to keep the sides away from the catch basin walls, this cord is also a visual means of indicating when the sediment control device should be emptied. Once the strap is covered with sediment, the sediment control device should be emptied, cleaned and placed back into the basin.

Construction Methods:

Installation, removal, and maintenance shall be per manufacturer instructions and recommendations.

Method of Measurement: Sedimentation Control at Catch Basin will be measured as each installed, cleaned, maintained, accepted, and removed. There will be no separate measurement for maintenance or replacement associated with this item.

Basis of Payment:

Sedimentation Control at Catch Basin will be paid for at the contract unit price each complete in place and accepted, which price shall include all materials, equipment, tools, and labor incidental thereto.

Description	Unit
Sedimentation Control at Catch Basin	Ea.

SECTION 2.86A - DRAINAGE TRENCH EXCAVATION, ROCK IN DRAINAGE TRENCH EXCAVATION

2.86.01—Description
2.86.03—Construction Methods
2.86.04—Method of Measurement
2.86.05—Basis of Payment

2.86.01—Description: Drainage trench excavation consists of the excavation necessary for the proper installation of drainage structures, pipes, pipe ends and any other incidental drainage items.

It shall include earth and rock excavation, removal of existing pipes, backfill, and disposal of materials; to the trench limits described herein, to the dimensions shown on the plans, or as directed by the Engineer.

Classifications:

(1) Drainage Trench Excavation will include only the excavation necessary for the construction of the drainage items and the removals specified above.

(2) Rock in Drainage Trench Excavation, insofar as it applies to drainage trench excavation, shall be defined as **1/2 cubic yard or more** in volume of the following obstructions removed from the limits of the drainage trench:
   (a) rock in definite ledge formation
   (b) boulders, or portions of boulders
   (c) cement masonry structures
   (d) concrete or reinforced concrete structures
   (e) reinforced concrete pipe
   (f) subsurface concrete pavement or concrete base

The removal shall be as indicated or directed from within the limits defined in 2.86.03 for drainage trench excavation.

2.86.03—Construction Methods:

(1) Drainage Trench Excavation Limits:

Horizontal Limits: Trench widths for pipes, pipe ends, pipe-arches, and drainage structures shall be as follows:

(a) 2 feet greater than the nominal inside diameter of circular pipe or nominal inside span of elliptical pipe or pipe-arch for such diameters or spans of less than 30 inches
(b) 3 feet greater than the nominal inside diameter of circular pipe or the nominal inside span of elliptical pipe or pipe-arch for such diameters or spans that are 30 inches or greater
(c) 4 feet greater than the nominal inside diameter or nominal horizontal inside span for pipe-arches fabricated from structural plates

(d) 2 feet beyond the neat lines of all exterior or foundation walls of drainage structures

Vertical Limits: Trench depths shall extend vertically as follows:

(a) From the bottom of the trench to the bottom of the roadway excavation, or in areas away from roadway excavation, to the top of existing ground surface.

(b) Where drainage pipe is to be laid in a fill area, the embankment shall be placed and compacted to a minimum elevation 12 inches above the top of the proposed pipe, whereupon the drainage trench excavation shall be performed and the pipe installed.

(2) Drainage Trench Excavation: Drainage trench excavation shall be made in conformity with the requirements of the plans, or as directed by the Engineer. The Contractor shall furnish and employ such shores, braces, or ancillary equipment as needed for the proper protection of property, proper completion of the work, as well as safety of the public and employees of both the Contractor and the Department. All bracing and shoring shall be removed when no longer required for the construction or safety of the work. When required, the Contractor shall provide or have on the Site at all times any OSHA certification for equipment to be used, per 1.07.07. For support of trenches greater than 10 feet in depth, working drawings shall be submitted, in accordance with 1.05.02. The Contractor shall control erosion and sedimentation at trench locations.

Where a firm foundation is not encountered at the grades established due to unsuitable material, such as soft, spongy, or unstable soil, the unsuitable material shall be removed and replaced with approved backfill, thoroughly compacted in lifts not to exceed 6 inches, for the full trench width. The Engineer shall be notified prior to removal of the unsuitable material in order to determine the depth of removal necessary.

After the excavation is complete, the Contractor shall notify the Engineer and no drainage structure or material shall be placed in the excavated area until the Engineer has approved the depth of excavation and the character of the foundation material.

(3) Rock in Drainage Trench Excavation:

(a) Rock in Drainage Trench Excavation - Ledge: When rock in definite ledge form is encountered, the Contractor shall excavate a minimum of 12 inches below the bottom of the proposed pipe or drainage structure; and this depth shall be filled with bedding material (as specified in M.08.03-1) below the proposed pipe; or granular fill (as specified in M.02.01) below the proposed drainage structure, which shall be thoroughly compacted in lifts not to exceed 6 inches.

(b) Rock in Drainage Trench Excavation - Boulders: When boulders are encountered, the Contractor shall remove them from the trench and if backfill is required, the void shall be filled with bedding material, surplus excavated material (as specified in 2.02.03-8) or granular fill which shall be thoroughly compacted in lifts not to exceed 6 inches.

(c) Rock in Drainage Trench Excavation –Structures: When cement masonry, concrete or reinforced concrete structures are encountered within the drainage trench limits, the Contractor shall remove the structure in its entirety or as directed by the Engineer, and if backfill is required, the void shall be filled with bedding material, surplus excavated material or granular fill which shall be thoroughly compacted in lifts not to exceed 6 inches.

(4) Backfill: Suitable material excavated from the drainage trench shall be used as backfill material prior to consideration of using any other source of backfill. Backfill material used shall be of a quality satisfactory to the Engineer and shall be free from large or frozen lumps, wood and other extraneous material. Rock fill or stones larger than 5 inches shall not be placed within 1 foot of the drainage structure or pipe. The grading shall be completed to the lines shown on the plans, or as ordered, by refilling to the required elevation with approved material, placed in layers not to exceed 6 inches in depth after compaction, which shall be thoroughly compacted with equipment approved by the Engineer.

All surplus or unsuitable material shall be removed and disposed of as directed. Should additional material be required for backfilling, it may be obtained from the Project surplus excavation in accordance with 2.02.03-8 or from borrow pits, gravel pits, or elsewhere as directed by the Engineer.

2.86.04—Method of Measurement:

Drainage Trench Excavation: Drainage trench excavation will not be measured for payment.

If granular fill or borrow is required to replace unsuitable material it will be measured for payment as directed by the Engineer.

Rock in Drainage Trench Excavation: If any material meeting the definition of Rock in Drainage Trench Excavation is encountered, the Contractor shall strip it of sufficient overlying material to allow for proper measurement and shall then notify the Engineer that the rock surface is ready for measurement. If the Contractor fails to give such notice, the Engineer will presume that the measurements taken at the time the Engineer first saw the material in question will give the true quantity of excavation.

Rock in Drainage Trench Excavation will be measured according to the classification provided in 2.86.01 and within the drainage trench excavation limits provided in 2.86.03.

For the removal of underground obstructions, as classified in 2.86.01-2, the measurement shall be the actual volume of rock removed (1/2 cubic yard or more) as approved by the Engineer.

Rock in Drainage Trench Excavation will not be measured for payment in fills.

Bedding Material or other suitable fill, as specified in 2.86.03(3), used to fill voids after rock is excavated will not be measured for payment.

2.86.05—Basis of Payment:

Drainage Trench Excavation: There will be no direct payment for drainage trench excavation required for the installation of drainage pipes, pipe ends, catch basins, drop inlets, manholes, and other drainage structures, or any other incidental drainage work including materials, tools,

equipment and labor necessary to complete the drainage trench excavation in conformity with the plans or as directed by the Engineer.

There will be no direct payment for backfill or disposal of surplus material necessary for the satisfactory completion of this work.

There will be no direct payment made for shoring, bracing, or for material or equipment necessary for the satisfactory completion of the work.

Where called for on the plans to install temporary earth retaining systems for the support of existing facilities, pavement, utilities, or for other constraints, payment will be made in accordance with such items in the Contract.

If granular fill or borrow is used to replace unsuitable material, payment will be made at the respective Contract unit prices, or in the absence of such items in the Contract, as Extra Work in accordance with 1.04.05.

