

860-594-3150

November 30, 2000

Mr. Donald J. West
Division Administrator
Federal Highway Administration
628-2 Hebron Avenue, Suite 303
Glastonbury, Connecticut 06033

Dear Mr. West:

Subject: State Project No. 92-526
Federal Aid Project No. STPA-IBR-STPN-MGS-1092(110)
Church Street South Extension
City of New Haven

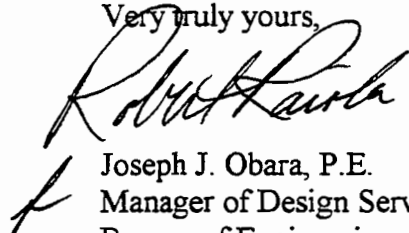
Forwarded herewith is a copy of Addendum No. 2 for the above-captioned project.

This Addendum is necessary to reflect additional work due to a change in project scope and to address questions from prospective bidders.

Please review this Addendum, and if found satisfactory, notify Mr. Brien Robertson so that he may make proper distribution.

Your early reply will be appreciated.

Very truly yours,



Joseph J. Obara, P.E.
Manager of Design Services
Bureau of Engineering -
and Highway Operations

Enclosure

David Levesque/kac

bcc: Walter H. Coughlin
Arthur Gruhn - L. Brian Castler
Stephen M. Barton
Joseph J. Obara - Robert P. Raiola
Brien Robertson
Joseph DeMarco

NOVEMBER 28, 2000
FEDERAL AID PROJECT NO. STPA-IBR-STPN-MGS-1092(110)
STATE PROJECT NO. 92-526

CONSTRUCTION OF CHURCH STREET SOUTH EXTENSION
OVER NEW HAVEN INTERLOCKING AND RAIL YARD
CITY OF NEW HAVEN

ADDENDUM NO. 2

SPECIAL PROVISIONS

NEW SPECIAL PROVISIONS

The following Special Provisions are hereby added:

NOTICE TO CONTRACTOR - FLOOD CONTINGENCY PLAN
ITEM #202654A - ADJUST MONITORING WELL
ITEM #202655A - ADJUST AIR INJECTION WELL
ITEM #507110A - TIDEGATE MANHOLE
ITEM #651302A - SLIP-ON CHECK VALVE WITH THIMBLE PLATE
ITEM #653101A - CLEAN EXISTING CULVERT - GREATER THAN 42"DIAMETER
ITEM #921013A - CONCRETE DRIVEWAY APRON

REVISED SPECIAL PROVISIONS:

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

NOTICE TO CONTRACTOR - PROTECTION OF EXISTING UTILITIES
NOTICE TO CONTRACTOR - PROGRESS PHOTOGRAPHS
ITEM #0096069A - REMOVAL OF CATENARY POLE STRUCTURE
ITEM #0096070A - REMOVAL OF CATENARY STRUCTURE FOUNDATION
ITEM #507640A - MANHOLE MODIFICATIONS
ITEM #522280A - ISOLATION BEARING ASSEMBLY
ITEM #601057A - HIGH PERFORMANCE CONCRETE
ITEM #603354A - STRUCTURAL STEEL (SEGMENT 2)
ITEM #904042A - METAL BRIDGE RAIL (COMBINATION) (EXTRUDED
ALUMINUM)
ITEM #904908A - METAL BRIDGE RAIL - PROTECTIVE FENCE (TYPE C)
ITEM #904950A - METAL BRIDGE RAIL (SOLID PANEL) (TYPE A)
ITEM #904951A - METAL BRIDGE RAIL (SOLID PANEL) (TYPE B)
ITEM #1400104A - 12" POLYVINYL CHLORIDE PIPE FOR SANITARY SEWER
ITEM #1400108A - 24" POLYVINYL CHLORIDE PIPE FOR SANITARY SEWER
ITEM #1401984A - 18" POLYVINYL CHLORIDE PIPE FOR SANITARY SEWER

CONTRACT ITEMS

NEW CONTRACT ITEMS:

<u>ITEM NO.</u>	<u>DESCRIPTION</u>	<u>UNIT</u>	<u>QUANTITY</u>
202654A	ADJUST MONITORING WELL	EA.	1
202655A	ADJUST AIR INJECTION WELL	EA.	1
507110A	TIDEGATE MANHOLE	L.S.	L.S.
651302A	SLIP-ON CHECK VALVE WITH THIMBLE PLATE	EA.	2
653101A	CLEAN EXISTING CULVERT-GREATER THAN 42" DIAMETER	L.F.	320
921013A	CONCRETE DRIVEWAY APRON	S.F.	3,100

REVISED CONTRACT ITEMS

<u>ITEM NO.</u>	<u>DESCRIPTION</u>	<u>ORIGINAL QUANTITY</u>	<u>REVISED QUANTITY</u>
101107A	CONTAMINATED MATERIAL EXCAVATION	34,100 C.Y.	34,325 C.Y.
202315A	DISPOSAL OF CONTROLLED MATERIAL	30,700 TONS	31,400 TONS
203004A	STRUCTURE EXCAVATION-EARTH (COMPLETE)	18,250 C.Y.	18,475 C.Y.
207003	BORROW	3,500 C.Y.	3,550 C.Y.
219001	SEDIMENTATION CONTROL SYSTEM	1,550 L.F.	1,650 L.F.
219002	SEDIMENTATION CONTROL HAY BALE SYSTEM	500 L.F.	550 L.F.
714020A	TEMPORARY SHEET PILING	61,300 S.F.	62,600 S.F.
728001	CRUSHED STONE FOR SLOPE PROTECTION	2,350 TONS	2,400 TONS
755016	GEOTEXTILE SEPARATION - TYPE A	5,900 S.Y.	5,950 S.Y.
944003	FURNISHING AND PLACING TOPSOIL	9,000 S.Y.	9,050 S.Y.

DELETED CONTRACT ITEMS

<u>ITEM NO.</u>	<u>DESCRIPTION</u>	<u>ORIGINAL QUANTITY</u>	<u>REVISED QUANTITY</u>
202654	ADJUST MONITORING WELL	1 EA.	0
202655	ADJUST AIR INJECTION WELL	1 EA.	0
921013	CONCRETE DRIVEWAY APRON	3,100 S.F.	0

PLANS

NEW PLAN SHEET

The plan sheet numbered 26-1 is hereby added to the contract.

REVISED PLAN SHEETS

The plan sheets numbered 1-1, 2, 11, 50, 63, 68, 75, 114-3, 114-4, 114-5, 114-6, 210, 211, 239, 241-1 and 243 are hereby deleted in their entirety and replaced with the attached like-numbered plan sheets.

QUESTIONS AND ANSWERS

- Q. On the above project, Items #904042A Metal Bridge Rail (Combination)(Extruded Aluminum), #904908A Metal Bridge Rail – Protective Fence (Type C), #904950A Metal Bridge Rail (Solid Panel)(Type A) and #904951A Metal Bridge Rail (Solid Panel)(Type B) call for the railing system to be anodized to the color grey. We have contacted several anodizers including Leed Himmel in Hamden, CT, Keymark Corp. in Fonda, NY and others and no one is able to anodize to the color grey. Please advise if there is someone who will do it to grey or what an acceptable alternative might be.
- A. The items listed above should be provided with a 215-R1 clear anodized finish complying with Aluminum Association Code AA-C22A41. Remove existing Special Provisions for Item Nos. 904042A, 904908A, 904950A and 904951A and replace with revised Special Provisions for Item Nos. 904042A, 904908A, 904950A and 904951A respectively, which are provided in Addendum No. 2.
- Q. Please identify under what payment item the wall caps and parapets for the east and west retaining walls, wing walls (1A & 1B, 2A & 2B) and retaining wall 101 will be paid.
- A. The wall caps and parapets on the East and West Retaining walls, Wingwalls 1A, 1B, 2A & 2B and Retaining Wall 101 shall be paid for under the individual unit prices for the items required to complete the work. The concrete shall be Class "A" concrete. All other work shall be paid for under the applicable items.
- Q. Is it correct that item 601057 High Performance Concrete is for the bridge deck, sidewalk and parapets between abutment 1 & 2 only, and for no other sidewalks or parapets?
- A. High Performance Concrete shall be used for the bridge deck, bridge sidewalks, and bridge parapets only, between the limits of the expansion joints at Abutments 1 and 2.

- Q. Due to the complexity of this project, we respectfully ask for a bid date extension of a minimum of three weeks.
- A. The State has tentatively revised the bid date to December 13, 2000. This date is, however, subject to further revision.
- Q. Drawing E-114 has wood pole assembly details. The parts are identified by number, but there seems to be no legend. Could you provide us with a description of the parts required?
- A. The part numbers are identified in the Materials list on Drawing E-110.
- Q. On Drawing E-112 feeder #4 shows 3 – 1/c #4/0 AL wire. Is this 600v or 15 KV?
- A. The Electrical Utility Legend on Drawing E-110 identifies circuit 4 as “New Overhead 480V circuit conductors”. Therefore, 600V insulation is required.
- Q. On Drawings E-112 feeder #2 is unidentified. What type of wire is needed for this feeder?
- A. The Electrical Utility Legend on Drawing E-110 identifies circuit 2 as “New Overhead 240V circuit conductors”. Provide service-entrance conductors per NEC for 100A service.
- Q. On Drawing E-112 the new pole near the Yard Master’s Trailer is not detail. Could you clarify what hardware will be needed on that pole?
- A. Provide standard service drop hardware. Note the Proposed Electrical Utility Relocation Construction Sequence, and the General Notes, on Drawing E-110, for additional requirements.
- Q. Structure #1969 is listed in the specifications to be renovated. Do you mean Structure 1069?
- A. The correct Structure Number is #1069. Remove existing Special Provision for Item Nos. 0096069A & 0096070A and replace with revised Special Provision for Item Nos. 0096069A & 0096070A, which is provided in Addendum No. 2.
- Q. Please provide the “Stormwater Pollution Control Plan” (SCCP) and the “General Permit for Stormwater Discharge” (GPSD) referred to in the Notice to Contractor-General Permits for Stormwater Discharge. All that can be found in the special provisions is General Permit Registration Form.

- A. The "Stormwater Pollution Control Plan" (SPCP) is outlined in the Executive Summary (please refer to the last paragraph) immediately following the registration form. The SPCP is made up of: 1. Contract Plans (which includes Erosion and Sedimentation Control Plans, ref. Sheets 65-68); 2. Standard Specifications (in particular Section 1.10.03, Environmental Compliance – Best Management Practices) and 3. Special Provisions. A copy of the "General Permit for the Discharge of Stormwater and Dewatering Wastewaters Associated with Construction Activities", issued October 1, 1997, is provided in Addendum No. 2. In addition, a copy of Attachment L – Flood Contingency Plan, which is part of the Flood Management Application, is included in Addendum No. 2.
- Q. Notice to Contractor – Protection of Existing Utilities. The paragraph titled "Railroad Protection" on page 15 of the Special Provisions states that the "Railroad flagging that is required within the rail yard by the privately owned utilities to complete their work is the responsibility of the contractor." Is the contractor's responsibility for both the cost and scheduling coordination of the flagging or just the scheduling coordinating only? If the responsibility is to include the cost of flagging it is unreasonable to ask the contractor to carry this cost for the work that we have no direct control over under the contract, to rely on information given by the utilities which carries no consequence to them and for work which may change in scope. We respectfully request that the State, as with the contract work, consider carrying the cost for protective services related to the utility work.
- A. The cost of protective flagging required within the rail yard by the privately owned utilities to complete their work is the responsibility of the State. The Contractor is responsible for the scheduling coordination of the above mentioned protective flagging.
- Q. Please refer to the paragraph titled "Waste Stockpile Area" "(WSA)/Groundwater Treatment" under Notice to Contractor – Protection of Existing Utilities. The paragraph states that each utility company will be responsible to adhere to the required environmental specifications. Are we to assume then that each utility company will provide and administer their own Health and Safety Program, load, transport and maintain contaminated materials excavation, perform solidification, dispose of controlled materials and perform management of reusable controlled material?
- A. The Utility Companies have to adhere to the environmental regulations of the individual utility companies. The utility company will be responsible for the loading, transporting to the respective areas, and off-loading of the excavated materials and water. The contractor is responsible for all other activities involving the excavated materials and water after the material is off-loaded.
- Q. We assume that the second paragraph under "Utility Installations on Segment 2" under Notice to Contractors-Protection of Existing Utilities, should read "It is the responsibility of each utility company to property system."

- A. In the Notice to Contractor – Protection of Existing Utilities, the first sentence of the second paragraph under “Utility Installations on Segment 2” should read as follows, “It is the responsibility of each utility company to properly ground and bond their pipe/conduit over electrified wires within the yard.”

Remove existing Notice To Contractor – Protection of Existing Utilities in its entirety and replace with revised Notice To Contractor – Protection of Existing Utilities which is provided in Addendum No. 2.

- Q. Notice to Contractor-Progress Photographs. Please provide a quantity of photographs to be enlarged to 8 x 10 in size for each four month interval.

- A. Under Notice to Contractor – Progress Photographs, the number of photographs to be enlarged to 8x10 for each four-month interval shall be 24 photographs.

Remove existing Notice To Contractor – Progress Photographs in its entirety and replace with revised Notice To Contractor – Progress Photographs which is provided in Addendum No. 2.

- Q. Under the section “Amtrak Requirements” of Section 1.05 Control of the Work in the Special Provision, are we to assume that the Permittee is the State of Connecticut?

- A. Under the section “Amtrak Requirements” of Section 1.05 Control of the Work in the Special Provisions, the Permittee is the State of Connecticut.

- Q. Section 7.02 – Piles of the Special Provisions states that the contractor shall modify its operating by preauguring or other method it deems appropriate to assure that the vibration limit is not exceeded. How will this work be paid for? Will this work be paid for as an added contract item on a unit price basis or as extra work?

- A. The cost of preauguring or other method used to ensure that the vibration limit is not exceeded shall be included in the unit price for “Driving 14” Square Prestressed Concrete Piles (Pretensioned)”. There will not be an additional pay item for the method used to ensure that the vibration limit is not exceeded, nor shall it be an extra work.

- Q. Item No. 101107A “Controlled Material Excavation” includes the Construction and Dismantling of the Waste Stockpile Area (WSA). The fixed cost to construct and dismantle the WSA is not dependent upon the number of cubic yards excavated. To cover the sizable cost for the WSA in the unit price would grossly misrepresent the actual cost for this item. It has been past practice for the Department to assign a separate bid item on a lump sum payment for the Construction and Dismantling of a Waste Stockpile Area. We respectfully request that you consider adding a payment item for this work.

- A. This specification shall remain unchanged.

Q. The item No. 202315A-Disposal of Controlled Materials has in the past listed American Reclamation Corporation 100 West Main Street Northborough, MA 01532 as a ConnDOT approved treatment/recycle/disposal facility on previous projects. Are they currently approved and qualified to be used for this project?

A. American Reclamation Corporation, 100 West Main Street, Northborough, MA is **not** qualified to accept material generated from this project.

Q. Item No. 507640A-Manhole Modifications. The special provisions state that the method of measurement and basis of payment will be on a lump sum basis and the proposal form indicates one each. Please clarify.

A. The proposal form and Detailed Estimate Sheet No. 5 correctly indicate **Quantity – One with Units – Each**.

Remove existing Special Provision for Item No. 507640A – Manhole Modification in its entirety and replace with revised Special Provision for Item No. 507640A – Manhole Modifications which states method of measurement as **Units** and basis of payment will be **Each**.

Q. Item No. 522280A-Isolation Bearing Assembly states under "Construction Methods," the contractor shall submit the name of the isolation supplier to be used with the bid. Will this actually be required?