Rock in Drainage Trench Excavation: When rock, conforming to the description in 2.86.01 is encountered within the limits of drainage trench excavation, its removal will be classified and paid for at the Contract unit price per cubic yard for "Rock in Drainage Trench Excavation 0' – 10' Deep," or "Rock in Drainage Trench Excavation 0' – 20' Deep," as the case may be.

Those portions of drainage trench excavation classified and paid for as "Rock in Drainage Trench Excavation" of the various depths will be the actual volumes of rock excavated within the limits for drainage trench excavation, at the applicable bottom depth price.

Where no item or items for "Rock in Drainage Trench Excavation" at the applicable depth appear in the proposal and rock is encountered in drainage trench excavation, its removal will be paid for as Extra Work in accordance with 1.04.05.

When excavation is necessary in fill, no such excavation will be paid for as "Rock in Drainage Trench Excavation."

When excavation is necessary for any purpose other than drainage-related items, no such excavation will be paid under this item.

Bedding material or any other suitable material used to fill voids vacated by excavated rock will not be paid for but shall be included in the unit price per cubic yard for "Rock in Drainage Trench Excavation."

Pay Item	Pay Unit
Rock in Drainage Trench Excavation 0' - 10' Deep	C.Y.
Rock in Drainage Trench Excavation 0' - 20' Deep	C.Y.

ITEM #0406002A – TEMPORARY PAVEMENT

Description:

The work under this item shall consist of the installation of temporary bituminous concrete pavement as indicated on the plans and for storm drainage trench repair, and as directed by the Engineer. The work for this item includes sawcutting, removal of existing pavement, removal and salvaging of existing curbing, excavation, formation of subgrade, backfilling, disposal of surplus material, furnishing and placing processed aggregate base, tack coat, bituminous concrete pavement and resetting of salvaged curbing as shown on the plans.

Materials:

Bituminous concrete shall conform to the provisions of Sections 4.06 and Article M.04 of the Standard Specifications.

Material for Tack Coat shall conform to the provisions of Sections 4.06 and Article M.04 of the Standard Specifications.

Processed Aggregate Base shall conform to the provisions of Section 3.04 and Article M.05.01 of the Standard Specifications.

Construction Methods:

Excavation and grading shall be performed in accordance with the provisions of Article 2.02.03 of the Standard Specifications.

Processed Aggregate Base shall be placed and compacted in accordance with Section 3.04.03 of the Standard Specifications.

Bituminous concrete courses shall be constructed in accordance with the provisions of Article 4.06.03 of the Standard Specifications.

Method of Measurement:

This work will be measured by the actual number of square yards of completed temporary bituminous concrete pavement, only to the limits shown on the plans and details, or as directed by the Engineer.

Basis of Payment:

This work will be paid for at the contract unit price per square yard for "Temporary Pavement", complete in place, which shall include sawcutting, removal of existing

pavement, removal and salvaging of existing curbing, excavation, formation of subgrade, backfilling, disposal of surplus material, furnishing and placing processed aggregate base, tack coat, bituminous concrete pavement and resetting of salvaged curbing and all equipment, tools labor and materials incidental thereto.

Description	Unit
Temporary Pavement	SY

ITEM #0406005A – PERMANENT PAVEMENT REPLACEMENT

Description:

The work under this item shall consist of the installation of permanent bituminous concrete pavement as indicated on the plans and for storm drainage trench repair, and as directed by the Engineer. The work for this item includes sawcutting, removal of temporary pavement, removal and salvaging of existing curbing, excavation, formation of subgrade, backfilling, disposal of surplus material, furnishing and placing processed aggregate base, furnishing and placing subbase, tack coat, bituminous concrete pavement and resetting of salvaged curbing as shown on the plans.

Materials:

Bituminous concrete shall conform to the provisions of Sections 4.06 and Article M.04 of the Standard Specifications.

Material for Tack Coat shall conform to the provisions of Sections 4.06 and Article M.04 of the Standard Specifications.

Processed Aggregate Base shall conform to the provisions of Section 3.04 and Article M.05.01 of the Standard Specifications.

Subbase shall conform to the provisions of Section 2.12 and Articles M.02.02 and M.02.06 of the Standard Specifications.

Construction Methods:

Excavation and grading shall be performed in accordance with the provisions of Article 2.02.03 of the Standard Specifications.

Subbase shall be placed and compacted in accordance with Section 2.12.03 of the Standard Specifications.

Processed Aggregate Base shall be placed and compacted in accordance with Section 3.04.03 of the Standard Specifications.

Bituminous concrete courses shall be constructed in accordance with the provisions of Article 4.06.03 of the Standard Specifications.

Method of Measurement:

This work will be measured by the actual number of square yards of completed permanent pavement repair, only to the limits shown on the plans and details, or as directed by the Engineer. No permanent pavement repair, except as ordered by the Engineer, will be measured for payment within the area of full depth reconstruction.

Basis of Payment:

This work will be paid for at the contract unit price per square yard for "Permanent Pavement Replacement", complete in place, which shall include sawcutting, removal of existing temporary pavement, removal and salvaging of existing curbing, excavation, formation of subgrade, backfilling, disposal of surplus material, furnishing and installing subbase, furnishing and placing processed aggregate base, tack coat, bituminous concrete pavement, resetting of salvaged curbing and all equipment, tools labor and materials incidental thereto.

Description	Unit
Permanent Pavement Replacement	SY

ITEM #0406999A – ASPHALT ADJUSTMENT COST

Description: The Asphalt Adjustment Cost will be based on the variance in price for the performance-graded binder component of hot mix asphalt (HMA), Polymer Modified Asphalt (PMA), and Ultra-Thin Bonded Hot-Mix Asphalt mixtures completed and accepted during the Contract.

The Asphalt Price is available on the Department of Transportation website at:

http://www.ct.gov/dot/asphaltadjustment

Construction Methods: An asphalt adjustment will be applied only if all of the following conditions are met:

I. For HMA and PMA mixtures:

   a. The HMA or PMA mixture for which the adjustment would be applied is listed as a Contract item with a pay unit of tons.
   b. ***The total quantity for all HMA and PMA mixtures in the Contract or individual purchase order (Department of Administrative Service contract awards) exceeds 1000 tons or the Project duration is greater than 6 months.***
   c. The difference between the posted *Asphalt Base Price* and *Asphalt Period Price* varies by more than $5.00 per ton.

II. For Ultra-Thin Bonded HMA mixtures:

   a. The Ultra-Thin Bonded HMA mixture for which the adjustment would be applied is listed as a Contract item.
   b. The total quantity for Ultra-Thin Bonded HMA mixture in the Contract exceeds:
      i. 800 tons if the Ultra-Thin Bonded HMA item has a pay unit of tons.
      ii. 30,000 square yards if the Ultra-Thin Bonded HMA item has a pay unit of square yards.

      Note: The quantity of Ultra-Thin Bonded HMA measured in tons shall be determined from the material documentation requirements set forth in the Ultra-Thin Bonded HMA item Special Provision.
   c. The difference between the posted *Asphalt Base Price* and *Asphalt Period Price* varies by more than $5.00 per ton.
   d. No Asphalt Adjustment Cost will be applied to the liquid emulsion that is specified as part of the Ultra-Thin Bonded HMA mixture system.

III. Regardless of the binder used in all HMA or PMA mixtures, the Asphalt Adjustment Cost will be based on PG 64-22.

The Connecticut Department of Transportation (CTDOT) will post on its website, the average per ton selling price (asphalt price) of the performance-graded binder. The average is based on the high and low selling price published in the most recent available issue of the **Asphalt Weekly Monitor®** furnished by Poten & Partners, Inc. under the "East Coast Market – New England, New Haven, Connecticut area," F.O.B. manufacturer's terminal.

The selling price furnished from the Asphalt Weekly Monitor ® is based on United States dollars per standard ton (US$/ST).

Method of Measurement:

Formula: **HMA x [PG%/100] x [(*Period Price - Base Price*)] = $ ____**

Where

- **HMA:**

  1. For HMA, PMA, and Ultra-Thin Bonded HMA mixtures with pay units of tons: The quantity in tons of accepted HMA, PMA, or Ultra-Thin Bonded HMA mixture measured and accepted for payment.
  2. For Ultra-Thin Bonded HMA mixtures with pay units of square yards: The quantity of Ultra-Thin Bonded HMA mixture delivered, placed, and accepted for payment, calculated in tons as documented according to the Material Documentation provision (Construction Methods, paragraph G) of the Ultra-Thin Bonded HMA Special Provision.

- ***Asphalt Base Price***: The asphalt price posted on the CTDOT website 28 days before the actual bid opening posted.

- ***Asphalt Period Price***: The asphalt price posted on the CTDOT website during the period the HMA or PMA mixture was placed.

- **PG%:** Performance-Graded Binder percentage
  1. For HMA or PMA mixes:
     - PG% = 4.5 for HMA S1 and PMA S1
     - PG% = 5.0 for HMA S0.5 and PMA S0.5
     - PG% = 6.0 for HMA S0.375, PMA S0.375, HMA S0.25 and PMA S0.25
  2. For Ultra-Thin Bonded HMA mixes: PG% = Design % PGB (Performance Graded Binder) in the approved job mix formula, expressed as a percentage to the tenth place (e.g. 5.1%)

The asphalt adjustment cost shall not be considered as a changed condition in the Contract as result of this provision since all bidders are notified before submission of bids.

Basis of Payment: The "Asphalt Adjustment Cost" will be calculated using the formula indicated above. A payment will be made for an increase in costs. A deduction from monies due the Contractor will be made for a decrease in costs.

The sum of money shown on the Estimate and in the itemized proposal as "Estimated Cost" for this item will be considered the bid price although the adjustment will be made as described above. The estimated cost figure is not to be altered in any manner by the bidder. If the bidder should alter the amount shown, the altered figure will be disregarded and the original cost figure will be used to determine the amount of the bid for the Contract.

Pay Item	Pay Unit
Asphalt Adjustment Cost	Est.

ITEM #0506003A – REPLACE STONE RETAINING WALL

05.06.01 - Description:

Work under this item shall conform to the relevant provisions of Section 5.06 Retaining Walls, Endwalls, and Steps of the Standard Specifications and the following:

This item of work shall consist of:

1. Removing and rebuilding wet stone masonry walls with concrete caps to the lines and grades shown on the plans in such a way as to match the appearance and color of the existing and undisturbed section of the walls.
2. Removing and reconstructing concrete footing and wall stem disturbed by removal of existing wall.
3. Removing, storing, and rebuilding metal picket fencing and posts disturbed by removal of existing wall, including fencing, posts, and adjacent gates.

05.06.02 - Materials:

Existing stones from the existing walls.

Mortar shall conform to the requirements of Article M.11.04 of Form 817. Color shall match the mortar in the undisturbed wall.

Concrete required to rebuild the cap on the retaining wall shall be Class "F" concrete conforming to the requirements of Section M.03 of Form 817.

Reinforcing steel shall meet the requirements of Article M.06.01 of Form 817.

Joint sealers shall meet the requirements of Article M.03.08 of Form 817.

Grout required to reset fence posts shall conform to the requirements of Article M.03.05 of Form 817.

Materials required to rebuild the fence shall conform to those described in Item # 0914071A.

05.06.03 - Construction Methods:

The Contractor shall employ a mason with experience in reconstructing wet stone masonry and concrete walls to perform this item of work.

Existing retaining wall shall be removed to the limits shown on the drawings or as ordered by the Engineer to accommodate drainage pipe and structures. Limit of removal shall coincide with joints in the existing concrete cap on the wall and adjacent joints in the masonry wall. Fence on

the wall shall be removed to the post adjacent to the joint in the concrete cap. Removal shall be in a neat and workman like manner.

The stones used for the wall shall be the same stones removed from the same wall. Exposed faces of the existing wall stones shall be exposed faces on the rebuilt or relocated wall stones.

Wall shall be rebuilt to match the dimensions and materials used in the existing wall.

Fence shall be rebuilt according to the requirements of Item# 0914071A except that posts will not require concrete anchors. Post shall be grouted into the top of the rebuilt wall.

05.06.04 - Method of Measurement:

Replace Stone Retaining Wall, complete in place and accepted, is a lump sum item and will not be measured for payment.

Rebuilding of the fence on top of the retaining wall is included in the lump sum item Replace Stone Retaining Wall and will not be measured for payment.

05.06.05 - Basis of Payment:

This work will be paid for at the Contract lump sum price for "Replace Stone Retaining Wall." The price shall include removing the existing wall and foundation; salvaging the stones; rebuilding the wall (incorporating the salvaged stones); and removing, storing, and rebuilding the metal picket fencing (including posts and adjacent gates) and all materials, equipment, storage space, tools, and labor necessary for completion of the work.

Pay Item	Pay Unit
Replace Stone Retaining Wall	LS

ITEM #0507997A – JUNCTION CHAMBER (COMPLETE) 0’ to 10’ DEEP
ITEM #0507998A – JUNCTION CHAMBER (COMPLETE) 0’ to 20’ DEEP

Work under this item shall conform to the requirements of Section 5.86 amended as follows:

Article 5.86.01 - Description: Add the following:

This section also includes furnishing, preparing, and installing storm drain junction chambers in conformity with the lines, grades, dimensions, and details shown on the plans

Article 5.86.03 – Construction Methods: Add the following:

All references to drainage structures within this section shall include junction chambers.

Metal fittings for junction chambers shall be set in full mortar beds or otherwise secured as shown on the plans.

Article 5.86.04 – Method of Measurement: Add the following:

Junction chambers will be measured as separate units.

Article 5.86.05 – Basis of Payment: Add the following:

Junction chambers will be paid for at the Contract unit price for each “Junction Chamber (Complete),” at “0’ to 10’ Deep” or “0’to 20’ Deep”, complete in place, which price shall include all excavation, materials, manhole frame and cover, equipment, tools and labor incidental thereto.

Pay Item	Pay Unit
Junction Chamber (Complete) 0’ to 10’ Deep	EA
Junction Chamber (Complete) 0’ to 20’ Deep	EA

SECTION 5.86 - CATCH BASINS, MANHOLES AND DROP INLETS

5.86.01—Description: The work under this Section shall consist of furnishing, preparing, and installing catch basins, manholes and drop inlets (and also the removal, abandonment, alteration, reconstruction, or conversion of such existing structures) in conformity with the lines, grades, dimensions and details shown on the plans.

This Section shall also include resetting or replacing catch basin tops as well as manhole frames and covers.

5.86.02—Materials: The materials for this work shall meet the following requirements:

Drainage structures shall meet the requirements of M.08.02 and shall utilize concrete with a 28-day minimum compressive strength of 4000 psi.

Galvanizing shall meet the requirements of M.06.03.

Mortar shall meet the requirements of M.11.04.

Butyl rubber joint seal shall meet the requirements of ASTM C990.

Granular fill, if necessary, shall meet the requirements of M.02.01.

Protective compound material shall be a type appearing on the Department's Qualified Products List and be acceptable to the Engineer, as specified in M.03.09.

5.86.03—Construction Methods: Drainage trench excavation, including rock in drainage trench excavation and backfilling, shall be performed in accordance with 2.86.03 and the requirements of the plans.

Where a drainage structure is to be installed below the surface, a drainage trench shall be excavated to the required depth, the bottom of which shall be graded to the elevation of the bottom of the proposed drainage structure or to ensure a uniform foundation for the structure.

Where a firm foundation is not encountered at the grades established due to unsuitable material, such as soft, spongy, or unstable soil, the unsuitable material shall be removed and replaced with approved granular fill, thoroughly compacted in lifts not to exceed 6 inches. The Engineer shall

be notified prior to removal of the unsuitable material in order to determine the depth of removal necessary.

When rock, as defined in 2.86.01-2, is encountered, work shall be performed in accordance with 2.86.03 and the requirements of the plans.

When a drainage structure outside of proposed drainage trench limits is to be removed, it shall be completely removed and all pipes shall be removed or plugged with cement masonry.