A. The Special Provision for Item No. 522280A has been revised to require the contractor to submit the name of the isolation supplier prior to contract award.

Q. The bid proposal form list LF as the unit of payment for Item 702428 Test Pile (14" square Prestressed Concrete Piles-Pretensioned-75' long). The unit of payment per the Standard Form 814A is per each. Please amend accordingly.

A. The unit of Payment for Item No. 702428 – Test Pile (14" Square Prestressed Concrete Piles – Pretensioned – 75' Long) shall be **Each**.

The Bid Proposal Form has been revised to show the unit payment for Item No. 702428 Test Pile (14" Square Prestressed Concrete Piles – Pretensioned – 75' Long) as **Each**

Q. Please provide the Special Provision for Item No. 0202654 Adjust Monitoring Well.

A. The Bid Proposal Form has been revised to delete Item No. 202654 and to add Item No. 202654A. New Special Provision for Item No. 202654A – Adjust Monitoring Well is provided.

Q. Please provide the Special Provision for Item No. 0202655-Adjust Air Injection Well.

A. The Bid Proposal Form has been revised to delete Item No. 202655 and to add Item No. 202655A. New Special Provision for Item No. 202655A – Adjust Air Injection Well is provided

- Q. The Standard Specification Form 814A for Section 9.21 Concrete Sidewalks does not include reinforcement. The bid proposal form lists Item No. 921013 Concrete Driveway Apron. The drawing sheet No. 33 includes reinforcement for the concrete driveway. Please clarify how the reinforcement is to be paid.
- A. The Bid Proposal Form has been revised to delete Item No. 921013 and to add Item No. 921013A. New Special Provision for Item No. 921013A – Concrete Driveway Apron is provided.
- Q. Item No's. 1400104A-12" PVC Pipe for Sanitary Sewers, 1400108A-24" PVC Pipe for Sanitary Sewers and 1401984A-18" PVC Pipe for Sanitary Sewers. Will the excavation be paid under the item "Trench Excavation (O-X)". The Bedding under the item "Bedding Materials" and the granular fill under the item "Granular Fill for the above three items?"
- A. Excavation for Item No's. 1400104A, 1400108A and 1401984A will be paid for under the item "Trench Excavation (O-X)".

The item "Compacted Granular Fill" shall be used for bedding around pipes as shown on Sanitary Pipe Bedding Detail, Sheet No. 29 of the Plans. Note that item "Geotextile – Separation Type A" shall be wrapped around the compacted granular fill.

The item "Bedding Material" is not required for installations of Item Nos. 1400104A, 1400108A and 1401984A.

- Q. Item #522280A – Under the Testing section of the Elastomeric Isolation System, the third paragraph (pg. 258) states that the test result of each isolator shall be evaluated against the following performance requirements: However, there are no requirements listed. Please provide the requirements if there are any.
- A. Remove existing Special Provision for Item No. 522280A in its entirety and replace with revised Special Provision for Item No. 522280A which is provided in Addendum No. 2.
- Q. Item #522280A – Under Construction Methods section, System Description, the manufacture will have to provide a seismic analysis of the bridge to show that the maximum forces and displacements are not exceeded with the use of our isolators. In order to do this we will need to know the peak ground acceleration and the stiffness of the piers. If this information is provided in the plans or special provisions, please direct us to it. If not, please provide it.
- A. The peak ground acceleration shall be as indicated in the AASHTO Standard Specifications for Highway Bridges, Division 1A. The stiffness of the piers shall be calculated by the bearing manufacturer. This language has been incorporated into the Special Provision for Item No.522280A by means of this addendum.

- Q. The General Notes, sheet 138 and the notes on sheet 196 state that the isolator details shown are for information purposes only. As we do our design, we assume, we can alter the diameter, height and shape (round vs. square) from what is shown. Does that mean that we can also alter the plan size of the masonry and sole plate to accommodate either an increase or decrease in the plan size of the isolator? Any changes we make would take into consideration the size of the bearing seat, the girder and necessary clearances for fasteners.
- A. Yes, the manufacturer may alter the plan size of the masonry and sole plate to accommodate the plan size of the isolator, provided that the final plates satisfy the requirements of the AASHTO Standard Specifications for Highway Bridges.
- Q. On plan sheet 114-5 (E-133) there is a detail of the duct bank to be used to relocate the overhead power feeders. There is also a narrative on the right side of the detail explaining how each conduit is used. If the narrative is compared with the detail the detail is incorrect. There are not enough conduits installed. Could this detail be revised to show how the DOT would like the other conduits installed?
- A. Plan sheet 114-5 (E-133) is revised under Addendum No. 2 to correctly indicate how the conduits are to be installed.
- Q. Please clarify if this is to be single dip galvanizing. If so, it is very difficult and expensive to find galvanizers that this is can accommodate the 80' pieces in this job.
- A. Single dip galvanizing is not strictly required provided that the galvanized coating conforms to the requirements of the Special Provisions, including the thickness, finish and appearance.
- Q. Please clarify "straight edge" specification in Section 5.2 of the specifications. How will it be inspected? The galvanizing process is NOT conducive to creating a flat surface. When dipped, the steel is introduced to heat that causes minor distortions. Also, in Section 5.2, it allows for only a one (1) mil window for faying surfaces. This is next to impossible to do.
- A. The reference to a "straight edge" implies the use of a straight edged tool to check the relative smoothness of the coating applied to the member. The minor distortions of the material as a result of being coated will be held to industry-accepted standards for flatness relative to the size of the member being coated.

The thickness of the coating on the faying shall conform to the Special Provisions.

The Special Provision for Item No. 603354A is revised due to an update of ASTM A123 referenced therein. Remove existing Special Provision for Item No. 603354A in its entirety and replace with revised Special Provision for Item No. 603354A, which is provided in Addendum No. 2.

- Q. We would suggest metalizing versus galvanizing for two reasons. First, with galvanizing the fabricator will fabricate the steel, set it up for fitting purposes, send it to the galvanizer to be galvanized, bring it back to the shop to set up again for fitting purposes and then send it to the job site. With metalizing, you will set up once and metalize at the fabrication site, saving a lot of cost. Second, heat is not introduced to the steel in a metalizing process where it is with galvanizing. If you want to consider making the truss out of weathering steel (no paint), you will save considerably more than with either galvanizing or metalizing.
- A. The Structural Steel (Segment 2) shall be provided with a galvanized finish as described in the Special Provision for Item No. 603354A.
- Q. Mill-to-bear on the connection angles at floorbeam-to-truss connections is not necessary. Why are you doing this on this job? Eliminating it will save cost.
- A. The mill-to-bear requirement on the connection angles at the End Bolting Detail shown of Plan Sheets 210 and 211 is deleted under Addendum No. 2.
- Q. We understand that the truss will be picked fully assembled and set into place. Words of caution – wherever the truss is picked, the steel must be designed with sufficient strength to handle that full load.
- A. Refer to Erection Note 11 on Sheet No. 256 regarding the required analysis of the truss during all phases of the erection operations.

The permit entitled "General Permit for the Discharge of Stormwater and Dewatering Wastewaters Associated with Construction Activities" is hereby added.

The Detailed Estimate Sheets do not reflect these changes.

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

There will be no change in the number of calendar days due to this Addendum.

The foregoing is hereby made a part of the contract.

NOTICE TO CONTRACTOR

FLOOD CONTINGENCY PLAN

During active construction, the contractor will be bound by the conditions set forth in ConnDOT's *Standard Specifications for Roads, Bridges and Incidental Construction*. Specifically, Section 1.10 - *Environmental Compliance*, addresses the need for the contractor to maintain stable work areas and to coordinate with the NOAA weather service for information pertaining to storms. These provisions are clearly established under Items 9 and 10 of ConnDOT's *Best Management Practices*.

ConnDOT will assign construction inspection personnel to the project in order to oversee the contractor's operations to ensure compliance with the provisions of the *Standard Specifications*. The inspection personnel will be assigned through the ConnDOT Office of Construction.

In addition, staff from ConnDOT's Office of Environmental Planning will review the contractor's erosion and sedimentation control plans which are mandatory for all construction projects. ConnDOT does have the power to invoke the "24-hour rule", as described in Section 1.10 of the *Standard Specifications*, in order to enforce correction of erosion and sedimentation control deficiencies. Staff of ConnDOT's Office of Environmental Planning will oversee the contractor for the life of the contract, as necessary, to ensure compliance with best management practices and special conditions.

ITEM #202654A – ADJUST MONITORING WELL

Description:

Work under this item shall consist of adjusting existing monitoring well cover to final grade in accordance with these specifications.

Construction Methods:

The Contractor shall provide as-built information to the Engineer for existing monitoring well location at Church Street South Baseline Station 7+00± prior to work commencement. Method of adjustment shall be submitted to the Engineer for approval.

Care shall be taken to prevent excavated material around well cover from filling the inside on the monitoring well. Any damage done to the monitoring well by the Contractor shall be repaired or replaced at no cost to the State.

Method of Measurement:

The adjustment of monitoring well shall be measured for payment as a unit.

Basis of Payment:

This work will be paid for at the contract unit price for "Adjust Monitoring Well" complete in place, which price shall include all material, equipment, tools and labor incidental thereto.

<u>Pay Item</u>	<u>Pay Unit</u>
Adjust Monitoring Well	Each

ITEM #202655A – ADJUST AIR INJECTION WELL

Description:

Work under this item shall consist of adjusting existing air injection well (AI-14) to final grade in accordance with the plans and these specifications.

Construction Methods:

The Contractor shall verify approximate as-built information noted in the plans to the Engineer prior to work commencement. Method of adjustment, including materials proposed, shall be submitted to the Engineer for approval.

Contractor shall notify Sargent Manufacturing Company prior to start of work. Air pressure must be turned off.

Care shall be taken to prevent excavated material around well cover from filling the inside on the monitoring well. Any damage done to the air injection well by the Contractor shall be repaired or replaced at no cost to the State.

Method of Measurement:

The adjustment of monitoring well shall be measured for payment as a unit.

Basis of Payment:

This work will be paid for at the contract unit price for "Adjust Air Injection Well" complete in place, which price shall include all material, equipment, tools and labor incidental thereto.

<u>Pay Item</u>	<u>Pay Unit</u>
Adjust Air Injection Well	Each

ITEM #507110A – TIDEGATE MANHOLE

Description:

This item shall consist of furnishing and installing a complete, in-place Tidegate Manhole where shown of the plans.

Materials:

General: The Tidegate Manhole may be constructed utilizing a combination of precast concrete and poured-in-place concrete. The Contractor shall submit detailed shop drawings illustrating the construction of the Tidegate Manhole, including details of reinforcing steel. For precast elements, the Contractor shall submit detailed structural calculations stamped by a structural engineer registered in the State of Connecticut.

Precast elements shall be designed to withstand all dead loads including, but not limited to, lateral earth pressure, dead weight of cover materials, AASHTO HS20-44 vehicle loading (including impact), and hydrostatic pressure due to groundwater. The Contractor shall note that even though the Tidegate Manhole is not currently located below roadway pavement, the precast elements shall be designed for future possible highway loadings. The precast elements shall also be designed for a future raising of the grade over the structure by up to five (5) feet above the existing grade.

Materials shall conform to the applicable requirements of Article M.08.02 and the following:

Concrete shall conform to the requirements of Article M.03.01.

Reinforcing steel shall conform to the requirements of Article M.06.01.

Manhole Steps: Provide manhole steps of the type detailed on the plans.

Non-shrink grout: Non-shrink, non-metallic grout: Provide non-metallic cement based grout requiring only the addition of water, with minimum 28-day compressive strength of 8,000 psi, with shrinkage compensation characteristics in both the plastic and hardened states, conforming with ASTM C1107, "Grade C." Provide one of the following products:

- 1) Five Star Grout 100 by Five Star Products, Inc.
- 2) SikaGrout 212 as manufactured by Sika Corporation.
- 3) Masterflow 928 by Master Builders, Inc.
- 4) Or equal.

Construction Methods:

Confirmation of Existing Conditions: Prior to the start of construction, the Contractor shall excavate test pits at the Tidegate Manhole location to identify the junction area of the existing twin 72-inch RCP drainage pipes and the 15-inch drainage pipes from existing catch basins nos. 548 and 549. The Contractor shall prepare a sketch of the junction area of the aforementioned drainage pipes at 1/4 inch = 1 foot scale and submit it to the Engineer. The Contractor shall note and differences between what was found in the field and what is shown on the plans.

Cleaning of Existing Pipe: Prior to construction, clean sediment from the existing twin 72-inch RCP drainage pipes. The limit of cleaning shall be between Junction Chamber No. 3 and the proposed Tidegate Manhole location, extending 12 feet downstream of the proposed manhole structure wall.

General: Construct the Tidegate Manhole in accordance with the requirements of Section 5.07 and the following:

Reinforced concrete shall be installed in accordance with Sections 6.01 and 6.02.

Excavate around the existing twin 72-inch RCP drainage pipes for the Tidegate Manhole. Support the existing twin 72-inch RCP drainage pipes in place and excavate under the pipes to construct base slab of the Tidegate Manhole. Maintain flow inside existing twin 72-inch RCP drainage pipes.

Construct the walls of the Tidegate Manhole around the existing twin 72-inch RCP drainage pipes.

During low tide and a period with low chance of rain, cut into the top of the existing twin 72-inch RCP drainage pipes and install temporary inflatable plugs in each pipe. Until the tide valves are installed, provide for the prompt deflation and removal of the temporary plugs at the direction of the Engineer should rainfall be forecast.

Completely remove by sawcutting or other means the existing twin 72-inch RCP drainage pipes between the walls of the Tidegate Manhole.

Install Slip-On Elastomeric Check Valves & Assemblies in the Tidegate Manhole.

When valves are installed, remove temporary plugs.

Complete the construction of the Tidegate Manhole as noted on the plans.

Existing Pipe Connections: Utilize non-shrink grout where the interstitial space is 3 inches or less. Where the space between the pipe and the precast concrete is greater than 3 inches, utilize reinforced concrete as detailed on the plans.

Method of Measurement:

Tidegate Manhole, being paid for on a lump sum basis, will not be measured for payment.

Basis of Payment:

Tidegate Manhole will be paid for at the contract lump sum price, complete in place, including all materials, labor, equipment, tools and work incidental thereto. Excluded therefrom shall be work and material specific to cleaning of existing pipes and the Slip-On Check Valves with Thimble Plates.

ITEM #651302A – SLIP-ON CHECK VALVE WITH THIMBLE PLATE

Description:

This item shall consist of furnishing and installing a complete, in-place Series TF-2 Slip-on Check Valve with Thimble Plate or approved equal and necessary installation hardware where shown of the plans.

General:

Submittals - Slip-On Check Valve, Thimble Plate, and Related Installation Hardware

Submit product literature that includes information on the performance and operation of the valve, materials of construction, dimensions and weights, elastomer characteristics, flow data, headloss data, and pressure ratings.

Provide shop drawings that clearly identify the valve and thimble plate dimensions.

Provide shop drawings that indicate all details of the related installation hardware. Hardware shown shall include details and dimensions of all bolts, nuts, washers, anchor bolts, bands, and the connection between the thimble plate and the chamber wall.

Submit manufacturer's installation instructions.

Submit manufacturer's recommended operations and maintenance manuals and instructions.

Quality Assurance - Slip-On Check Valve, Thimble Plate, and Related Installation Hardware

Manufacturer shall have at least ten (10) years experience in the production of elastomer "Duckbill" style elastomeric valves, and shall provide references and a list of installations upon request.