When a drainage structure is to be abandoned, the structure shall be removed to a depth 2 feet below the subgrade or as directed by the Engineer. The floor of the structure shall be broken and all pipes shall be plugged with cement masonry.

Drainage structures shall be constructed in accordance with the plans and the requirements contained herein for the character of the work involved. The provisions of 6.02.03 pertaining to bar reinforcement shall apply except that shop drawings need not be submitted for approval unless called for in the plans, Contract or directed by the Engineer. Welding shall be performed in accordance with the applicable sections of the AWS Structural Welding Code, D1.1.

When it becomes necessary to increase the horizontal dimensions of manholes, catch basins and drop inlets to sizes greater than those shown on the plans in order to provide for multiple pipe installations, large pipes or for other reasons, the Contractor shall construct such manholes, catch basins and drop inlets to modified dimensions as directed by the Engineer.

The surfaces of the tops of all catch basins, and drop inlets shall be given a coat of protective compound material, at the manufacturer's recommended application rate, immediately upon completion of the concrete curing period.

All masonry units shall be laid in full mortar beds.

Metal fittings for catch basins, manholes or drop inlets shall be set in full mortar beds or otherwise secured as shown on the plans.

All inlet and outlet pipes shall be set flush with the inside face of the wall of the drainage structure as shown on the plans. The pipes shall extend through the walls for a sufficient distance beyond the outside surface to allow for satisfactory connections, and the concrete or masonry shall be constructed around them neatly to prevent leakage along their outer surfaces.

When constructing a new drainage structure within a run of existing pipe, the section of existing pipe disturbed by the construction shall be replaced with new pipe of identical type and size extending from the drainage structure to the nearest joint of the existing pipe in accordance with 6.86.03 or as directed by the Engineer.

Backfilling shall be performed in accordance with 2.86.03.

Frames, covers and tops which are to be reset shall be removed from their present beds, the walls or sides shall be rebuilt to conform to the requirements of the new construction and the frames, covers and tops shall be reset as shown on the plans or as directed by the Engineer.

5.86.04—Method of Measurement:

Drainage Trench Excavation: In accordance with 2.86.04, excavation for drainage trench will not be measured for payment but shall be included in the Contract unit price for the type of structure being installed.

Rock in Drainage Trench Excavation: Rock in Drainage Trench Excavation will be measured in accordance with the drainage trench excavation limits described in 2.86.03.

Manholes, Catch Basins and Drop Inlets will be measured as separate units.

Resetting of Manholes, Catch Basins and Drop Inlets will be measured as separate units.

Replacement of frames, covers, and tops will be measured as a unit for catch basin top or manhole frame and cover.

Conversion of drainage structures as specified on the plans, or as directed by the Engineer, including structure reconstruction will be measured for payment as a unit.

Removal or abandonment of drainage structures outside of drainage trench excavation limits, as defined in 2.86.03, will be measured as separate units.

There will be no measurement or direct payment for the application of the protective compound material, the cost of this work shall be considered as included in the general cost of the work.

Measurement for payment for work and materials involved with installing pipes to connect new drainage structures into a run of existing pipe will be as provided for under the applicable Contract items in accordance with 6.86.04.

There will be no measurement or direct payment for plugging existing pipes with cement masonry, the cost of this work will be considered as included in the general cost of the work.

5.86.05—Basis of Payment:

Drainage Trench Excavation for the installation of proposed structures described herein will be paid for under the respective drainage Contract item(s) for which the excavation is being performed, in accordance with the provisions of 2.86.05.

Rock in Drainage Trench Excavation will be paid for in accordance with the provisions of 2.86.05.

Manholes and Catch Basins will be paid for at the Contract unit price for each "Manhole," or "Catch Basin," of the type specified, at "0' to 10' Deep" or "0' to 20' Deep," complete in place, which price shall include all excavation, backfill, materials, equipment, tools and labor incidental thereto.

Drop Inlets will be paid for at the Contract unit price for each "Drop Inlet," of the type specified, complete in place, which price shall include all excavation, backfill, materials, equipment, tools and labor incidental thereto.

Manholes, Catch Basins and Drop Inlets constructed to modified dimensions as directed by the Engineer, will be paid for as follows:

Where the interior floor area has to be increased to accommodate existing field conditions, as measured horizontally at the top of the base of the completed structure, and does not exceed 125% of the interior floor area as shown on the plans for that structure, then the structure shall be paid for at the Contract unit price for each "Manhole," "Catch Basin," or "Drop Inlet" of the type specified. Where the floor area is greater than 125%, the increase in the unit price for the individual structure shall be in direct proportion to the increase of the completed structure interior floor area as compared to the interior floor area as shown on the plans for that structure. Such increased unit price shall include all excavation, materials, equipment, tools, and labor incidental to the completion of the structure.

Reset Units will be paid for at the Contract unit price each for "Reset Manhole," "Reset Catch Basin," or "Reset Drop Inlet," of the type specified, respectively, complete in place, which price shall include excavation, cutting of pavement, removal and replacement of pavement structure, and all materials, equipment, tools and labor incidental thereto, except when the work requires reconstruction greater than 3 feet, measured vertically, then the entire cost of resetting the unit will be paid for as Extra Work in accordance with the provisions of 1.04.05.

Frames, Covers, and Tops when required in connection with reset units, will be paid for at the Contract unit price each for such "Manhole Frame and Cover" or "(Type) Catch Basin Top," complete in place, including all incidental expense; or when no price exists, the furnishing and placing of such material will be paid for as Extra Work in accordance with the provisions of 1.04.05.

When the catch basin top has a stone or granite curb in its design, the curb or inlet shall be included in the cost of the "(Type) Catch Basin Top."

Conversion of drainage structures will be paid for at the Contract unit price each for "Convert Catch Basin to (Type) Catch Basin," "Convert Catch Basin to (Type) Manhole," or "Convert Manhole to (Type) Catch Basin," complete in place, which price shall include excavation, cutting of pavement, removal and replacement of pavement, backfill, all alterations to existing structure, all materials including catch basin frame and grate of the type specified, or manhole frame and cover, all equipment, tools and labor incidental thereto.

The maximum change in elevation of frame under these items shall not exceed 3 feet. Greater depth changes, if required, shall be paid for as Extra Work, in accordance with 1.04.05.

Removal or abandonment of drainage structures outside of drainage trench excavation limits as defined in 2.86.03 will be paid for at the Contract unit price each for "Remove Drainage Structure – 0' to 10' Deep," "Remove Drainage Structure – 0' to 20' Deep," or "Abandon Drainage Structure," which price shall include excavation, cutting of pavement, removal and replacement of pavement, backfill, and all equipment, tools and labor incidental thereto.

Pay Item	Pay Unit
(Type) Catch Basin – 0' to 10' Deep	EA.
(Type) Catch Basin – 0' to 20' Deep	EA.
Manhole (Size) – 0' to 10' Deep	EA.
Manhole (Size) – 0' to 20' Deep	EA.
(Type) Drop Inlet	EA.
Reset Catch Basin	EA.
Reset Manhole	EA.
Reset Drop Inlet	EA.
Convert Catch Basin to (Type) Catch Basin	EA.
Convert Catch Basin to (Type) Manhole	EA.
Convert Manhole to (Type) Catch Basin	EA.
Manhole Frame and Cover	EA.
(Type) Catch Basin Top	EA.
Remove Drainage Structure – 0' to 10' Deep	EA.
Remove Drainage Structure – 0' to 20' Deep	EA.
Abandon Drainage Structure	EA.

ITEM #0651234A – 12" BACKFLOW PREVENTER

06.51.01 - Description:

Work under this item shall consist of furnishing and installing a backflow preventer of the size and type shown on the plans. This item shall also include all hardware needed to complete this item.

06.51.02 - Materials:

Backflow preventers are to be all rubber of the flow-operated type with a slip-in cuff connection. The port area shall contour down to a duckbill, which shall allow passage of flow in one direction while preventing reverse flow. The entire backflow preventer shall be ply reinforced throughout the body, saddle, and bill and cured and vulcanized into a one-piece unibody construction. A separate valve body or pipe used as the housing is not acceptable. The backflow preventer shall be manufactured with no metal, mechanical hinges, or fasteners, which would be used to secure any component of the valve to a valve housing. The port area of the saddle shall contour into a circumferential sealing area (the "bill") that is concentric with the pipe, which shall allow passage of flow in one direction while preventing reverse flow. The entire backflow preventer shall fit within the pipe inside diameter. The saddle area must be flat, not conical, and integral with the rubber body above centerline in order to not produce any areas or voids that can collect or trap debris. The backflow preventer must be easily installed in pipes with poor end condition without the need to modify or utilize the headwall or structure to seal and anchor the valve. Once installed, the backflow preventer shall not protrude beyond the face of the structure or end of the pipe.

Backflow preventers shall be Series CMUF-SL slip-in CheckMate Ultraflex Valve as manufactured by Tideflex Technologies, a Division of Red Valve Co., Inc. of Carnegie, PA 15106 or approved equal. However, per Section 1.06 of CTDOT Form 817, it shall be understood that this represents the standard required and that a comparable product of another manufacturer may be considered as a satisfactory substitute and approved.

The backflow preventer shall incorporate multiple concave grooves molded integrally into the flat saddle wall thickness extending longitudinally a minimum of 80% of the length of the saddle to reduce opening resistance and reduce headloss.

The backflow preventer shall incorporate a customized geometrical notch in the end of the bill to reduce cracking pressure. The notch shall be at the invert/bottom of the bill and symmetrical about the valve centerline. The longitudinal length of the notch shall be no greater than half the length of the bill.

The outside diameter of the upstream and downstream sections of the backflow preventer must be circumferentially in contact with the inside diameter of the pipe.

Hardware to secure the backflow preventer shall be stainless steel, capable of being installed in the upstream or downstream cuff of the unit depending on installation orientation, and shall

expand outward by means of a turnbuckle. The securing hardware shall be predrilled allowing for the backflow preventer to be pinned and secured into position in accordance with the manufacturer's installation instructions.

The manufacturer must have available flow test data from an accredited hydraulics laboratory to confirm pressure drop data. Company name, plant location, and backflow preventer size and serial number shall be bonded to the unit.

06.51.03 - Construction Methods:

Contractor shall submit product literature that includes information on the performance and operation of the backflow preventer, materials of construction, dimensions and weights, elastomer characteristics, headloss, flow data, and pressure ratings for review by the engineer.

Valves shall be installed in accordance with the manufacturer's written Installation and Operation Manual and approved submittals.

Manufacturer's authorized representative shall be available for customer service during installation and start-up and to train personnel in the operation, maintenance, and troubleshooting of the backflow preventer.

06.51.04 - Method of Measurement:

The work will be measured by the actual number of backflow preventers completed and accepted.

06.51.05 - Basis of Payment:

This work will be paid for at the contract unit price each for "12" Backflow Preventer" of the type specified on the plans, complete in place, which price shall include all materials including but not limited to the backflow preventer and all related hardware and all equipment, tools, and labor incidental thereto.

Pay Item	Pay Unit
12” Backflow Preventer	ea.

ITEM #0651711A – 48" DUCTILE IRON PIPE (COMPLETE)

Work under this item shall conform to the requirements of Section 6.51 amended as follows:

Article 6.51.01 – Description: Add the following:

This item shall include furnishing and installing the 48" ductile iron pipe discharging to the Thames River as shown on the plans. This item is inclusive of all material, barges and other marine equipment and labor, all required excavation, backfilling, bedding, dewatering, and shoring required for the complete in-water and on-land installation.

Article 6.51.02 Materials: Add the following:

Ductile Iron Pipe shall meet the requirements of ANSI/AWWA C151/A21.51 for Ductile Iron Pipe, Centrifugally Cast for Water. Asphaltic outside coating and inside lining shall be in accordance with ANSI/AWWA C151/A21.51. Pipe shall meet the requirements of class 52. Pipe shall have joints (push-on or restrained) as called for on the plans.

Fittings shall meet the requirements of ANSI/AWWA C153/A21.53, Ductile Iron Compact Fittings for Water Service 3 in. Through 48 in. For Water.

Pipe and fittings shall have double thickness Type II cement mortar lining in accordance with ANSI/AWWA C104/A21.4, Cement Mortar Lining for Ductile Iron Pipe and Fittings for Water.

Article 6.51.04 – Method of Measurement: Add the following:

Furnishing and installing 48" ductile iron pipe is a lump sum item and will not be measured for payment.

Article 6.51.05 – Basis of Payment: Add the following:

Furnishing and installing 48" ductile iron pipe will be paid for at the Contract lump sum price for "48" Ductile Iron Pipe (Complete)", complete in place, which price shall include all material, barges and other marine equipment and labor, all required excavation, backfilling, bedding, dewatering, and shoring required for the complete in-water and on-land installation, disposal of materials and all other materials, equipment, tools, and labor incidental thereto.

Pay Item	Pay Unit
48" Ductile Iron Pipe (Complete)	LS

ITEM #0651723A – 18" DUCTILE IRON PIPE (COMPLETE)

Work under this item shall conform to the requirements of Section 6.86 amended as follows:

Article 6. 86.01 – Description: Modify this section as follows:

In the first sentence, after the phrase "drainage pipes of the size and type specified" add "(including ductile iron pipe)," and after the phrase "drainage trench excavation," add "dewatering,".

Article 6.86.02 Materials: Add the following:

Ductile Iron Pipe shall meet the requirements of ANSI/AWWA C151/A21.51 for Ductile Iron Pipe, Centrifugally Cast for Water. Asphaltic outside coating and inside lining shall be in accordance with ANSI/AWWA C151/A21.51. Pipe shall meet the requirements of class 52. Pipe shall have push-on joints.

Pipe shall have double thickness Type II cement mortar lining in accordance with ANSI/AWWA C104/A21.4, Cement Mortar Lining for Ductile Iron Pipe and Fittings for Water.

Article 6.86.05 – Basis of Payment: Add the following:

Furnishing and installing 18" ductile iron pipe will be paid for at the Contract unit price per linear foot for "18" Ductile Iron Pipe (Complete)", complete in place, which price shall include all excavation, temporary trench protection, backfill, bedding material, dewatering, and all other materials, equipment, tools, and labor incidental thereto.

Pay Item	Pay Unit
18" Ductile Iron Pipe (Complete)	LF

SECTION 6.86 - DRAINAGE PIPES, DRAINAGE PIPE ENDS

6.86.01—Description: This work shall consist of furnishing, preparing and installing drainage pipes of the size and type specified, bedding material, joint sealant, rubber gaskets, clamps, collars, grout, grout collars, drainage trench excavation, backfilling or satisfactory disposal of all materials, the removal of which is necessary for the proper completion of the work, connecting proposed drainage systems to existing systems, plugging or abandoning existing pipes and removal of existing pipe within trench limits, as shown on the plans or as directed by the Engineer.

This Section shall also include removal of drainage pipes outside of drainage trench excavation limits, as defined in 2.86.03-1.

6.86.02—Materials: The materials for this work shall meet the following requirements:

Drainage Pipe, Drainage Pipe Ends, Sealers, Gaskets and connection hardware shall meet the requirements of M.08.01.

Bedding Material shall meet the requirements of M.08.03-1.

Granular Fill, if necessary, shall meet the requirements of M.02.01.

Brick Masonry shall meet the requirements of M.11.03 and Mortar shall meet the requirements of M.11.04.

Concrete used for Concrete Pipe Connections shall be Class "F" Concrete meeting the requirements of M.03.

6.86.03—Construction Methods:

(1) Drainage Trench Excavation: Drainage trench excavation and backfilling shall be performed in accordance with 2.86.03 and the requirements of the plans.

Where drainage pipe is to be laid below the surface, a drainage trench shall be excavated to the required depth, the bottom of which shall be graded to the elevation of the bottom of the bedding material.

Where drainage pipe is to be laid in a fill area, the embankment shall be placed and compacted to a minimum elevation 12 inches above the top of the proposed pipe, whereupon the drainage trench excavation shall be performed and the pipe installed.