Manufacturer shall have performed hydraulic tests on valves through 48" for flow capacity, headloss, and jet velocity at an accredited flow laboratory. Manufacturer shall provide test data upon request.

Upon request, manufacturer shall provide installation data for existing valves of similar size and type to the project scope.

Materials:

All valves shall be of the Series TF-2 as manufactured by the Red Valve Co or approved equal. Thimble plates and valves to be manufactured by the Red Valve Co., Inc. of Carnegie, PA 15106 or approved equal.

“Duckbill” Elastomeric Check Valves: Tideflex Check Valves or approved equal are to be all rubber of the flow operated check type with a slip-on connection. The Check Valve is designed to slip over the specified pipe outside diameter and attached by means of vendor furnished stainless steel clamps. The port area shall contour down to a duckbill, which shall allow passage of flow in one direction while preventing reverse flow. The valve shall be one piece rubber construction with nylon reinforcement. In sizes 20” and larger, the bill portion shall be thinner and more flexible than the valve body, and formed into a curve of 180°.

Company name, plant location, valve size and serial number shall be bonded to the check valve. Elastomeric duckbill check valve shall be manufactured in the United States of America. A single manufacturer shall provide all elastomer duckbill check valves.

Function: When line pressure inside the valve exceeds the backpressure outside the valve by a certain amount, the line pressure forces the bills of the valve open, allowing flow to pass. When backpressure exceeds the line pressure by at the same amount, the bills of the valve are forced closed.

Thimble Plate: Thimble plate shall consist of a square backing plate with welded pipe stub located on horizontal and vertical centerline. The outside diameter of the pipe stub shall be the same as the cuff diameter of the Tideflex Valve or approved equal. The length of the pipe stub shall be sufficient to allow for the proper installation of the Tideflex valve or approved equal. Preliminary drilling pattern on backing plate shall be provided by Red Valve Company or approved equal. Consultant or end-user to provide alternate drilling pattern, if required, based on headwall condition, obstructions, etc.

Thimble plate shall be of carbon steel conforming to ASTM A36. Thimble plate shall be coat tar epoxy coated.

Related Installation Hardware: All assemblies, bands and mounting hardware shall be stainless steel and shall conform to the manufacturer’s specifications for size and strength.

Construction Methods:

Installation

Hardware used to mount thimble plate to the Tidegate Manhole interior wall shall be specified and supplied. Installation of Tideflex Valve or approved equal onto thimble plate shall be in accordance with manufacturer’s written Installation and Operation Manual and approved submittals.

Manufacturer's Customer Service

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 valve.

Manufacturer shall also make customer service available directly from the factory in addition to authorized representatives for assistance during installation and start-up, and to train personnel in the operation, maintenance and troubleshooting of the valve.

Method of Measurement:

The quantity to be paid for under this item will be the number of complete and accepted Valves with Thimble Plates.

Basis of Payment:

This work will be paid for at the contract unit price each for "Slip-on Check Valve with Thimble Plate," complete in place, which price shall include all materials, tools, equipment, and labor incidental thereto.

Pay Item	Pay Unit
Slip-on Check Valve with Thimble Plate	EA.

ITEM NO. 0653101A
CLEAN EXISTING CULVERT – GREATER THAN 42" DIAMETER

6.53.03 – Construction Methods:

Delete Paragraph 1 and add the following:

The Contractor shall prepare and submit proposed procedures to the Engineer for review and approval prior to proceeding with the work. The submittal shall indicate the Contractor's proposed method of cleaning, equipment to be used, equipment location and position, plans for containment and handling of contaminated solids, semi-solids and liquids, contingency plans to maintain sewer flows in the event of a storm, etc. All solid, semi-solid and liquid material removed from the pipe shall be considered contaminated.

Delete Paragraph 4 and add the following:

Any and all debris resulting from the cleaning operations shall be solidified as necessary and transported to the temporary waste stockpile area for characterization. All material determined to be contaminated shall be disposed of under the item "Disposal of Controlled Materials". All liquids resulting from the cleaning operations shall be collected and treated as required and disposed of under the item "Contaminated Groundwater Treatment". The Contractor shall make every effort to remove all sludge, dirt, sand, gravel, roots, grease and other debris from the existing twin 72 inch RCP's. Washing sludge, dirt, sand, gravel, roots, grease and other debris downstream shall not be permitted.

6.53.05 – Basis of Payment

Add the following:

Solidification of semi-solids shall be paid under the item "Environmental Work – Solidification".

Disposal of contaminated solids shall be paid for under the item "Disposal of Controlled Materials".

Treatment and disposal of contaminated fluids shall be paid for under the item "Contaminated Groundwater Treatment".

ITEM #921013A – CONCRETE DRIVEWAY APRON

Work under this item shall conform to the applicable provisions of Section 9.21 of the Standard Specifications Form 814A amended as follows:

Description:

Replace the Subarticle 9.21.01 with the following:

This item shall consist of concrete sidewalks and concrete driveway aprons constructed on gravel or reclaimed miscellaneous aggregate base course in the locations and to the dimensions and details shown on the plans or as ordered and in accordance with these specifications.

Materials:

Add the following to Subarticle 921.02:

Reinforcing steel shall conform to the requirements of Article M.06.01.

Construction Methods:

Add the following to Subarticle 921.03:

7 – Reinforcing Steel: Provide #4 bar reinforcing steel in the locations and to the details shown on the plans.

Method of Measurement:

Replace Subarticle 921.04-1 with the following:

1 – Concrete Sidewalk – Concrete Driveway Apron: This work will be measured by the actual number of square feet of completed and accepted concrete sidewalk or driveway apron.

Basis of Payment:

Replace Subarticle 921.05 with the following:

This work will be paid for at the contract unit price per square foot for "Concrete Sidewalk" or "Concrete Driveway Apron", complete in place, which price shall include all excavation as specified above, backfill, disposal of surplus material, gravel or reclaimed miscellaneous aggregate base, reinforcing steel, equipment, tools, materials and labor incidental thereto.

<u>Pay Item</u>	<u>Pay Unit</u>
Concrete Sidewalk	S.F.
Concrete Driveway Apron	S.F.

NOTICE TO CONTRACTOR – PROTECTION OF EXISTING UTILITIES

The utilities within the limits of the New Haven Rail Yard are owned by The State of Connecticut/Metro-North Railroad, except for the gas service, which is owned up to the building connections by The Southern Connecticut Gas Company (SCG) and the communications cables at the base of the retaining wall along Union Avenue, which are owned by SNET. See also Section 1.07 – “Contractor’s Responsibility for Adjacent Property and Services”.

It should be noted that the work included under this contract requires the relocation of numerous utility installations, both within the limits of the New Haven Rail Yard and Interlocking, and outside the Rail Yard. The removal of previously abandoned utilities is also required. In general, the utility relocations and removals are required to allow for construction of the proposed substructure components of the bridge and the proposed drainage facilities. The required utility relocation work is to be completed under this project, as well as several concurrent projects, as noted on the plans and in these specifications or as directed by the Engineer. It is the responsibility of the Contractor to insure that the required utility relocations and/or removals that he is performing are completed prior to the proposed construction.

The Contractor shall be aware that before, during and after the completion of the project, there are several other ongoing independent projects adjacent to and within the project limits. These projects are as listed in Section 1.05.07 – “Coordination with Work by Other Parties”. These projects also include the relocation of existing utilities and the installation of new facilities. It should be noted that the Contractor’s activities may overlap the activities of the contractors engaged in the execution of the other projects, as well as, the activities of State of Connecticut, Metro-North, Amtrak and other railroad and utility company personnel.

The Contractor shall completely coordinate his operations with the affected utility companies and/or agencies, and to insure that his work is coordinated with that of the other contractors. The coordination of the work is the complete responsibility of the Contractor. When the work required under his contract is in conflict with work being carried out by another contractor or agency, it is the responsibility of the Contractor to notify the Engineer immediately of the conflict.

Existing utilities shall be maintained during construction except as specifically stated herein and/or noted on the plans and as coordinated with the utilities. The Contractor shall verify the location of underground, structure mounted and overhead utilities. Construction work within the vicinity of utilities shall be performed in accordance with current safety regulations.

The Contractor shall notify “Call Before You Dig”, telephone 1-800-922-4455 for the location of public utility, in accordance with Section 16-345 of the Regulations of the Department of Utility Control.

Representatives of the various utility companies shall be provided access to the work, by the Contractor.

Contractors are cautioned that it is their responsibility to verify locations, conditions, and field dimensions of all existing features, as actual conditions may differ from the information shown on the plans or contained elsewhere in the specifications.

The Contractor shall notify the Engineer prior to the start of work and shall be responsible for all coordination with the Department. The Contractor shall allow the Engineer complete access to the work.

The Contractor shall be liable for all damages or claims received or sustained by any persons, corporations or property in consequence of damage to the existing utilities, their appurtenances, or other facilities caused directly or indirectly by the operations of the Contractor.

Any damage to any existing private and public utility, as a result of the Contractor's operations, shall be repaired to the utilities and Engineer's satisfaction at no cost to the State or the Utilities, including all materials, labor, etc., required to complete the repairs.

The Contractor's attention is directed to the requirements of Section 1.07.13 – "Contractor's Responsibilities for Adjacent Property and Services".

Prior to opening an excavation, effort shall be made to determine whether underground installations, i.e., water, sanitary, gas, electric ducts, communication ducts, etc., will be encountered and, if so, where such underground installations are located. When the excavation approaches the estimated location of such an installation, the exact location shall be determined by careful probing or hand digging, and when it is uncovered, proper supports shall be provided for the existing installation. Utility companies shall be contacted and advised of proposed work prior to the start of actual excavation, as noted above. Note that test pits have been dug at several locations throughout the project. The test pit data is shown on the plans.

Railroad Protection

Railroad flagging that is required within the rail yard by the privately owned utilities to complete their work is the responsibility of the Contractor. The Contractor shall coordinate the scheduling of the protection with the railroad and the privately owned utility company requiring the flag.

Proposed UI and SNET Easement Within the Rail Yard.

The Contractor shall survey and stake out the proposed utility easement (UI and SNET) prior to the installation of the proposed utilities. The stakes shall sufficiently identify the easement.

Clearing and Grubbing

The Contractor shall complete all clearing and grubbing required by each of the utilities within the limits of their work as soon as possible.

Waste Stockpile Area (WSA)/Ground Water Treatment

The utilities are required to transport all excess and/or unsuitable excavated material and ground water to the WSA and Ground Water Treatment Facility, respectively. The utilities may not begin any excavation prior to the completion of the WSA and Ground Water Treatment Facility. Therefore, it is essential that the WSA and Ground Water Treatment Facility be established to allow for the utility relocations to begin. Each of the utility companies is responsible for dewatering their excavations and to adhere to the required environmental specifications.

Utility Installations on Segment 2

It shall be specifically noted that the water main and telephone conduit on the truss span of Segment 2 shall be installed prior to the lifting and moving of the completed truss into its final position on Piers 1 and 2. The section of the water main shall be completely pressure tested by the water company prior to lifting the truss (approximately 48 hours will be required for the water company to complete the testing). The Contractor shall be responsible for and completely coordinate this work with the utility companies so as not to delay the project.

It is the responsibility of each utility company to properly ground and bond their pipe/conduit over electrified wires within the yard. Metro-North Railroad and/or Amtrak will determine the need for the ground and bonding system.

It is anticipated that the installation of the proposed telephone conduits and water main on the proposed Church Street South will be completed in several stages depending on the actual sequencing of the work by the Contractor. The Contractor is responsible for the complete coordination of the work with each of the utilities.

Utility Installations Within the Project Limits

The utility installations being completed as part of this project, includes but is not limited to the following:

- The existing gas mains are being abandoned and the proposed gas mains are being placed by SCG. SCG will require approximately one month to complete this work.
- The existing overhead electric and telephone lines at the south end of the Rail Yard are being placed underground in concrete encased duct banks by UI and SNET, respectively. UI and SNET will require approximately six months to complete this work.
- The existing overhead electric, telephone and communications lines along the retaining wall at the south side of Union Avenue will be relocated to new poles along the north side by UI, SNET and AT&T Local Services. Approximately six months will be required to complete this work.
- The existing communications cables at the base of the Union Avenue retaining wall are to be relocated by SNET. Under this contract, the Contractor is required to provide surface mounted and underground conduit, conduit installed through the existing concrete retaining wall and connections to the existing manholes, etc. as shown on the plans to accommodate the communications wires by SNET. SNET will complete this work as part of the relocation of their underground duct bank in Union Avenue.
- Existing overhead, surface mounted and embedded electric wires are to be relocated by the Contractor, as shown on the plans.
- Existing overhead communications wires within the rail yard are being relocated underground or removed by Metro-North Railroad prior to the Contractors work under the project in this area.
- Existing water mains and sanitary sewers, as shown on the plans, are to be relocated by the Contractor.
- New water mains and sanitary sewers, as shown on the plans, are to be installed by the Contractor.

- The Contractor is required to relocate all existing utilities impacted due to the operation of the High Capacity Crane. The Contractor is responsible for the design and coordination of the relocations with the utility owners, as required.

Utility Sequencing/Details

The following utility sequencing and details are required to allow for the completion of the construction of the project. It does not necessarily include all of the relocation work required, the coordination of which shall be the complete responsibility of the Contractor. The listing includes work that is to be completed under other projects and by Metro-North Railroad.

- The Contractor shall complete all work required to allow each of the utilities to relocate their facilities. The Contractor shall completely coordinate the timing and sequencing of the relocation work with the work required under the contract. Delays to the project as a result of the Contractor's lack of coordination with the utilities is the complete responsibility of the Contractor.
- The existing gas mains are to be abandoned and removed prior to construction of Piers 6 and 7, Abutment 2, the retaining structure and the proposed drainage, box culvert and water mains at Church Street Extension. The Contractor shall take extreme caution at the crossing of the box culvert and proposed gas main at Church Street South. It is anticipated that the proposed box culvert will be installed under the proposed gas main.
- The existing overhead electric and telephone wires and poles and the south end of the rail yard shall be relocated prior to construction of Pier 7. It is anticipated that the proposed conduit duct banks will be installed above the existing and proposed drainage pipes to the west of the bridge at the south end of the rail yard.
- The existing fire protection main shall be relocated prior to construction of Pier 7.
- The existing overhead electric and telephone wires and poles along the Union Avenue retaining wall and the underground telephone duct bank at Union Avenue are to be relocated prior to reconstruction of the wall and construction of Abutment 1 and Wingwalls.
- The existing communications and electric wires in and adjacent to the Union Avenue retaining wall shall be relocated prior to construction of Abutment 1 and Wingwalls.
- The proposed drainage at Church Street South is to be installed prior to the relocation of the underground telephone duct bank.
- The Contractor shall take extreme caution in the vicinity of the Union Avenue retaining wall not to damage the existing underground electric duct bank to remain. The location of the duct bank shown on the plans is based on limited field investigations.
- The overhead electric feeder wires and poles and the overhead communications wire and poles in the rail yard shall be relocated prior to the construction of the Waste Stockpile Area and Pier 5.
- The guy wires for the existing railroad catenary system shall be relocated prior to construction of Pier 5.
- The existing abandoned communications wires and handhole shall be removed prior to construction of Pier 4.
- Existing drainage and water mains in the rail yard shall be relocated prior to construction of various proposed piers.
- In the vicinity of the Wheel Mill Building and the Train Masters Building, the overhead electric wires are to be relocated by the Contractor and the overhead communications wires are to be relocated by Metro-North Railroad, prior to assembly of the High Capacity Crane.

- The overhead power and signal feeder wires supported on TP #3 and TP #4 are to be removed under State Project No. 301-0039 prior to construction of proposed Piers 3 and 4, proposed superstructure of Segment 3 and the proposed truss of Segment 2.
- The Contractor shall coordinate the installation of the load center at Church Street South/Union Avenue with UI.