(2) Rock in Drainage Trench Excavation: When rock, as defined in 2.86.01-2, is encountered, work shall be performed in accordance with 2.86.03 and the requirements of the plans.

(3) Drainage Pipe Installation: New or re-laid drainage pipes shall be installed on 4 inches of bedding material (12 inches if over rock in ledge formation), the details as shown on the plans, or as directed by the Engineer. Prior to placement of the drainage pipe, in accordance with the plans, bedding material shall be pre-shaped to 10% of the total height

of the pipe in order to keep the pipe in the center of the trench. Following placement of the drainage pipe, bedding material backfill shall be placed in accordance with the following table:

Internal Pipe Diameter	**Required Bedding Material Backfill**
< 48 inches*	25% of total height of the pipe
≥ 48 inches*	12 inches above the top of the pipe
*Includes pipe arch of equivalent internal horizontal span See Standard Drawing	

The placement of the drainage pipe shall start at the downstream end and progress upstream or as shown on the plans, or as directed by the Engineer. All drainage pipes shall be carefully laid in the center of the drainage trench, true to the lines and grades given. Bell ends shall face upgrade and all joints shall be tight.

Joints in concrete pipe shall be sealed with cold-applied bituminous sealer, preformed plastic gaskets or flexible, watertight, rubber-type gaskets. Portland cement mortar shall not be used for sealing pipe joints except with permission of the Engineer.

When cold-applied bituminous sealer is used, the bell and spigot ends shall be wiped clean and dry before applying the bituminous sealer to the pipe ends. Before the drainage pipes are placed in contact with each other, the spigot or tongue end shall be completely covered with bituminous sealer; then the pipe shall be laid to line and grade so the inside surface of all abutting pipes are flush. Additional bituminous sealer shall be applied to the joint after the connection has been made to ensure a water tight connection.

Where the end of an existing drainage pipe is not compatible with the end of a proposed concrete pipe, the Contractor shall align the inner diameters of the pipes being connected, butt the pipe ends together, and construct a cast-in-place concrete pipe connection, as shown in the plans. Incompatible bell/spigot or tongue/groove ends shall be cut off as required to ensure the interior drainage pipe walls are aligned to provide a smooth transition between the pipes.

Metal pipe and pipe arches shall be carefully joined and firmly clamped together by approved connecting bands, which shall be properly bolted in place before any backfill is placed.

Newly installed drainage pipe which is not in true alignment, or which shows any settlement or distortion, shall be reinstalled in accordance with 1.05.03.

When drainage pipe outside of proposed drainage trench limits is to be removed, it shall be removed to the limits shown on the plans and all remaining pipes shall be plugged with cement masonry.

Where shown on the plans or directed by the Engineer, the Contractor shall plug abandoned existing pipes with cement masonry.

(4) Drainage Pipe End Installation: Reinforced concrete drainage pipe ends shall be placed on a prepared bed of the existing ground and accurately aligned as shown on the plans. The joints shall be sealed as specified in 6.86.03-3 and backfill shall be placed around both sides of the unit simultaneously to the elevation shown on the plans.

Metal drainage pipe ends shall be placed on a prepared bed of the existing ground and accurately aligned as shown on the plans. After the attachment of the drainage pipe end, backfill shall be placed around both sides of the unit up to the elevation shown on the plans, exercising caution to avoid displacement or deformation of the unit.

6.86.04—Method of Measurement: This work will be measured as follows:

Drainage Trench Excavation, in accordance with 2.86.04, will not be measured for payment.

Rock in Drainage Trench Excavation will be measured in accordance with 2.86.04.

Bedding Material will not be measured for payment.

New and Re-laid Pipes and Pipe Arches will be measured for payment by the actual number of linear feet of pipe or pipe arch of the various sizes and types, completed and accepted and measured in place along the invert. Coupling bands and fittings for pipes and pipe arches will not be measured for payment.

Reinforced Concrete Drainage Pipe Ends and Metal Drainage Pipe Ends will be measured for payment as separate units.

Corrugated Metal Pipe Elbows (of the Size and Type specified) will be measured for payment by the actual number of linear feet of pipe elbows completed and accepted, based on 6 linear feet per elbow, as shown on the plans. Coupling bands for elbows will not be measured for payment.

Concrete Pipe Connection will be measured for payment by the number of each concrete pipe connection constructed at locations where proposed concrete pipes tie into an existing pipe with an incompatible end, completed and accepted by the Engineer.

Removal of drainage pipe outside of drainage trench excavation limits, as defined in 2.86.03, will be measured for payment by the actual number of linear feet of drainage pipe removed.

There will be no measurement for plugging existing pipes with cement masonry.

6.86.05—Basis of Payment:

Drainage Trench Excavation for the installation of drainage pipes will not be paid separately but shall be included in the Contract unit price for the respective drainage pipe or pipe end item(s), in accordance with the provisions of 2.86.05.

Rock in Drainage Trench Excavation will be paid for in accordance with the provisions of 2.86.05.

Bedding Material necessary for the installation of drainage items described herein will be included in the Contract unit price for the respective drainage pipe or pipe end item(s). Bedding material required to fill voids when rock in drainage trench is encountered will not be measured for payment but shall be included in the Contract unit price for "Rock in Drainage Trench Excavation," in accordance with 2.86.05.

New Pipes and Pipe Arches will be paid for at the Contract unit price per linear foot for "(Size and Type) Pipe (Thickness) – 0' to 10' Deep," "(Size and Type) Pipe (Thickness) – 0' to 20' Deep," "(Size) Pipe Arch (Thickness) – 0' to 10' Deep" or "(Size) Pipe Arch (Thickness) – 0' to 20' Deep" complete in place, including materials, drainage trench excavation, bedding material, equipment, tools, and labor incidental thereto.

Relaid Pipes and Pipe Arches will be paid for at the Contract unit price per linear foot for "Relaid Pipe (Size and Type) – 0' to 10' Deep," "Re-laid Pipe (Size and Type) – 0' to 20' Deep," "Relaid Pipe Arch (Size and Type) – 0' to 10' Deep," or "Relaid Pipe Arch (Size and Type) – 0' to 20' Deep," complete in place, including all materials, drainage trench excavation, bedding material, equipment, tools, and labor incidental thereto.

Reinforced Concrete Drainage Pipe Ends and Metal Drainage Pipe Ends will be paid for at the Contract unit price for each drainage pipe end of the Size and Type specified, complete in place, including all excavation, materials, attachment systems, equipment, tools and labor incidental thereto.

Corrugated Metal Pipe Elbows will be paid for at the Contract unit price per linear foot for "(Size and Type) Corrugated Metal Pipe Elbow" including all materials, drainage trench excavation, bedding material, equipment, tools, and labor incidental thereto.

Concrete Pipe Connection will be paid for at the Contract unit price each for "Concrete Pipe Connection" complete in place, including all materials, equipment, tools and labor incidental thereto.

Removal of drainage pipes of all types and sizes, outside of drainage trench excavation limits, as defined in 2.86.03-1, will be paid for at the Contract unit price per linear foot for "Remove Existing Pipe – 0' to 10' Deep," or "Remove Existing Pipe – 0' to 20' Deep," which price shall include excavation, temporary trench protection, backfill, and all equipment, tools and labor incidental thereto.

There will be no direct payment for the plugging of existing drainage pipes, but the cost thereof shall be included in the respective drainage Contract item(s).

Pay Item	Pay Unit
(Size and Type) Pipe (Thickness) – 0' to 10' Deep	l.f.
(Size and Type) Pipe (Thickness) – 0' to 20' Deep	l.f.
(Size and Type) Pipe Arch (Thickness) – 0' to 10' Deep	l.f.
(Size and Type) Pipe Arch (Thickness) – 0' to 20' Deep	l.f.
Relaid (Size and Type) Pipe– 0' to 10' Deep	l.f.
Relaid (Size and Type) Pipe– 0' to 20' Deep	l.f.
(Size and Type) Relaid Pipe Arch – 0' to 10' Deep	l.f.
(Size and Type) Relaid Pipe Arch – 0' to 20' Deep	l.f.
(Size) Reinforced Concrete Drainage Pipe End	ea.
(Size) Metal Drainage Pipe End	ea.
(Size and Type) Corrugated Metal Pipe Elbow	l.f.
Concrete Pipe Connection	ea.
Remove Existing Pipe – 0' to 10' Deep	l.f.
Remove Existing Pipe – 0' to 20' Deep	l.f.

ITEM #0914017A – REMOVE AND RESET METAL PICKET FENCE

09.14.01 - Description: This item will consist of removing, storing, and resetting metal picket fencing at the location and grades shown on the plans and in accordance with these specifications.

09.14.02 - Materials:

Replacement parts, if required, for primary fence components (pickets, rails, and posts) shall match the material of the existing fence and shall be hot-dip galvanized to meet the requirements of ASTM A 123.

Any required replacement bolts, nuts, and other hardware shall be hot-dip galvanized in accordance with ASTM A 153 and match the size and type used in the existing fence.

Touch-up galvanized coating shall conform to the requirements of ASTM A 780 using material conforming to Federal Specification TT-P-641, Type I. The use of aerosol spray cans shall not be permitted.

Concrete for fence post anchors shall be Class "C" concrete conforming to the requirements of Article M.03 of Form 817.

Touch-up Painting: All replacement hot-dip galvanized steel fence components and the surface areas of all existing components which have been damaged during removal, storage, or reinstallation shall receive one of the following coating systems:

KEELER AND LONG	
Primer Coat	Kolor-Poxy #3200
Finish Coat	Kolorane Y-Acrythane Series Enamel
CARBOLINE	
Primer Coat	Carboline 888 Primer
Finish Coat	Carbothane 134HB Enamel
VALSPAR	
Primer Coat	Val Chem 13-F-62 Primer
Finish Coat	V40 Series Urethane Enamel

Coating on replacement posts, pickets, and rails shall be shop applied. Touch-up coating on existing fence components shall be field applied.

Color of all work shall match the existing fence.

Storage of the paint system materials shall be in a dry, well-ventilated area, not in direct contact with the ground, where the temperature is maintained between 50ºF and 100ºF. Damaged

materials and/or materials exceeding the manufacturer's recommended shelf life shall not be used.

09.14.03 - Construction Methods:

The existing fence, including hardware, shall be carefully removed so as not to bend, crush, scratch, or otherwise damage any of its components. Damaged items that in the opinion of the Engineer are not suitable for reuse shall be replaced by the Contractor at no cost to the Owner.

All fence components, including hardware, shall be stored in a secure location to prevent vandalism and theft. The Contractor is responsible for the security of the stored items, and any fence items damaged or stolen while in storage shall be replaced by the Contractor at no cost to the Owner.

The fence shall be reinstalled in a manner such that the finished product matches the existing fence. The posts shall be firmly and accurately set plumb in position prior to and during the placing of concrete or backfill. The posts shall be placed plumb with the top and bottom rails set parallel to the top of the wall.

Posts shall be placed in concrete footings. Footing size shall match the diameter of those supporting the existing fence and shall be not less than 3'-6" in depth. Beneath the footings shall be placed coarse aggregate or broken stone to a depth of 6 inches.

All hot-dip galvanizing and painting shall be performed in a climate-controlled shop.

All shop fabrication, unless otherwise approved by the Engineer, shall be of welded construction. The surface preparation, procedures, electrodes, finishing, and inspection shall be in accordance with AWS D1.1/D1.1M:2002.

Installation:

Preparation and Installation of Fence Posts:

Concrete surfaces shall be free of all loose material, and steel shall be clean and free of corrosion.

Surfaces shall be free of oil, grease, loose paint, corrosive deposits, dust, laitance, and other contaminants, and sleeves and holes shall be clean of dust and debris.

Erecting Fence Panels

After the posts have been properly grouted in place or set in concrete footings and the concrete is fully cured, the fence panels may be installed. All fence panels shall be installed by field bolting only. Field welding is disallowed except by the written permission of the Engineer.

After all threaded fasteners have been installed, the exposed threads beyond the nut shall be nicked to prevent easy removal. Fasteners shall receive the same finish treatments as the fence, with field touch-up painting provided as necessary.

09.14.04 - Method of Measurement:

This work will be measured for payment by the number of linear feet of completed and accepted reset metal picket fencing, as indicated and specified, measured from outside to outside of terminal posts. Concrete for footings, replacement fence parts, and hardware, if required, will not be measured for payment but will be included in the number of linear feet of completed and accepted reset metal picket fencing.

09.14.05 - Basis of Payment:

This work will be paid for at the Contract unit price per linear foot for "Remove and Reset Metal Picket Fence," complete in place, which price shall include all materials, replacement fence parts and hardware, equipment, tools, storage space, and labor incidental thereto.

Pay Item	Pay Unit
Remove and Reset Metal Picket Fence	LF

ITEM #0950019A – TURF ESTABLISHMENT - LAWN

All of the provisions of Section 9.50 of the Standard Specifications shall apply, except as amended and/or supplemented herein:

Materials:
Revise as follows:
The materials for this work shall conform to the requirements of Section M.13 *except that the Seed Mixtures in M.13.04 shall be replaced with the following Seed Mixture:*

Percent by Weight	***Common Name***	***Scientific Name***
25	*Abbey Kentucky Bluegrass*	*Poa pratensis*
15	*Envicta Kentucky Bluegrass*	*Poa pratensis*
15	*Ambrose Chewing Fescue*	*Festuca rubra*
20	*Manhattan Ryegrass*	*Lolium perenne*
25	*Pennlawn Red Fescue*	*Festuca rubra*

Construction Methods:
Shall conform to Section 9.50.03 of the Standard Specifications. Rate of application shall be 225 lbs per acre.

Basis of Payment:
Shall conform to Section 9.50.04 of the Standard Specifications.

Pay Item	Pay Unit
Turf Establishment – Lawn	S.Y.

ITEM #1302061A – ADJUST GATE BOX (WATER)

Description:

The Contractor shall adjust to final grade, the gate boxes and covers appurtenant to the water mains as required and furnish and install extension rings, extension stems, air valve extensions, covers, and additional top or bottom sections if necessary, as shown on the Contract Drawings or as directed by the Engineer in accordance with these specifications.

Materials: The Contractor shall furnish standard City of New London cast iron type gate box sections as required and extension stems if necessary.

All additional materials, including any resurfacing materials and any additional fill required, shall be furnished and placed by the Contractor. Gravel shall conform to Article M.02.01.

Construction Methods: The Contractor shall carefully excavate around the gate boxes, remove the boxes, install extension stems and air valve extensions, if necessary, reinstall the present gate box if reusable, adjust the box to final grade using extension rings if applicable, and refill the excavation. Care shall be taken to prevent material from filling the inside of the gate box.

Extension stems will be required if the gate box is raised 24-inches or more. Extension stems shall be fabricated according to the City of New London details.

Any damage done to City of New London water facilities by the Contractor shall be repaired or replaced by the Contractor at his expense.

Method of Measurement: The number of adjust gate boxes, complete with extension stems, air valve extensions, gate box extension rings, covers, and additional top or bottom sections, if necessary, measured for payment shall be the actual number of each box reset.

Basis of Payment: This work will be paid for at the contract unit price for "Adjust Gate Box (Water)" complete in place, which price shall include the cost of furnishing material, including labor and equipment to incorporate them into 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, and pumping.

Pay Item	Pay Unit
Adjust Gate Box (Water)	EA.

ITEM #1403501A – RESET MANHOLE (SANITARY SEWER)

Description:

The work under this item shall consist of resetting sanitary sewer manholes to final grade, as shown on the plans or as directed by the Engineer. It shall also include the legal, off-site disposal of existing sanitary appurtenances and all surplus material. All work and materials shall be in accordance with the City of New London standards and the Standard Specifications, and to the satisfaction of the Engineer and the City of New London.

Materials:

Mortar, masonry units, grade rings, new frames and covers, resurfacing materials, any additional fill required and all other appurtenances shall comply with the City of New London standards and the Standard Specifications.