NOTICE TO CONTRACTOR - PROGRESS PHOTOGRAPHS

The Contractor shall take color photographs at four (4) month intervals to record the general progress of the project. The photographer must be a commercial photographer. Resume must be submitted to the Engineer for approval. A sufficient number of views of the job site shall be photographed to provide an indication of the work accomplished to date.

At intervals of eight (8) months (alternate four month intervals), the photographs shall include aerial photographs taken from an airplane or helicopter. If in the opinion of the Engineer, the work progress does not justify the need for aerial photographs, the eight month interval may be increased. At no time will aerial photographs be required at intervals of less than eight months.

Copies of all photographs taken shall be submitted to the Engineer at each four month interval for selection of 24 photographs to be enlarged to 8 in. x 10 in. size. The Contractor shall provide two copies of the 8 in. x 10 in. photographs suitably titled and dated. The photographs shall be delivered to the Engineer.

There shall be no direct payment for the photographs or work associated in providing the photographs. The cost of this work shall be included in the general cost of the contract.

ITEM #0096069A - REMOVAL OF CATENARY POLE STRUCTURE
ITEM #0096070A - REMOVAL OF CATENARY STRUCTURE FOUNDATION

Description

Work under these items consists of the removal of existing designated feeder support structures and their foundations, including pole extensions with cross arm.

Submittals

Contractor's proposed method of removing structures to demonstrate compliance with "Requirements for Erection, Demolition, or other Rigging Operations over or Adjacent to Railroad Right-of-Way", see Special Conditions.

Construction Method

Designated structures shall be removed from their foundations. Foundations shall be removed to a depth of not less than 4 feet below ground level.

The Contractor shall dispose of all removed structures, materials and foundations and shall backfill at removed foundations. The backfill material shall be a granular soil compacted to density equal to the surround soil.

Removal shall be performed in such a manner that it causes no unscheduled interruption of rail operations or damages existing facilities or work by others.

Method of Measurement

Removal of Catenary Structure Foundation refers to Pole 53A. It will be measured for payment based on the number of foundations removed.

Removal of Catenary Pole refers to Pole 53A and existing pole extension and cross arms on structures 1067, 1068, 1069, 1070, 1070A and 1071. They will be measured for payment based on the number of structures removed.

Basis of Payment

This work will be paid for at the contract unit prices, which shall include all transportation, materials, equipment, tools and labor incidental thereto:

<u>Pay Item</u>	<u>Pay Unit</u>
REMOVAL OF CATENARY POLE STRUCTURE	EA
REMOVAL OF CATENARY STRUCTURE FOUNDATION	EA

ITEM #507640A – MANHOLE MODIFICATIONS

Description:

This item shall consist of furnishing and installing modifications to existing manhole No. 126 as shown on the plans. Modifications will include removal of existing twin 60-inch CMP outlet pipes, patching and plugging existing pipe penetration locations, making new penetrations for the proposed drainage connections, and connecting the proposed drainage to the existing manhole.

Materials:

Concrete shall conform to the requirements of Article M.03.01.

Reinforcing steel shall conform to the requirements of Article M.06.01.

Non-shrink grout: Non-shrink, non-metallic grout: Provide non-metallic cement based grout requiring only the addition of water, with minimum 28-day compressive strength of 8,000 psi, with shrinkage compensation characteristics in both the plastic and hardened states, conforming with ASTM C1107, "Grade C." Provide one of the following products:

- 1) Five Star Grout 100 by Five Star Products, Inc.
- 2) SikaGrout 212 as manufactured by Sika Corporation.
- 3) Masterflow 928 by Master Builders, Inc.
- 4) Or equal.

Construction Methods:

Confirmation of Existing Conditions: Prior to the start of construction, the Contractor shall excavate test pits to locate the existing outlet pipes and to verify the size of the structure. The Contractor shall prepare sketches of the existing structure at 1/4 inch = 1 foot scale and submit them to the Engineer. The Contractor shall note and differences between what was found in the field and what is shown on the plans.

General Construction: Reinforced concrete shall be installed in accordance with Sections 6.01 and 6.02. Dowels shall be drilled into the existing structure and grouted with a non-shrink grout.

The Contractor shall reset the existing manhole frame and cover to the finish grade.

Removal of Existing Pipes: The Contractor shall remove the existing twin 60-inch outlet pipes as shown on the plans. The Contractor shall patch the existing penetrations to the manhole utilizing reinforced concrete with dowels into the existing structure.

Connection of Box Culvert: The Contractor shall modify the wall of the existing manhole to connect the proposed box culvert to the existing manhole. The Contractor shall chip out and remove the existing wall to match the configuration of the proposed box. The Contractor shall connect the proposed box culvert to the existing manhole with reinforced concrete encasement as shown on the plans.

Invert: The Contractor shall reconstruct the invert of the existing manhole to provide a smooth drainage channel connecting the inlet pipes with the proposed box culvert outlet.

Method of Measurement:

Manhole Modifications for the specified manhole structure number will be measured as units.

Basis of Payment:

Manhole Modifications will be paid for at the contract unit price each for "Manhole Modifications", complete in place, which price shall include all materials, equipment, tools and labor incidental thereto.

ITEM #522280A – ISOLATION BEARING ASSEMBLY

Description:

This work shall consist of furnishing and installing isolation bearings assemblies at the locations shown on the plans in accordance with these Special Provisions and the AASHTO Guide Specifications for Seismic Isolation Design, 2nd edition. Isolation bearing assemblies shall consist of one of the following isolation systems:

Elastomeric Isolation System:

This system shall consist of an elastomeric bearing with lead core type consisting of alternate layers of natural rubber and steel plates with a preformed hole at the center of the unit filled tight with a pure lead plug. This system shall include base isolation bearings (isolators), sole plates, base plates, masonry plates, load plates, prefabricated pads and connection hardware.

Sliding Isolation System:

This system shall be composed of sliding bearings consisting of TFE stainless steel surfaces used in conjunction with enclosed energy control devices. This system shall include base isolation bearings (isolators), distribution plates, distribution pads and connection hardware.

Isolation bearings shall be self-contained and shall not be susceptible to detrimental environmental conditions. All isolation bearings shall be designed to be easily removable in the future, if necessary.

All isolators shall be of the same isolation system and shall be provided by one supplier.

The following suppliers have been approved by the State and have displayed the capability of supplying isolation bearing assemblies with characteristics that conform to the general requirements of this Special Provision. **NO SUBSTITUTIONS WILL BE ALLOWED.**

Elastomeric Isolation System:

DIS, Inc.
3470 Mt. Diablo Blvd.
Suite A200
Lafayette, CA 94549
Telephone: 925-283-1166
Fax: 925-283-4307

Seismic Energy Products, L.P.
518 Progress Way
Athens, TX 75751
Telephone: 903-675-8571
Fax: 903-677-4980

Sliding Isolation System:

R.J. Watson, Inc.
P.O. Box 85
East Amherst, New York 14051
Telephone: 716-741-2166
Fax: 716-741-2580

Materials:

All materials shall be new and unused, with no reclaimed material incorporated in the finished bearing.

Elastomeric Isolation System:

The elastomers of the isolators shall be natural rubber. Type NR Grade 3 per ASTM D4014.89 meeting or exceeding the following requirements.

A. Heat Resistance

- ASTM D573 (158° for 7 days)
- Maximum permissible change in tensile strength – 25%
- Maximum permissible change in ultimate elongation – 25%
- Maximum permissible change in durometer hardness – 10 points

B. Compression Set

- ASTM D395 Method B (158° F for 22 hours)
- Maximum permissible set: 25%

C. Low Temperature Properties

- ASTM D1229 (Compression set at 14° F for 7 days at 25% compression)
- Maximum permissible set: 65%
- ASTM D2240 (Low Temperature Stiffness; conditioned for 22 hours at -13° F)
- Maximum permissible change in durometer hardness: +15 Shore A points

D. Ozone Resistance of Elastomer: Ozone resistance will be determined by tests on strips of representative material mounted as per Method A of ASTM D518. The tests will be performed by ASTM D1149 at an ozone concentration of 50 +5 parts per hundred million at 20% stain at 100° F for 100 hours. The ozone resistance will be regarded as satisfactory, if on conclusion of a test, no cracks are visible using 7X magnification.

E. Bond of Elastomer to Steel Laminate: The average of the peak values of force during separation to determine the minimum peel strength will be at least 40 lbs./in. The failure type shall be 100% rubber test. Peel strength tests will be performed by ASTM D429 Method B.

F. Tensile Strength and Ultimate Elongation of Elastomer: Minimum tensile strength and ultimate elongation tests will be performed by ASTM D412. The minimum tensile strength will be 2250 psi and the minimum ultimate elongation will be 550%.

G. Hardness of Elastomer: The durometer hardness will be determined by ASTM D2240.

H. Shear Modulus at 50% Shear Strain of Elastomer: The shear modulus of the elastomer at 50% shear strain will be determined by ASTM D4014. The tangent modulus will be the design value \pm 10%.

Lead:

The purity of lead will be established by chemical analysis from a sample of the lead in the isolators. This test will confirm a minimum of 99% purity of the lead.

Sliding Isolation System:

Polyether Urethane Structural Element:

The physical properties of the polyether urethane shall conform to one of the following requirements:

<u>Physical Property</u>	<u>ASTM Test Method</u>	Compound A		Compound B	
		<u>Min</u>	<u>Max</u>	<u>Min</u>	<u>Max</u>
Hardness, Shore D	D2240	46	50	60	64
Tensile Stress	D412				
At 100% elongation		1500		2000	
At 200% elongation		2800		3700	
Tensile Strength, psi	D412	4000		5000	
Ultimate Elongation, %	D412	350		220	
Compression Set	D395		40		40
22 hrs. at 158 F, &					

Steel:

All steel except stainless steel components of the bearing shall conform to the requirements of the type of steel designated in the Contract Plans.

Stainless Steel:

Stainless Steel shall conform to the requirements of ASTM A240, Type 304 or ASTM A240, Type 316. Stainless steel in contact with TFE Sheet shall be polished to a bright mirror finish, less than 20 micro-inches root mean square. The minimum thickness of the stainless steel shall be 0.050 inches.

Polytetrafluorethylene Sheet:

Polytetrafluorethylene (TFE) sheet shall be manufactured from pure virgin (not processed) unfilled TFE resin. TFE sheet shall meet the applicable material requirements of AASHTO standard Specifications for Highway Bridges; Section 18, Div. II.

Construction Methods:

The Contractor shall submit name of the isolator supplier to be used prior to the awarding of the contract.

Isolation Bearings Shown on the Contract Plans:

The dimensions of the isolation bearings detailed on the Contract Plans are of a conceptual nature; however, the beam seat elevations, as detailed, are computed based on the dimensions given. Any change in height of the isolation bearings shall be made up

in adjustments first to masonry and sole plates (minor changes), and second to the beam seat elevations, if absolutely necessary. Changes in the plan dimensions (i.e. width and length) shall take into consideration the physical limits of the beam seats which may be sized for future jacking clearance; and all bearings shall be centered directly beneath stiffeners and girder webs, as detailed on the plans.

Since adjustments to the beam seats may be necessary, the Contractor shall submit Shop Drawings to the Engineer for approval and shall have received said approval prior to construction of the beam seats and fabrication of bearings. These drawings shall include, but not be limited to the following information:

- Plans and elevation of each bearing size.
- Complete details and sections showing all materials (with ASTM or other designations) incorporated in the bearings.
- Vertical and horizontal load capacity (the minimum bearing capacities are given on the Contract Plans).
- Details of the connections of the isolators to the adjacent sole, base, masonry or distribution plates. Separate plates are required to allow for easy removal of bearings, if necessary.
- Any required revisions or additions to concrete reinforcement or other facilities.

System Description:

The "Bearing Data" tables given on the Contract Plans contain the design requirements for this bridge. These are supplied as a means of specifying the required performance characteristics for the isolation system. Analytical results showing the maximum seismic forces and displacements at all locations shall be submitted and approved by the Design Engineer. The peak ground acceleration for this analysis shall be as indicated in the AASHTO Standard Specifications for Highway Bridges, Division 1A. The stiffness of the piers shall be calculated by the bearing manufacturer. Also, calculations showing system compliance with all relevant provisions of the AASHTO Guide Specifications for Seismic Isolation Design, including the seismic isolation modifications to Section 14 of Division I and Section 18 of Division II of the AASHTO Standard Specifications, shall be submitted and approved by the Design Engineer.

Elastomeric Isolation System:

Fabrication Details:

The tolerance on isolator dimensions shall be as follows:

<u>Dimensions</u>	<u>Tolerance</u>
External Plan Dimensions	±1/4 inch
Flatness of Exterior Top and Bottom Surfaces of Completed Bearings	±1/16 inch from the main surface
Variation from Plane Parallel to the Theoretical Surface	
Top	Slopes relative to the bottom no more than 0.005 radians
Sides	±1/4 inch
Overall Bearing Height	±1/4 inch

Exposed steel surfaces, if any, will be prepared for weathering or painting in accordance with the requirements of Article 6.03.03.

Each isolator will be permanently marked. The markings will consist of an isolator number specified by the manufacturer, date of fabrication (month and year), isolator type and manufacturer (name and address)

Testing:

Test results for combined compression and shear (as specified in Section 15 of the AASHTO Guide Specifications for Seismic Isolation Design) will be provided to the Engineer. The test load for each isolator type will be determined from the maximum design dead plus live load to be applied to that particular isolator type. All test results will identify the isolators by identification number.

During the combined compression and shear tests on all completed isolators, each isolator will be closely inspected for lack of rubber to steel bonds, laminate placement faults, or three (3) surface cracks wider and deeper than 0.08 inches. Any isolator showing such signs will be rejected.

The results of each isolator test shall be evaluated for the following performance requirements:

1. The effective stiffness (K_{eff}) shall fall within the range of $\pm 15\%$ of the design value. The effective stiffness is defined as shear force (kips) divided by shear displacement (inches) at a displacement of D_t .
2. The slope of the loading (K_r) shall be greater than or equal to 80% of the design value.
3. The average value of energy dissipated per cycle (EDC) shall be equal to or greater than 90% of the design value. The value of EDC as determined by the load test shall be computed from the area of the hysteresis loop for the shear force to shear displacement data.

Any tested bearings which fail to conform to the required K_{eff} , K_r or EDC design values shall be rejected.

Product Delivery, Storage and Handling:

The isolators shall be shipped in protective packing. They shall be stored under cover above the ground in the original packaging until installation.

Installation:

The Contractor shall certify to the Engineer that a skilled representative of the bearing manufacturer will be available to the Contractor to give such aid and instruction in the installation of bearings as is required to obtain satisfactory results.

The isolators shall be installed level and normal to the gravity loads. Superstructure gradients shall be accommodated with beveled sole plates.

There shall be no obstructions, including bolt extension, which prevent the isolators from deforming horizontally in any direction. The area around the isolator shall be cleaned of all debris and construction materials at the completion of the Contract.

No welding will be performed on steel in contact with an isolator.

Sliding Isolation System:

Seismic analysis shall include non-linear time history analyses, non-linear modeling shall include a varying pressure and velocity dependent friction element as well as any nonlinearities present in the restoring force.

Non-linear time history analysis shall include simultaneous orthogonal excitations to check for excessive torsional displacements.

The supplier shall show previous history in the design and fabrication of sliding bearings with restoring force elements to mitigate dynamic effects.

Sliding bearings shall be still in shear, i.e. negligible shear displacement shall occur with the load bearing element.