Construction Methods:

For resetting of manholes, the Contractor shall carefully excavate around the manhole, remove the frame, cover, and any risers or sections as necessary, adjust the grade with masonry units, grade rings, precast concrete sections, and mortar as necessary, reinstall frame and cover to final grade and refill the excavation. If the existing frame and grate are not acceptable because of their poor condition, as determined by the Engineer, the Contractor will install a new frame and cover.

Care shall be taken to prevent material from falling inside the manhole. Any debris or material which falls inside the manhole shall be removed by the Contractor. The excavated area around the manhole shall be filled with gravel or processed aggregate to conform to the plans and specifications, graded, compacted and prepared for paving.

Any damage done to sanitary sewer facilities by the Contractor shall be repaired or replaced by the Contractor at no extra cost to the project or the City of New London.

All work performed shall be in accordance with City of New London standards and the Standard Specifications, and to the satisfaction of the Engineer and the City of New London.

Method of Measurement and Basis of Payment:

This work will be measured for payment and paid for by the actual number of each sanitary manhole reset, "Reset Manhole (Sanitary Sewer)", completed and accepted by the Engineer.

The price bid for "Reset Manhole (Sanitary Sewer)" shall include sawcutting, pavement removal, any additional fill required, grading, compaction, mortar, masonry units, grade rings, new frames and covers, and all materials, equipment, tools and labor incidental thereto.

Any material deemed unsuitable for refilling by the Engineer and any excess material shall be removed and disposed of by the contractor at no additional cost.

Pay Items	Pay Unit
Reset Manhole (Sanitary Sewer)	Ea.

ITEM #1504010A – TEMPORARY SUPPORT OF UTILITIES (ESTIMATED COST)

15.04.01 - Description:

Under this item the Contractor shall provide support of existing underground utilities, including laterals and main line facilities, required during the installation of storm drainage pipe and structures. The item includes support for all underground utilities which are encountered and which are not shown on the plans and removal of those support systems when no longer required. This item also includes the Contractor's coordination with the owner(s) of the utility facility requiring support.

15.04.02 – Materials

Material used to support existing underground utilities shall be in accordance with the requirements of the owner(s) of the utility being supported.

15.04.03 - Construction Methods:

Methods used to temporarily support existing underground utilities shall be in accordance with the requirements of the owner(s) of the utility being supported. The methods shall be coordinated with the respective utility company prior to starting of any work to support any utility.

The Contractor shall be entirely and solely responsible for the adequacy and sufficiency of the system used to temporarily support existing utilities. The Contractor shall assume the entire responsibility for damages due to injury to persons or damage to adjacent pavements and public and private property (including, but not limited to, the Work under construction, existing buildings, facilities, etc.) if such injury or damage results directly from Contractor's failure to install and maintain an adequate and sufficient support system.

The Contractor shall properly backfill and compact the space below each supported utility lateral or main location and entirely remove and dispose of each support system immediately after the system is no longer required.

15.04.04- Method of Measurement:

The work and materials shall be measured for payment as provided for within the Contract Documents as Extra Work.

The sum of money shown on the estimate and in the itemized proposal as "Estimated Cost" for this work will be considered the price bid even though payment will be made only for actual work performed. The estimated cost figure is not to be altered in any manner by the bidder. Should the bidder alter the amount shown, the altered figure will be disregarded and the original price will be used to determine the total amount for the contract.

Corrective work required to repair damage caused by the Contractor or its Subcontractors shall not be measured for payment.

15.04.05 - Basis of Payment:

This work will be paid as Extra Work as described in the Contract Documents.

Pay Item	Unit
Temporary Support of Existing Utilities	Estimated Cost

ITEM #1507000A – PROTECTION AND SUPPORT OF EXISTING UTILITIES

Description: Work under this item shall consist of the protection and temporary support of utilities during the construction of the 48" RCP drainage culvert, structures, and appurtenances, as well as with any other drainage crossing or drainage structure. The Contractor shall be responsible for the design and construction of the temporary support of the following utilities during construction.

2-16" diameter sanitary sewer force mains owned by the City of New London
12" diameter sanitary sewer force main owned by the City of New London
24" diameter sanitary sewer force main owned by the City of New London
12" diameter water main owned by the City of New London
15" diameter gravity sewer main owned by the City of New London
6" diameter gas main owned by Eversource

Work under this item also includes temporary support of all utility laterals and services indicated on the plans.

Prior to any construction, the Contractor shall arrange and meet with the City of New London Public Utility Commission and other utility owners for scheduling and coordination regarding the work. The Contractor shall, within five (5) days, file documentation of that meeting and the resulting agreements in a project memorandum to the Engineer. The Engineer shall be informed by the Contractor five (5) days prior to the meeting and may attend at his discretion.

Construction Methods: The Contractor shall design and construct the temporary support systems for the utilities necessary to complete the new culvert, other drainage crossing, or drainage structures and shall be solely responsible for the adequacy of his design and erection scheme. The Contractor shall obtain all necessary permits for the performance of the work and shall assume all liabilities in connection therewith. The Contractor shall prepare and submit to the Engineer working drawings showing the plan for construction of temporary support system. Working drawings shall be developed and submitted in accordance with the contract documents. The drawings shall be submitted to each utility for their review and approval. These drawings shall bear the seal of a Professional Engineer licensed in the State of Connecticut. Work shall not be started until approval from the Engineer and utility is obtained.

The approval of the Engineer or the utility shall not serve to relieve the Contractor of the responsibility for the protection and support of the utility from carrying out the work in full accordance with the plans and specifications.

The Contractor under the supervision of the utility owner will accomplish the transfer of each utility from the temporary support to the final location and shall fully coordinate his activities with the utility companies, giving them access and adequate opportunity to inspect their facilities and ensuring that utility service remains uninterrupted if and as required by the utility company.

All parts of any temporary structures used in this work shall be removed and disposed of off the site once temporary support is no longer needed.

Method of Measurement: Work on this item, being paid for on a lump sum basis, will not be measured for payment.

Basis of Payment: This work will be paid for the contract lump sum price for "Protection and Support of Existing Utilities", which price shall include all materials, equipment, tools, labor, and work incidental thereto. This shall include the construction and removal of any temporary structures, the implementation of any means of protection or support of existing utility facilities, and all else necessary by the Contractor for the support and protection of the utilities involved. The one lump sum price shall include payment for all utilities requiring support.

Pay Item	Pay unit
Protection and Support of Existing Utilities	LS

ITEM # 1700001A – SERVICE CONNECTIONS (ESTIMATED COST)

Description: This work shall consist of disconnection, alteration and reconnection of those existing utility services which are not shown on the drawings and which are discovered at locations where disconnection, alteration and reconnection is necessary to complete this project and as ordered by the Engineer. This work shall include the coordination with the affected utility companies and customers. Any damage caused by the Contractor or Subcontractors, as determined by the Engineer, shall be corrected by the Contractor in accordance with this specification. Disconnection, alteration, and reconnection of existing utility services which are shown on the drawings are not included in this item.

Materials: All materials shall be provided by the Contractor and shall meet the current standards of the affected service.

Construction Methods: The Contractor shall perform all work in coordination with the Utility Company and affected property owner and as directed by the Engineer. Certain work may require use of a licensed and/or certified tradesman when such work is required by local and/or state codes.

Any utility customer's service interruption shall be done in a way that minimizes adverse impacts to the customer and affected utility.

Any work and materials supplied by the utility companies shall be on a billable basis to the Contractor.

Method of Measurement: The work and materials shall be measured for payment as provided for within the Contact Documents as Extra Work.

The sum of money shown on the estimate and in the itemized proposal as "Estimated Cost" for this work will be considered the price bid even though payment will be made only for actual work performed. The estimated cost figure is not to be altered in any manner by the bidder. Should the bidder alter the amount shown, the altered figure will be disregarded and the original price will be used to determine the total amount for the contract.

Disconnection, alteration, and reconnection of existing utility services which are shown on the drawings and where disconnection, alteration and reconnection is necessary to complete this project will not be measured for payment.

Corrective work required to repair damage caused by the Contractor or its Subcontractors shall not be measured for payment.

Basis of Payment: This work will be paid as Extra Work.

Pay Item	**Pay Unit**
Service Connections (Estimated Cost)	Estimated Cost