Isolation system shall be fully test verified utilizing shake table testing. Documentation of the testing shall be provided as well as verification from a member of the test team. In addition to shake table testing prototype bearing tests in accordance with the AASHTO Guide Specifications of Seismic Isolation Bearings will be required.

A copy of the manufacturing specification to be used in the project shall be supplied to the Engineer.

Energy dissipation shall not be achieved via the material degradation of a structural element in the bearing system. If such a structural element is to provide resistance to service load conditions (wind, braking forces, etc.) it shall not also be used in a manner that would lead to reduced capacity after material yielding.

Isolation bearing shall not contain elements known to be toxic, nor shall energy dissipation devices contain fluids.

Dynamic testing for both production testing, and prototype testing (if required) shall be performed at the undamped natural frequency of the isolation system, or, at a minimum of 0.5 Hz.

Fabrication Details:

The Contractor shall provide the Engineer with written notification thirty (30) days prior to the start of bearing fabrication. This notification shall include all of the information shown on the shop drawings which are required by Section of these specifications dealing with "Contract Document and Shop Drawings".

Contract Document and Shop Drawings:

The contract documents shall contain information necessary for proper design and detailing of the bearings. This information is listed in AASHTO Standard Specifications for Highway Bridges.

The Contractor shall submit detailed shop drawings in conformance with the applicable requirements of the Engineer for approval prior to the start of fabrication. Information to be noted on the plans shall be as required by AASHTO Standard Specifications for Highway Bridges.

All steel surfaces exposed to the atmosphere, except stainless steel surfaces and metal surfaces to be welded, shall be shop painted to match weathering steel or galvanized color in accordance with the Contract Plans. Prior to painting, the exposed steel surfaces shall be cleaned in accordance with the recommendations of the coating's manufacturer. Metal surfaces to be welded shall be given a coat of clear lacquer, or other protective coating approved by the Engineer, if the time of exposure before welding takes place is to exceed three months. The coating shall be removed at the time of welding. No painting will be done to these surfaces prior to the completion of welding.

Stainless steel sheet shall be attached with a continuous seal weld. Weldment shall remain below the level of the stainless steel sheet.

All welding shall conform to, and all welders shall be qualified in accordance with the requirements of the ANSI/AASHTO/AWS D1.5 (Bridge Welding Code) including interims as modified by AASHTO Standard Specifications for Welding of Structural Steel Highway Bridges.

Except as noted, all bearing surfaces of steel plates shall be finished or machined flat within 0.010 inches per foot. Out-of flatness greater than 0.010 inches per foot on any plate shall be cause for rejection. The bottom surfaces of lower bearing plates (masonry plates) designed to rest on bearing pads shall not exceed an out-of-flatness value of 0.0625 inches per foot (1/16 inch per foot). Oxygen cut surfaces shall not exceed a surface roughness value of 1000 micro-inches, as defined by ANSI B46.1.

Gross bearing dimensions shall have a tolerance of $-0, +1/8$ ".

Every bearing shall have the Project Identification Number, Lot Number, and individual bearing number indelibly marked with ink on a side that will be visible after erection.

After assembly including sole plates and masonry plates, bearing components shall be held together with steel strapping, or other means, to prevent disassembly until the time of installation. Packing shall be adequate to prevent damage from impact as well as from dust and moisture contamination during shipping and storage.

Sampling and Testing:

Requirements for lot size shall be in accordance with AASHTO Standard Specifications for Highway Bridges.

Sampling and testing requirements shall be in accordance with AASHTO Standard Specifications for Highway Bridges with modifications as noted:

<u>Test</u>	<u>Samples Required</u>
Physical properties of polyether urethane (except compression set)	One 10" x 15" sheet of polyether urethane material (thickness of 0.063" to 0.120") per lot
Compression set of polyether urethane	One 4" x 4" sheet of polyether urethane per lot, molded or cut to the thickness requirements of ASTM D395, Method B.

Production Bearing Testing:

The sliding coefficients of friction shall be measured at the bearing's design capacity in accordance with AASHTO Standard Specifications for Highway Bridges and on the fifth and fiftieth cycles, at a sliding speed of 1 inch per minute. The sliding of one bearing, divided by the bearing's vertical design capacity. The test results will be evaluated as follows:

- a. The measured sliding coefficients of friction shall not exceed 3%.
- b. The bearing will be visually examined both during and after the proof load test. Any resultant defects, such as bond failure, physical destruction, cold flow of TFE to the point of debonding, or damaged components shall be cause for rejection.

Seismic tests on EQS bearings shall be tested in accordance with Section 13 of AASHTO Guide Specifications for Seismic Isolation Design. Results shall be within +/- 10% of the predicted values. Bearings which test outside this range may only be acceptable on the specific approval of the Engineer.

Proof load testing shall be performed in accordance with AASHTO Standard Specifications for Highway Bridges; Section 18.3.5.3.1, Div. II.

A test bearing shall be loaded to 150% of the bearings' rated design capacity and simultaneously subjected to design rotation for a period of one (1) hour.

Any visual defects, such as extruded or deformed polyether urethane or TFE, or cracked steel, shall be cause for rejection.

Installation:

Bearings delivered to the bridge site shall be stored under cover on a platform above the ground surface. Bearings shall be protected at all times from injury. When placed, bearings shall be dry, clean, and free from dirt, oil, grease, or other foreign substances.

Bearing devices shall not be disassembled unless otherwise permitted by the Engineer or Manufacturer.

Bearings shall be installed in accordance with the alignment plan and installation scheme as shown in the Contract Plans. Upon final installation of the bearings, the Engineer, in the presence of the Manufacturer's representative, shall inspect the bearing components to assure that they are level and parallel to centerline of girder with $\pm 1/32$ " per foot. Any deviations in excess of the allowed tolerances shall be corrected.

Certificate of Compliance:

In addition to records of test results, the Contractor's isolator supplier shall submit Certificates of Compliance for the isolators indicating the materials, fabrication, testing, and installation are as specified herein.

Method of Measurement:

Isolation bearing assemblies will be measured for payment for each complete and accepted installation.

Basis of Payment:

This work will be paid for at the contract unit price each for "Isolation Bearing Assembly," which price shall include all materials, tools, furnishing and installing isolation bearing assemblies where shown on plans.

ITEM #601057A - HIGH PERFORMANCE CONCRETE

Work under this item shall conform to the pertinent requirements of Section 6.01 supplemented and amended as follows:

Description:

Work under this item shall consist of furnishing and placing high performance concrete for the various components of the superstructure deck, parapets and sidewalks within the limits shown on the plans, including all necessary materials and equipment to complete the work and the design of the concrete mix. Special care as specified below, must be taken in the finishing of high performance concrete. The inclusion of microsilica and low water/cement ratio decreases bleeding rates and may cause faster set times. As such, high performance concrete must be finished as soon as possible after placement and during finishing particular measures must be taken to prevent water loss from the surface of the concrete: these include (1) strict adherence to specifications regarding evaporation rates, (2) expediting finishing of concrete and use of fog sprays during finishing (3) use of evaporation retarding agents during and immediately after finishing, and (4) initiation of wet curing as soon as possible after finishing. The Contractor is encouraged to work closely with the microsilica manufacturer or his technical representative in developing his finishing techniques.

Materials:

Materials for this work shall conform to the requirements of Article M.03.01 amended as follows:

Concrete: The concrete shall be air-entrained and composed of portland cement, fly ash, microsilica admixture, fine and coarse aggregate, admixtures and water. The air-entraining feature shall be obtained by the use of an approved air-entraining admixture. The entrained air content of the concrete immediately before placement shall be not less than 5 percent nor more than 7 percent. The testing of air content shall be performed in accordance with the requirements of AASHTO T152.

The consistency shall be determined by the AASHTO Method T119. A uniform consistency shall be continuously maintained. The slump shall be 3 to 4 in. Slumps greater than indicated above may be used only when directed by the Engineer.

The Contractor shall design and submit for the approval by the Engineer, a concrete mix that shall attain a minimum 28 day cylinder strength (f'c) as shown on the plans.

The maximum water – cementitious material ratio shall be 0.40.

The minimum weight of cementitious materials per cubic yard of concrete shall be 675 lbs.

Fly ash shall be used to replace 20% by weight of cementitious material and microsilica shall be used to replace 6% by weight of cementitious material.

Portland Cement:

The portland cement shall be Type II cement conforming to the requirements of Article M.03.01-3.

Fly Ash: The fly ash shall conform to the requirements of Article M.03.01-13.

Coarse Aggregate: The coarse aggregate shall conform to the requirements of Article M.03.01-1 and the mix shall be designed utilizing a nominal maximum size of No. 6 aggregate.

Water-Reducing Admixture: The Contractor may submit, for the approval of the Engineer, a water-reducing admixture for the purpose of increasing workability and reducing the water requirements for the concrete.

Calcium Chloride: The addition of calcium chloride to the mix will not be permitted.

Microsilica Admixture: The microsilica admixture shall be in accordance with ASTM C1240 and approved by the Department. Only one brand shall be allowed for any structural element. The manufacturer shall provide written certification that the supplied material meets the requirements of the specifications.

If the microsilica admixture is supplied in the slurry form, the slurry shall be maintained in storage above the temperature of 32°F. Slurries exposed to temperatures of 32°F or less shall be removed and replaced at no cost to the Department. The slurry shall be homogeneous and agitated as necessary to prevent separation. The slurry shall be added using proportioning equipment approved by the Engineer. The microsilica slurry admixture shall be added through an existing automation system or a two stop off-line automated batching system. The automated batching system shall meet the following requirements:

Delivery accuracy of $\pm 1\%$ (by volume)

Program quantity (gallons, nearest tenth)

Batching tolerance $\pm 2.0\%$ (by volume)

System interlocks

Print requirements:

- a. Date and time
- b. Truck number (or alternate method relating microsilica to batch ticket)
- c. Delivered quantity (gallons, nearest tenth)

The control box/printer for a two stop off-line batching system shall be located at the batch plant operator's work station unless otherwise approved by the Engineer.

If the microsilica admixture is supplied in the densified powder form, the weight of the densified powder shall be measured cumulatively with the cement and fly ash. The densified powder shall be last in the measuring sequence and the tolerance for each material drawweight shall be based upon the total weight of cement plus fly ash plus densified powder. The batching tolerance for the cement plus fly ash plus densified powder shall be $\pm \frac{1}{2}\%$ by weight.

Special Mixing Requirements for Densified Microsilica:

Densified microsilica requires enhanced mixing to ensure full dispersion. Mix requirements shall conform to the recommendations of the microsilica manufacturer.

Construction Methods:

The construction methods for this work shall conform to the requirements of Section 6.01.03, supplemented and amended as follows:

When falsework is required to support the forms and before the erection of such falsework, the Contractor shall submit working drawings of falsework and forms to the Engineer for approval in accordance with Article 1.05.02-2. These working drawings shall be submitted at least thirty (30) days before the erection of such and shall include but not be limited to the following information:

1. Complete details and erection plan of falsework and forms.
2. The computed settlements and deflections of falsework and forms.
3. Required camber of the forms to correct falsework settlement and form deflections.
4. Sequence of concrete placement.
5. Screed erection plan.

Any work done or material ordered prior to approval of these drawings shall be at the Contractor's risk. Approval of the working drawings shall not serve to relieve the Contractor of any of his responsibility for the successful completion of the project.

At least thirty (30) days before the erection of falsework and forms, the Contractor shall submit procedures to demonstrate compliance with ACI 302 "Guide for Concrete Floor and Slab Construction", ACI 308 "Standard Practice for Curing Concrete", ACI 306 "Standard Practice for Cold Weather Concreting", and ACI 305 "Hot Weather Concreting" in accordance with Article 1.05.02 for review by the Engineer. This information shall include details of equipment to be used in placing and finishing of the concrete, including the number and type of personnel who will be engaged in placing the concrete. The personnel shall consist exclusively of persons with skill and experience appropriate to their working assignments.

Concrete shall not be placed until the Engineer has inspected the forms, form ties, the placing of the reinforcing steel, and has given his approval thereof. No concrete shall be placed if the ambient air temperature is above 85° or below 50° F.

When falsework is required to support the forms, the Contractor shall make proper allowances for the deflection and settlement of forms and form supports and for the deflection and camber of the superstructure due to all operations.

Cylinders for Compressive Strength Testing: The concrete necessary to cast cylinders for compressive-strength determinations shall be furnished by the Contractor from each pour. The necessary personnel and forms for casting these specimens will be furnished by the Department and the number of specimens required will be specified by the Engineer.

Construction joints shall be made only where shown on the plans. Approval will not be given to place concrete in more than one operation where construction joints are not shown on the plans.

The concrete shall be vibrated. Both internal and external vibration shall be used when ordered by the Engineer. The vibrating shall be done with care in such a manner as to avoid displacement of reinforcing steel or other components. Concrete shall be carefully placed in the forms and vibrated sufficiently to produce a surface free from imperfections such as honeycomb, segregation, cracking or checking.

Any deficiency such as honeycomb, segregation, cracking or checking may be cause for rejection.

During placing and finishing the evaporation rate shall not exceed 0.1 pound per square foot per hour of exposed concrete as determined by ACI 305R-5 Fig. 2.1.5. Possible procedures to control evaporation may include cooling ingredients prior to mixing, use of temporary windbreaks, sun shades, and light fog misting above the concrete.

The concrete for each pour sequence shall be kept constantly moist and protected against any drying action and cured for no less than seven (7) days after the placing of the concrete. Ambient air temperatures during the cure period shall be 50°F or higher. Should the temperature drop below 45°F during curing, measures shall be taken to insure that the temperature of the concrete is maintained at or above 45°F for the cure period. Curing shall be accomplished in the following manner:

Fog Spray:

Curing of the concrete shall begin by the application of a water fog spray immediately after the finishing operation. Fog spray shall continue until such time as the moist cotton mats are placed. The amount of fog spray shall be strictly controlled so that accumulations of standing or flowing water on the surface of the concrete shall not occur. There shall be a sufficient amount of spray to keep up with the placing operations.

Should atmospheric conditions render the use of fog spray impractical, the Contractor shall use plastic covers of suitable thickness and securely fastened down, but not directly in contact with the deck concrete. The covers shall be used only until the initial set has taken place, whereupon moist cotton mats shall be placed immediately thereafter and kept wet for the duration of the curing period.

On the windward side of the panel being cured, the Contractor shall erect barriers of suitable height, when necessary, to protect the curing concrete from the direct force of the wind.

Moist Curing:

When the concrete has set sufficiently, moist curing shall be substituted for the fog spray.

Cotton mats shall be prewetted and ready to place on the newly finished concrete surface as soon as placement, consolidation, and finishing of concrete are complete. The time between initial exposure of the finished concrete to the environment and the application of soaked mats shall not exceed 10 minutes. The mats should then be covered with plastic sheeting to prevent evaporation of the curing water. Additional curing water should be applied through soaker hoses running under the protective plastic sheeting so that the mats are kept continuously wet throughout the period of cure.

To compensate for shrinkage, fresh concrete shall not be placed against a construction joint until the existing concrete has cured for 24 hours, except as noted on contract plans or otherwise authorized or ordered by the Engineer.

No load shall be imposed on the superstructure for at least seven days after the concrete has been placed.

Test Panels:

At least two weeks prior to the test panel placement, a preplacement meeting shall be held to review the specification, proposed procedures including concrete and admixture handling, placing, finishing and curing and to facilitate coordination between all the parties involved. Individuals attending this meeting should include the Engineer, Contractor, Concrete Supplier, representatives from the Department and a technical representative from the microsilica manufacturer.

At least 45 days prior to placing high performance concrete on the bridge, the Contractor shall construct a test panel utilizing the proposed mix. The test panel shall be a minimum of 15 feet x 15 feet and 8" thick and shall be located on site. The test panel shall be utilized to demonstrate that the Contractor's method of placing, finishing and curing the concrete shall meet the requirements of this specification. Finishing of the concrete surface shall be that required for an exposed concrete slab. The test panel shall include a 7 day wet cure as described above.

A technical representative of the microsilica manufacturer shall be present to advise the Contractor regarding finishing the test panel. Additional test panels shall be cast until all aspects, including materials, placement and curing are approved by the Engineer.

Method of Measurement:

This work will be measured for payment by the actual volume in cubic yards of High Performance Concrete, completed and accepted in place in accordance with the plans or as ordered by the Engineer. No deductions will be made for the volume of reinforcing bars.

Basis of Payment:

Payment for this work will be made at the contract unit price per cubic yard for "High Performance Concrete" complete in place, which price shall include all materials, equipment, tools, labor and work incidental thereto, including test panels, heating and cooling, curing and all admixtures.

ITEM #603354A - STRUCTURAL STEEL (SEGMENT 2)

Work under this item shall conform to the requirements of Section 6.03 amended as follows:

Article 6.03.01 – Description:

Add the following to the end of the article:

This item shall include the assembly of the structural steel truss of Segment 2 supported on the proposed welded girders of Segment 3, as shown on the “Suggested Erection Sequence– Truss Assembly” plans. The Contractor is completely responsible for the erection of the truss and shall completely design and detail the erection sequencing and methods. Also included under this item is the use of temporary transfer beams and hold-down devices, as shown on the “Suggested Erection Sequence – Truss Assembly” plans. It shall include the design of, and the furnishing, fabricating, transporting, erecting, installing, and the removal and disposal of, the transfer beams and hold-down devices, as required.

This item will also include supporting and jacking the fully assembled truss segment at the four reaction posts for the purpose of determining the correct installation of remain-in-place forms, and to allow for the installation of the proposed inspection platforms. The remain-in-place forms and the inspection platforms shall be installed when the truss is in the temporary location. This jacking will require the use of temporary support structures, including bracing and foundations, and hydraulic jacks, as required, and as determined by the Contractor. It shall include the design of, and the furnishing, fabricating, transporting, erecting, installing, jacking, and the removal and disposal of, the temporary supports, bracing, foundations and jacks, as required.

Included under this item is the preparation of working drawings and computations, as required, and as noted herein and elsewhere in these specifications, for the methods and temporary work the Contractor proposes to complete the work included under this item. All working drawings and computations shall be signed and sealed by a Professional Engineer licensed in the State of Connecticut and experienced in this type of work. The Department reserves the right to approve the use of any and all Professional Engineers performing the work.

It is anticipated that the placement and removal of the concrete forms for the cantilever deck slab will be completed after the structural steel truss of Segment 2 is lifted and moved into its final position. Metro-North Railroad and Amtrak requires that this work be completed above temporary work platforms/protective shielding.

The installation of the work platforms/protective shielding over the railroad right of way for the purposes of deck forming and any of the other Contractor’s operations as required by the railroad(s) will be included under this item.

Article 6.03.02 - Materials:

The materials for this work shall conform to the requirements of Section M.06 amended as follows:

Subarticle M.06.02-1 – Structural Steel: Delete the entire subarticle and replace with the following:

The structural steel shall be low alloy conforming to the requirements of AASHTO M270, Grade 50 or ASTM 709 HPS Grade 70W as shown on the plans.

Fasteners: All high strength ASTM A325 Type 1 bolts, nuts and washers for use in the galvanized steel truss shall be mechanically galvanized in accordance with ASTM B695, Class 50.

The structural steel for the main load carrying components of the structure shall meet the Zone 2 Charpy V-notch Impact Testing requirements, for fracture critical and non-fracture critical members, in accordance with AASHTO M270 (ASTM A709).

Subarticle M.06.03 – Galvanizing: add the following:

Before hot dip galvanizing, the tanks shall be cleaned to remove surface and bottom contamination, i.e. dross, sludge, ash and flux.

The steel members shall be hot-dip galvanized by completely submerging them in the galvanizing tank.

The hot-dip galvanizing shall conform to the requirements of ASTM A123 as amended as follows:

Subarticle 6.2 – Add the following:

The coating shall be inspected by visual means with the aid of straight edge and dry film thickness instruments. The overall dry film thickness shall be 3.4 – 8.0 mils. Joint faying surfaces shall have a dry film thickness of 3.4– 4.5 mils.

Subarticle 6.4 – Appearance: Delete the first three sentences and replace with:

Galvanized articles shall be free from uncoated areas, blisters, flux deposits, acid and black spots, and dross inclusions. Lumps, projections, globules, or heavy deposits of zinc will not be permitted. All holes shall be clean and free of excess zinc.

Inspection shall be visual with the aid of straight edge instruments to determine compliance with the requirements of 6.2 and 6.4. Articles that have a nonuniform, rough coating shall be ground smooth with power tools such as disc grinders. If grinding has been performed, the resultant surface shall comply with 6.2 and 6.4.

All damage, (i.e., scratches, nicks, cracks), on the hot dip galvanized steel shall be repaired in accordance with ASTM A780 Annex A2 "Repair using Zinc-Rich Paints". The Zinc-Rich paint shall conform to Federal Specification TT-P-641 Type 1 and shall be brush applied with a dry film thickness range of 3 to 6 mils.

Add the following Subarticle.

Subarticle M06.05 – Certified Tests Reports, Material Certificates and Certificates of Compliance:

The Contractor shall furnish Certified Test Report in conformance with Article 1.06.07 confirming that the structural steel meets the chemical and strength requirements stated herein. The Contractor shall furnish Materials Certificate in conformance with Article 1.06.07 confirming that the structural steel galvanizing meets the requirements stated herein.

Temporary Supports: All steel for the temporary support of the structural steel shall conform to the requirements of ASTM A709 Grade 36 or Grade 50, as proposed by the Contractor and approved by the Engineer. All material shall be in conformance with the Connecticut Department of Transportation Standard Specifications Form 814A. The structural steel for the temporary supports need not be painted. All bolts shall be high strength bolts conforming to ASTM A325. Anchor bolts shall be fully threaded rods conforming to ASTM A449. Threaded rods for the hold down devices shall conform to ASTM A354 Grade BD. All materials required for the temporary support of the proposed structural steel, which are not required in the completed structure, shall remain the property of the Contractor and shall be removed from the site when it is no longer needed.

Article 6.03.03 - Construction Methods:

Add the following to Subarticle 1 – Shop Drawings:

The Contractor shall prepare and submit to the Engineer, Working Drawings and Computations for approval in accordance with Article 1.05.02(2), for the work required under this item. The working drawings and computations shall be stamped by a Professional Engineer Licensed in the State of Connecticut and experienced in this type of work. The drawings and computations shall fully depict the erection methods, sequences, details and materials and equipment the Contractor proposes to use.

The working drawings shall include, but not be limited to, the following information:

Truss Assembly:

- A sequencing plan for the complete assembly of the proposed truss, including bracing members and floor beams and stringers.
- A layout plan for the temporary supports required, including bracing and guying to be used during the assembly of the proposed truss.
- Complete member sizes, material specifications, dimensions, connection details, temporary support systems, working loads and design methods, field measurements and grades as required, and an estimated time schedule for the truss assembly operation.

Truss Jacking:

- A sequencing plan for supporting and jacking the fully assembly truss for the purpose of determining the correct installation of remain-in-place forms, and to allow for the installation of the proposed inspection platforms.
- A layout plan for the temporary support structures, including bracing and foundations, and hydraulic jacks, as required. It shall include the design of, and the furnishing, fabricating, transporting, erecting, installing, jacking, and the removal and disposal of, the temporary supports, bracing, foundations and jacks, as required.

The Contractor's attention is directed to the fact that specific "Erection Sequencing" as shown on the plans and elsewhere in these specifications, have been developed for the erection of the Structural Steel Truss (Segment 2) over the Metro-North Railroad. The Contractor shall determine the specifics of and be responsible for the actual erection methods and sequencing with the approval of the Engineer. Prepare and submit to the Engineer working drawings and computations in accordance with Article 1.05.02-2 of Form 814A. The drawing shall be prepared and stamped by a professional Engineer licensed in the State of Connecticut fully depicting his proposed methods and sequencing. These drawings shall include, but not be limited to complete details of the methods, materials and equipment he proposes to use for this purpose.

ITEM #904042A - METAL BRIDGE RAIL (COMBINATION) (EXTRUDED ALUMINUM)

Description:

Work under this item shall consist of fabricating and installing a metal bridge railing, consisting of aluminum posts and rails as shown on the plans, as directed by the Engineer and in accordance with this specifications.

Materials:

Materials for this work shall conform to the following requirements:

1. Metal Bridge Rail:

The railing posts, rails, plates angles, splice bars and connections shall be aluminum and conform to the requirements of ASTM B221, aluminum alloy 6061-T6.

All bolts and socket head cap screws shall be stainless steel and conform to the requirements of ASTM A193, Class 2 Grade B8 (AISI Type 316). Washers shall be stainless steel and conform to the requirements of ASTM A167, Type 316.

2. Preset Anchorage:

The preset anchorage shall be fabricated as detailed on the contract plans. Preset anchorages configured differently from those detailed on the plans may be used provided they utilize the same materials described below and are approved by the Engineer prior to fabrication.

The wire struts shall be cold-drawn and conform to ASTM A510, Grade 1030 with minimum tensile strength of 100,000 psi. These wire struts shall be securely welded to the ferrules with the welds capable of developing the tensile strength of the struts and the ferrules.

The ferrules, either open end or closed end, shall conform to ASTM A108, Grade 12 L 14. A plastic cap shall be provided for sealing the bottom of each open end ferrule before placing concrete. Closed end ferrules shall provide a minimum full thread length of 2". Removable plastic washers of the same diameter as the ferrules and approximately 3/32" in thickness shall be provided for the top of each ferrule and shall be left in place until the temporary supporting bolts are removed. Removable plastic caps shall be provided for sealing the top of each ferrule until the erection of railing posts.

After fabrication, the preset anchorage system shall be hot-dip galvanized in accordance with ASTM A123.

A sample anchorage system shall be submitted to the Engineer for approval prior to incorporation into the project.

3. Molded Pads:

Molded pads shall be manufactured from new unvulcanized elastomer and unused synthetic fibers, with a weight proportion of fiber content equal to approximately one-half of the total weight of the pad. The pads shall be formed into single sheets of 1/8" minimum thickness, with a

tolerance of plus or minus 10 percent. Pads shall have a Shore A Durometer hardness within the range of 70 to 90, and shall have a minimum compressive breakdown of 7,000 psi.

4. Color:

Metal Bridge Rail shall receive a 215-R1 clear anodized finish complying with Aluminum Association Code AA-C22A41. The anodic coating shall be Architectural Class I with a minimum thickness of 0.7 mils and a minimum weight of 35 mg/in².

Samples from production lots of finished material as selected by the Engineer, shall be tested in accordance with the following ASTM Specifications available from the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA.

1. ASTM B137 - Coating Weight
2. ASTM B244 - Coating Thickness
3. ASTM B136 - Sealing

Color range samples shall be submitted by the selected finisher for the Engineer's approval before proceeding with production. All the color should be obtained from one source. These samples shall be used for comparison purposes during production finishing, and shall consist of actual sections large enough so that good comparisons can be made to establish the limits of the allowable color shade range. Material outside the allowable color shade range, as determined by the Engineer, will be rejected.

The Contractor shall furnish a Materials Certificate and a Certificate of Compliance in conformance with the requirements of Article 1.06.07 for the following materials: rail posts, rails, rail splices, preset anchorages, bolts, washers and molded pads. Samples of the bolts and washers, of all sizes used in the metal bridge rail, shall be submitted to the Engineer.

Construction Methods:

Before fabricating any materials, the Contractor shall submit shop drawings to the Engineer for approval in accordance with Article 1.05.02(b). These drawings shall include but not be limited to the following information: The layout plan showing all railing post spacings, rail splice locations, details for the rails, posts and anchorage system and material designations.

Aluminum welding shall be in accordance with the American Welding Society "Structural Welding Code-Aluminum", ANSI/AWS D1.2.

The preset anchorages shall be fabricated for installation perpendicular to the grade of the parapet. The anchorages shall be firmly and accurately held in position prior to and during the placing of concrete.

The railings shall be accurately fabricated and installed as shown on the plans. Lengths of rail elements shall be continuous over a minimum of four rail posts wherever possible and in no case less than two. Rail splices shall be located in rail panels over open joints in parapets and at other locations determined by the Contractor. Splice bars shall have a sliding fit in the rail sections.

Aluminum railings shall be carefully adjusted prior to fixing in place to insure proper matching at abutting joints and correct alignment and curvature throughout their length. After installation, all rails and posts shall be free of burrs, sharp edges and irregularities.

Method of Measurement:

This work will be measured for payment by the actual number of linear meter of the type of metal bridge rail completed and accepted, measured along the centerline of the rail.

Basis of Payment:

This work will be paid for at the contract unit price per meter for "Metal Bridge Rail (Combination)", complete and accepted in place, which price shall include all materials, equipment, tools and labor incidental thereto.

ITEM #904908A – METAL BRIDGE RAIL - PROTECTIVE FENCE (Type C)

Description:

This item shall consist of furnishing and installing aluminum railing, ornamental grill, stainless steel hardware, aluminum extrusions, plates, and steel anchorages fabricated in accordance with the dimensions and details shown on the plans or as ordered by the Engineer in accordance with these specifications.

Materials:

Materials for this work shall conform to the following requirements:

Materials for posts, rails, plates, angles and straps shall be extruded aluminum alloy conforming to the requirements of ASTM B221, Alloy 6061 – T6.

The aluminum ornamental grill shall be of the dimensions and pattern as designated on the plans and conform to ASTM B211 Alloy 6061-T6 or approved equal.

Welding of aluminum components shall be accomplished in the shop; no field welding will be permitted. Following shop welding, all aluminum components shall be anodized to match solid barrier panels.

All hardware shall be stainless steel and conform to the requirements of ASTM A193, Class 2 Grade B8 (AISI Type 316). Washers shall be stainless steel and conform to the requirements of ASTM A167, Type 316.

2. Preset Anchorage:

The preset anchorage shall be fabricated as detailed on the contract plans. Preset anchorages configured differently from those detailed on the plans may be used provided they utilize the same materials described below and are approved by the Engineer prior to fabrication.

The wire struts shall be cold-drawn and conform to ASTM A510, Grade 1030 with minimum tensile strength of 100,000 psi. These wire struts shall be securely welded to the ferrules with the welds capable of developing the tensile strength of the struts and the ferrules.

The ferrules, either open end or closed end, shall conform to ASTM A108, Grade 12 L 14. A plastic cap shall be provided for sealing the bottom of each open end ferrule before placing concrete. Closed end ferrules shall provide a minimum full thread length of 2". Removable plastic washers of the same diameter as the ferrules and approximately 3/32" in thickness shall be provided for the top of each ferrule and shall be left in place until the temporary supporting bolts are removed. Removable plastic caps shall be provided for sealing the top of each ferrule until the erection of railing posts.

After fabrication, the preset anchorage system shall be hot-dip galvanized in accordance with ASTM A123.

A sample anchorage system shall be submitted to the Engineer for approval prior to incorporation into the project.

Bolts for the preset anchorage system shall be stainless steel and conform to the requirements of ASTM A193, Class 2 : Grade B8 (AISI Type 316). All washers shall be standard size and conform to ASTM A167, Type 316.

3. Molded Pads:

Molded pads shall be manufactured from new unvulcanized elastomer and unused synthetic fibers, with a weight proportion of fiber content equal to approximately one-half of the total weight of the pad. The pads shall be formed into single sheets of 1/8 " minimum thickness, with a tolerance of plus or minus 10 percent. Pads shall have a Shore A Durometer hardness within the range of 70 to 90, and shall have a minimum compressive breakdown of 7,000 psi.

4. Color:

Metal Bridge Rail shall receive a 215-R1 clear anodized finish complying with Aluminum Association Code AA-C22A41. The anodic coating shall be Architectural Class I with a minimum thickness of 0.7 mils and a minimum weight of 35 mg/in².

Samples from production lots of finished material as selected by the Engineer, shall be tested in accordance with the following ASTM Specifications available from the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA.

1. ASTM B137 - Coating Weight
2. ASTM B244 - Coating Thickness
3. ASTM B136 - Sealing

Color range samples shall be submitted by the selected finisher for the Engineer's approval before proceeding with production. All the color should be obtained from one source. These samples shall be used for comparison purposes during production finishing, and shall consist of actual sections large enough so that good comparisons can be made to establish the limits of the allowable color shade range. Material outside the allowable color shade range, as determined by the Engineer, will be rejected.

The Contractor shall furnish a Materials Certificate and a Certificate of Compliance in conformance with the requirements of Article 1.06.07 for the following materials: rail posts, rails, rail splices, preset anchorages, bolts, washers and molded pads. Samples of the bolts and washers, of all sizes used in the metal bridge rail, shall be submitted to the Engineer.

Construction Methods:

Before fabricating any materials, the Contractor shall submit shop drawings to the Engineer for approval in accordance with Article 1.05.02(b). These drawings shall include but not be limited to the following information: The layout plan showing all railing post spacings, railing post grades, expansion joint locations, details for the rails, posts and anchorage system and material designations.

The metal bridge rail shall be accurately fabricated and erected in accordance with the plans and as directed by the Engineer. All rails shall be erected to produce a smooth continuous appearance with posts vertical and the rail components paralleling the line of the tops of the parapets.

The preset anchorage assembly shall be set perpendicular to grade in concrete. Each unit shall be completely furnished with plastic end caps, throw away bolts, and templates. The Contractor shall place molded pads as herein specified under each base plate. Each pad shall be the same size and shape as the base plate it is to support, and the holes to accommodate the anchorage bolts shall be clearly and accurately punched before setting the pads in place.

Aluminum welding shall be in accordance with the American Welding Society "Structural Welding Code-Aluminum", ANSI/AWS D1.2.

Method of Measurement:

This work will be measured for payment by the actual number of linear feet of the type of metal bridge rail completed and accepted, measured along the centerline of the rail.

Basis of Payment:

This work will be paid for at the contract unit price per foot for "Metal Bridge Rail- Protective Fence (Type C)", complete and accepted in place, which price shall include all materials, equipment, tools and labor incidental thereto.

ITEM #904950A - METAL BRIDGE RAIL (SOLID PANEL) (Type A)
ITEM #904951A - METAL BRIDGE RAIL (SOLID PANEL) (Type B)

Description:

This work of this item shall include posts, rails, solid barrier panels, woven fabric and related materials fabricated of aluminum alloy. Erection shall be as shown on the plans and in accordance with these specifications.

Materials:

Materials for this work shall conform to the following requirements:

1. Metal Bridge Rail:

Material for solid barrier panels shall be extruded aluminum alloy conforming to the requirements of ASTM B221, Alloy 6061, Temper T6. Extruded barrier panel detail sections shall be joined with panel nuts, bolts and washers to achieve the desired barrier panel height as shown on the plans. Vertical dimensions of the extruded sections shall be as shown on the plans. Mass and section properties of the extruded sections shall be as indicated on the plans.

Materials for barrier panel nuts, bolts and washers shall be aluminum alloy anodized conforming to the requirements of ASTM B211, alloys and tempers as follows:

- (a) Lock-Nuts: 6262-T9
- (b) Bolts: 2024-T4

Nuts, bolts and washers shall be anodized to match panels.

Materials for posts, rails, plates, angles and straps shall be extruded aluminum alloy conforming to the requirements of ASTM B221, Alloy 6061 – T6.

Material for fabric shall be aluminum coated steel woven wire of the chain link type. It shall be No. 9 gage wire woven to form a 3/8" mesh. The chain link fabric shall conform to the requirements of AASHTO M181 for Type II Aluminum Coated Steel Fabric except that the fabric selvage shall be knuckled at the top and bottom.

Welding of aluminum components shall be accomplished in the shop; no field welding will be permitted. Following shop welding, all aluminum components shall be anodized to match solid barrier panels.

All hardware shall be stainless steel and conform to the requirements of ASTM A193, Class 2 Grade B8 (AISI Type 316). Washers shall be stainless steel and conform to the requirements of ASTM A167, Type 316.

2. Preset Anchorage:

The preset anchorage shall be fabricated as detailed on the contract plans. Preset anchorages configured differently from those detailed on the plans may be used provided they utilize the same materials described below and are approved by the Engineer prior to fabrication.

The wire struts shall be cold-drawn and conform to ASTM A510, Grade 1030 with minimum tensile strength of 100,000 psi. These wire struts shall be securely welded to the ferrules with the welds capable of developing the tensile strength of the struts and the ferrules.

The ferrules, either open end or closed end, shall conform to ASTM A108, Grade 12 L 14. A plastic cap shall be provided for sealing the bottom of each open end ferrule before placing concrete. Closed end ferrules shall provide a minimum full thread length of 2". Removable plastic washers of the same diameter as the ferrules and approximately 3/32" in thickness shall be provided for the top of each ferrule and shall be left in place until the temporary supporting bolts are removed. Removable plastic caps shall be provided for sealing the top of each ferrule until the erection of railing posts.

After fabrication, the preset anchorage system shall be hot-dip galvanized in accordance with ASTM A123.

A sample anchorage system shall be submitted to the Engineer for approval prior to incorporation into the project.

Bolts for the preset anchorage system shall be stainless steel and conform to the requirements of ASTM A193, Class 2 : Grade B8 (AISI Type 316). All washers shall be standard size and conform to ASTM A167, Type 316.

3. Molded Pads:

Molded pads shall be manufactured from new unvulcanized elastomer and unused synthetic fibers, with a weight proportion of fiber content equal to approximately one-half of the total weight of the pad. The pads shall be formed into single sheets of 1/8 " minimum thickness, with a tolerance of plus or minus 10 percent. Pads shall have a Shore A Durometer hardness within the range of 70 to 90, and shall have a minimum compressive breakdown of 7,000 psi.

4. Color:

Metal Bridge Rail (Solid Panel) shall receive a 215-R1 clear anodized finish complying with Aluminum Association Code AA-C22A41. The anodic coating shall be Architectural Class I with a minimum thickness of 0.7 mils and a minimum weight of 35 mg/in².

Samples from production lots of finished material as selected by the Engineer, shall be tested in accordance with the following ASTM Specifications available from the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA.

1. ASTM B137 - Coating Weight
2. ASTM B244 - Coating Thickness
3. ASTM B136 - Sealing

Color range samples shall be submitted by the selected finisher for the Engineer's approval before proceeding with production. All the color should be obtained from one source. These samples shall be used for comparison purposes during production finishing, and shall consist of actual sections large enough so that good comparisons can be made to establish the limits of the allowable color shade range. Material outside the allowable color shade range, as determined by the Engineer, will be rejected.

The Contractor shall furnish a Materials Certificate and a Certificate of Compliance in conformance with the requirements of Article 1.06.07 for the following materials: rail posts, rails, rail splices, preset anchorages, bolts, washers and molded pads. Samples of the bolts and washers, of all sizes used in the metal bridge rail, shall be submitted to the Engineer.

Construction Methods:

Before fabricating any materials, the Contractor shall submit shop drawings to the Engineer for approval in accordance with Article 1.05.02(b). These drawings shall include but not be limited to the following information: The layout plan showing all railing post spacings, rail splice locations, details for the rails, posts and anchorage system and material designations.

The metal bridge rail shall be accurately fabricated and erected in accordance with the plans and as directed by the Engineer. All rails shall be erected to produce a smooth continuous appearance with posts vertical and the rail components paralleling the line of the tops of the parapets.

The preset anchorage assembly shall be set perpendicular to grade in concrete. Each unit shall be completely furnished with plastic end caps, throw away bolts, and templates. The Contractor shall place molded pads as herein specified under each base plate. Each pad shall be the same size and shape as the base plate it is to support, and the holes to accommodate the anchorage bolts shall be clearly and accurately punched before setting the pads in place.

Aluminum welding shall be in accordance with the American Welding Society "Structural Welding Code-Aluminum", ANSI/AWS D1.2.

Method of Measurement:

This work will be measured for payment by the actual number of linear feet of the type of metal bridge rail completed and accepted, measured along the centerline of the rail.

Basis of Payment:

This work will be paid for at the contract unit price per foot for "Metal Bridge Rail (Solid Panel)(Type A & B)", complete and accepted in place, which price shall include all materials, equipment, tools and labor incidental thereto.

ITEM #1400104A - 12" POLYVINYL CHLORIDE PIPE FOR SANITARY SEWERS
ITEM #1400108A - 24" POLYVINYL CHLORIDE PIPE FOR SANITARY SEWERS
ITEM #1401984A - 18" POLYVINYL CHLORIDE PIPE FOR SANITARY SEWERS

Description:

These items shall consist of furnishing and installing polyvinyl chloride pipe for sanitary sewers where shown of the plans.

Materials:

The pipe shall conform to the requirements of Subarticle M.08.01-28 and the following:

The pipe shall have pipe diameter to wall thickness ratio (SDR) of a maximum of 35, unless otherwise indicated and/or approved by the Authority. Closed profile pipe shall have a minimum stiffness of 46 psi for 18 inch to 27 inch PVC sewer pipe and minimum stiffness of 50 psi for 30-inch diameter PVC pipe.

Joints shall conform to ASTM D3212. Provide push-on bell and spigot joints with elastomeric ring gaskets.

Provide gaskets conforming to ASTM F477; resistant to common ingredients of sewage and industrial wastes, including oils and groundwater; and capable of enduring permanently under conditions of proposed use. Fix gaskets into place in bell to avoid dislodging during joint assembly.

Construction Methods:

The pipe shall be installed in accordance with Section 6.51 and the following:

The pipe shall be installed in a bedding of compacted granular fill. The compacted granular fill shall be wrapped with geotextile – Separation Type A material. Refer to detail indicated in the Drawings.

For the section of pipe under the box culvert, encase the pipe in concrete as shown on the plans.

Follow directions of joint material and pipe manufacturers when installing gaskets and joints to render them watertight and flexible.

After bedding pipe, place and compact bedding material between pipe and sides of trench. Use extra care to compact bedding material under lower half of pipe. Fill bell holes with bedding material and compact. Places compact bedding material as indicated on the Drawings.

Perform a low pressure air test as follows:

1. Testing shall be by low pressure air test after installation of service fittings and leads, and after completing backfill of the sanitary sewer trench. The Engineer will be present during all testing.

2. The low pressure air test shall be conducted in compliance with the following:
 - a. After completing backfill of the sewer line, the Contractor shall, at his expense, conduct a Line Acceptance Test using low pressure air.
 - b. The test shall be performed under the supervision of an inspector of the sewer district.
3. Equipment used shall meet the following minimum requirements:
 - a. Pneumatic plugs shall have a sealing length equal to or greater than the diameter of the pipe to be inspected.
 - b. Pneumatic plugs shall resist internal test pressures without requiring external bracing or blocking.
 - c. All air used shall pass through a single control panel.
 - d. Three individual hoses shall be used for the following connections:
 - 1) From control panel to pneumatic plugs for inflation.
 - 2) From control panel to sealed line for introducing the low pressure air.
 - 3) From sealed line to control panel for continually monitoring the air pressure rise in the sealed line.
 - 4) Procedures: All pneumatic plugs shall be seal tested before being used in the actual test installation. One length of pipe shall be laid on the ground and sealed at both ends with the pneumatic plugs to be checked. Air shall be introduced into the plugs to 25 psi. The sealed pipe shall be pressurized to 5 psi. The plugs shall hold against the pressure without bracing and with movement of the plugs out of the pipe.
 - 5) After a reach of pipe has been backfilled and cleaned, and the pneumatic plugs are checked as specified, the plugs shall be placed in the line and inflated to 25 psi. Low pressure reaches 4 psi greater than the average back pressure of ground water that may be over the pipe. Two minutes minimum shall be allowed for the air pressure to stabilize.
 - 6) After the stabilization period (3.5 psi minimum pressure in the pipe), the air hose from the control panel to the air supply shall be disconnected. The portion of line being tested shall be termed "acceptable" if the time required in minutes for the pressure to decrease from 3.5 to 2.5 psi (greater than the average back pressure of any ground water that may be over the pipe) shall not be less than the time shown for the given diameters in the following table:

Pipe Diameter (in inches)	Minutes
4	2.0
6	3.0
8	4.0
10	5.0
12	5.5
15	7.5
18	8.5
21	10.0
24	11.5

In areas where ground water is known to exist, the Contractor shall install a 1/2 inch diameter capped pipe nipple, approximately 10 inches long, through the manhole wall on top of one of the lines entering the manhole. This shall be done at the time the line is installed. Immediately prior to the performance of the Line Acceptance Test, the ground water shall be determined by removing the pipe cap, blowing air through the pipe nipple into the ground so as to clear it, and then connecting a clear plastic tube to the nipple. The hose shall be held vertically and a measurement of the height in feet shall be divided by 2.3 to establish the pounds of pressure that will be added to all readings. (For example, if the height of water is 11 feet, then the added pressure will be 5 psi, and the 2.5 psi increased to 7.5 psi. The allowable drop of one pound and the timing remain the same.)

- 7) If installation fails to meet the above requirements for the air test, the Contractor shall correct the pipeline until an acceptable test is achieved.
- 8) The Contractor shall provide as required the proper plugs, weirs, and other equipment required to perform all tests.
- 9) The tests shall be conducted at all times in the presence of the Engineer and the sewer district's inspecting engineer. Should a line which has previously been tested indicate any water infiltration, or otherwise appear suspect to the Engineer, the Contractor shall conduct confirmation air tests on the line, at no additional cost to the Department.

Method of Measurement:

Pipe will be measured for payment by the actual linear feet of pipe completed and accepted and measured in place along the invert.

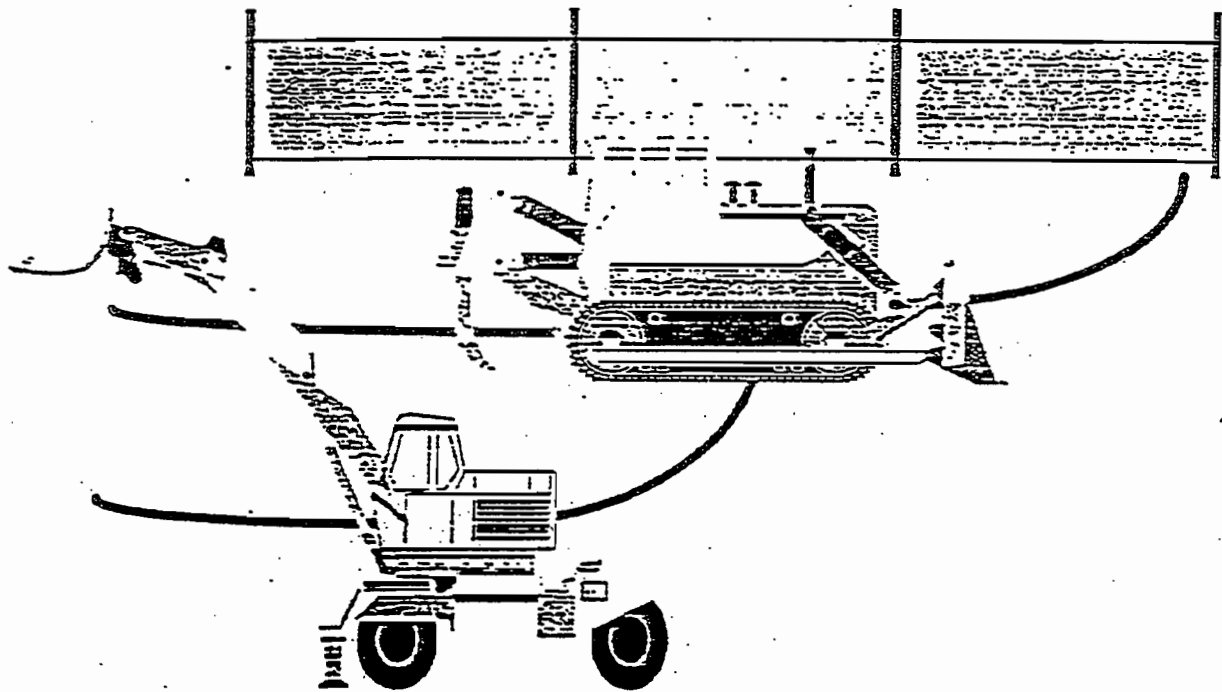
Basis of Payment:

Pipe will be paid for at the contract unit price per linear foot of pipe, complete in place, including all materials, equipment, tools and labor incidental thereto.



STATE OF CONNECTICUT
DEPARTMENT OF ENVIRONMENTAL PROTECTION
BUREAU OF WATER MANAGEMENT
PERMITTING, ENFORCEMENT AND REMEDIATION DIVISION
(860) 424-3018

General Permit for the Discharge of Stormwater and Dewatering Wastewaters Associated with Construction Activities



Issuance Date: October 1, 1997

General Permit for Discharge of Stormwater and Dewatering Wastewaters from Construction Activities

Table of Contents

Section 1.	Authority	1
Section 2.	Definitions	1
Section 3.	Authorization Under This General Permit	3
	(a) Eligible Activities	3
	(b) Requirements for Authorization	3
	(c) Geographic Area	4
	(d) Effective Date and Expiration Date of this General Permit	4
	(e) Effective Date of Authorization	4
	(f) Revocation of an Individual Permit	4
	(g) Issuance of an Individual Permit	4
Section 4.	Registration Requirements	4
	(a) Who Must File a Registration	4
	(b) Scope of Registration	4
	(c) Contents of Registration	5
	(d) Where to File a Registration	7
	(e) Additional Information	7
	(f) Additional Notification	7
	(g) Action by Commissioner	7
Section 5.	Termination Requirements	8
	(a) Notice of Termination	8
	(b) Termination Form	8
	(c) Where to File a Termination Form	8
Section 6.	Conditions of this General Permit	8
	(a) Conditions Applicable to Certain Discharges	8
	(b) Stormwater Pollution Control Plans	9
	(c) Reporting and Record Keeping Requirements	15
	(d) Regulations of Connecticut State Agencies Incorporated into this General Permit	15
	(e) Reliance on Registration	16
	(f) Duty to Correct and Report Violations	16
	(g) Duty to Provide Information	16
	(h) Certification of Documents	16
	(i) Date of Filing	16
	(j) False Statements	17
	(k) Correction of Inaccuracies	17
	(l) Transfer of Authorization	17
	(m) Other Applicable Law	17
	(n) Other Rights	17

Section 7. Commissioner's Powers 17
 (a) Abatement of Violations 17
 (b) General Permit Revocation, Suspension, or Modification 18
 (c) Filing of an Individual Application 18

General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities

Section 1. Authority

This general permit is issued under the authority of Section 22a-430b of the General Statutes.

Section 2. Definitions

The definitions of terms used in this general permit shall be the same as the definitions contained in Section 22a-423 of the General Statutes and Section 22a-430-3(a) of the Regulations of State Agencies. As used in this general permit, the following definitions shall apply:

"Authorized activity" means any activity authorized under this general permit.

"Coastal area" shall be the same as the definition contained in Section 22a-93(5) of the General Statutes.

"Coastal waters" shall be the same as the definition contained in Section 22a-29 of the General Statutes.

"Commissioner" shall be the same as the definition contained in Section 22a-2(b) of the General Statutes.

"Construction activities" means activities including but not limited to clearing, grading, excavation, and dewatering.

"Department" means the department of environmental protection.

"Developer" means a person who or municipality which is responsible, either solely or through contract, for the design and construction of a project site.

"Dewatering wastewater" means wastewater generated from the lowering of the groundwater table, the pumping of accumulated stormwater from an excavation, or the pumping of surface water from a coffer dam, or pumping of other surface water which has been diverted into a construction site.

"Disturbance" means the execution of any of the construction activities defined above.

"Erosion" means the detachment and movement of soil or rock fragments by water, wind, ice and gravity.

"Fresh-tidal wetland" means a tidal wetland with an average salinity level of less than 0.5 parts per thousand.

"Guidelines" means the Connecticut Guidelines for Soil Erosion and Sediment Control, as amended, or as may be amended, established pursuant to Section 22a-328 of the General Statutes.

"High tide line" shall be the same as that contained in Section 22a-359(c) of the General Statutes.

"Individual permit" means a permit issued to a named permittee under Section 22a-430 of the General Statutes.

"Inland wetland" means wetlands as that term is defined in Section 22a-38 of the General Statutes.

"Municipal separate storm sewer" means conveyances for stormwater (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels or storm drains) owned or operated by any municipality and discharging directly to surface waters of the state.

"Municipality" means a city, town or borough of the state.

"Permittee" means any person who or municipality which initiates, creates or maintains a discharge in accordance with Section 3 of this general permit.

"Person" means person as defined by Section 22a-2(c) of the General Statutes.

"Point Source" means any discernible, confined and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are or may be discharged.

"Registrant" means a person who or municipality which files a registration.

"Registration" means a registration form filed with the commissioner pursuant to Section 4 of this general permit.

"Retain" means to permanently hold on-site with no subsequent point-source release as in a detention system where there is a temporary holding or delaying of the delivery of stormwater downstream.

"Sediment" means solid material, either mineral or organic, that is in suspension, is transported, or has been moved from its site of origin by erosion.

"Site" means geographically contiguous land or water on which a authorized activity takes place or on which an activity for which authorization is sought under this general permit is proposed to take place. Non-contiguous land or water owned by the same person and connected by a right-of-way which such person controls and to which the public does not have access shall be deemed the same site.

"Soil" means any unconsolidated mineral and organic material of any origin.

"Stabilize" means the use of pavement, establishment of vegetation, use of geotextile materials, use or organic or inorganic mulching materials, or retention of existing vegetation to prevent erosion.

"Stormwater" means waters consisting of precipitation runoff.

"Tidal wetland" means a wetland as that term is defined in Section 22a-29(2) of the General Statutes.

"Total disturbance" means the total area on a site that will be exposed or susceptible to erosion during the course of a project.

"Upland soils" means soils which are not designated as poorly drained, very poorly drained, alluvial, or flood plain by the National Cooperative Soils Survey, as may be amended from time to time, of the Soil Conservation Service of the United States Department of Agriculture and/or the Inland Wetlands Commission of the community in which the project will take place.

"Water company" shall be the same as the definition contained in Section 25-32a of the General Statutes.

Section 3. Authorization Under This General Permit

(a) *Eligible Activities*

The following activity is authorized by this general permit, provided the requirements of subsection (b) of this section are satisfied and the activity is conducted in accordance with the conditions listed in Section 6 of this general permit:

The discharge of stormwater and dewatering wastewater from construction activities which result in the disturbance of five or more total acres of land area on a site.

(b) *Requirements for Authorization*

This general permit authorizes the activity listed in subsection (a) of this section provided:

(1) Registration

A completed registration with respect to such activity has been filed with the commissioner.

(2) Coastal Management Act

Such activity must be consistent with all applicable goals and policies in Section 22a-92 of the General Statutes, and must not cause adverse impacts to coastal resources as defined in Section 22a-93(15) of the General Statutes.

(3) Endangered and Threatened Species

Such activity must not threaten the continued existence of any species listed pursuant to Section 26-306 of the General Statutes as endangered or threatened and must not result in the destruction or adverse modification of habitat designated as essential to such species.

(4) The stormwater is *not* discharged to a Publicly Owned Treatment Works or to ground water;

(5) No effluent limitations, standard or guidelines adopted by the U.S. Environmental Protection Agency under the Federal Clean Water Act are applicable to the discharge;

(6) The discharge shall *not* cause pollution due to acute or chronic toxicity to aquatic and marine life, impair the biological integrity of aquatic or marine ecosystems, or result in an unacceptable risk to human health.

(7) Any construction site which is registered under the General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities, issued October 1, 1992, is authorized by this general permit provided that the site continues to meet the conditions listed in Section 6 of this general permit.

(c) *Geographic Area*

This general permit applies throughout the State of Connecticut.

(d) *Effective Date and Expiration Date of this General Permit*

This general permit is effective on October 1, 1997, and expires on October 1, 2002.

(e) *Effective Date of Authorization*

Any activity is authorized by this general permit on the date the general permit becomes effective or on the date the activity is initiated, whichever is later.

(f) *Revocation of an Individual Permit*

If an activity which is eligible for authorization under this general permit and such activity is presently authorized by an individual permit, the existing individual permit may be revoked by the commissioner upon a written request by the permittee. If the commissioner revokes such individual permit in writing, such revocation shall take effect on the effective date of authorization of such activity under this general permit.

(g) *Issuance of an Individual Permit*

If the commissioner issues an individual permit under Section 22a-430 of the General Statutes, authorizing an activity authorized by this general permit, this general permit shall cease to authorize that activity beginning on the date such individual permit is issued.

Section 4. Registration Requirements

(a) *Who Must File a Registration*

With the exception noted below, any person who or municipality which initiates, creates, originates or maintains a discharge described in Section 3(a) of this general permit shall file with the commissioner a registration form which meets the requirements of Section 4 of this general permit along with the applicable fee.

If a site has been previously registered under the General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities issued October 1, 1992, the permittee does *not* need to submit a new registration under this general permit, unless the site has been transferred.

If the site for which a registration is submitted under this permit is owned by one person or municipality but is leased or, in some other way, the legal responsibility of another person or municipality (the developer), the developer is responsible for submitting the registration required by this permit. The registrant is responsible for compliance with all conditions of this permit.

(b) *Scope of Registration*

A registrant shall register on one registration form only those discharges which are operated by such permittee on one site.

(c) *Contents of Registration*

(1) Fees

- (A) The registration fee of \$250.00 established by Section 22a-430-6 of the Regulations of Connecticut State Agencies shall be submitted with a registration form. A registration shall not be deemed complete and no activity shall be authorized by this general permit (with the exception of activities previously registered under the general permit issued October 1, 1992), unless the registration fee has been paid in full.

Note: In accordance with Section 22a-6(b) of the General Statutes, the fee for municipalities is fifty percent of the fee listed above.

- (B) For all sites submitting a stormwater pollution control plan in accordance with Section 6(b)(3)(C) of this permit, an additional plan review fee of \$250.00 established by Section 22a-430-6 of the Regulations of State Agencies shall be submitted with the plan and the registration form and registration fee.
- (C) The registration fee and plan review fee shall be paid by check or money order payable to the Department of Environmental Protection.
- (D) The registration fee and plan review fee are non-refundable.

(2) Registration Form

A registration shall be filed on forms prescribed and provided by the commissioner and shall include the following:

- (A) Legal name, address, and telephone number of the registrant. If the registrant is a corporation or a limited partnership transacting business in Connecticut, provide the exact name as registered with the Connecticut Secretary of the State.
- (B) Legal name, address, and daytime and off-hours telephone numbers of the developer of the property on which the subject activity is to take place.
- (C) Legal name, address, and telephone number of the general contractor or other representative, if different from the developer.
- (D) Legal name, address, and telephone number of any consultant(s) or engineer(s) retained by the permittee to prepare the registration and Stormwater Pollution Control Plan.
- (E) Location address or description of the site with respect to which the registration is submitted.
- (F) The estimated duration of the construction activity.
- (G) A brief description of the construction activity, including:
- (i) Number of acres disturbed.
 - (ii) Assurance that construction is in accordance with the Guidelines and local erosion and sediment control ordinances.

(H) A brief description of the stormwater discharge, including:

(i) The name of the municipal separate storm system or immediate surface water body or wetland to which the stormwater runoff discharges, and whether or not the site discharges within 500 feet of a tidal wetland.

(ii) The name of the watershed or nearest waterbody to which the site discharges.

(I) An 8 1/2" by 11" copy of the relevant portion or a full-sized original of a United States Geological Survey (USGS) quadrangle map, with a scale of 1:24,000, showing the exact location of the site and the area within a one mile radius of the site. Identify the quadrangle name on such copy.

(J) For all sites which will disturb 10 acres or more at one time, a copy of the Stormwater Pollution Control Plan must be submitted in accordance with Section 6(b)(3)(C) of this general permit.

(K) The signature of the permittee and of the individual or individuals responsible for actually preparing the registration, each of whom shall certify in writing as follows:

"I have personally examined and am familiar with the information submitted in this document and all attachments thereto, and I certify that, based on reasonable investigation, including my inquiry of those individuals responsible for obtaining the information, the submitted information is true, accurate and complete to the best of my knowledge and belief. I understand that a false statement made in the submitted information may be punishable as a criminal offense, in accordance with Section 22a-6 of the General Statutes, pursuant to Section 53a-157b of the General Statutes, and in accordance with any other applicable statute.

I certify that this permit application is on complete and accurate forms as prescribed by the commissioner without alteration of the text.

I also certify under penalty of law that I have read and understand all conditions of the General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities issued on October 1, 1997, that all conditions for eligibility for authorization under the general permit are met, all terms and conditions of the general permit are being met for all discharges which have been initiated and are the subject of this registration, and that a system is in place to ensure that all terms and conditions of this general permit will continue to be met for all discharges authorized by this general permit at the site. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowingly making false statements."

(L) The following certification must be signed by a professional engineer, licensed to practice in Connecticut:

"I certify that I have thoroughly and completely reviewed the Stormwater Pollution Control Plan for the site. I further certify, based on such review and on my professional judgment, that the Stormwater Pollution Control Plan has been prepared in accordance with the Connecticut Guidelines for Soil Erosion and Sediment Control, as amended, and the conditions for the General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities issued on

October 1, 1997, and the controls required for such Plan are appropriate for the site. I am aware that there are significant penalties for false statements in this certification, including the possibility of fine and imprisonment for knowingly making false statements."

(d) *Where to File a Registration*

A registration shall be filed with the commissioner at the following address:

CENTRAL PERMIT PROCESSING UNIT
DEPARTMENT OF ENVIRONMENTAL PROTECTION
79 ELM STREET
HARTFORD CT 06106-5127

(e) *Additional Information*

The commissioner may require a permittee to submit additional information which the commissioner reasonably deems necessary to evaluate the consistency of the subject activity with the requirements for authorization under this general permit.

(f) *Additional Notification*

For discharges through a municipal separate storm sewer system authorized by this general permit, a copy of the registration shall also be submitted to the owner and operator of that system.

For discharges within a public drinking water supply watershed or aquifer area, a copy of the registration and the Stormwater Pollution Control Plan described in Section 6(b) of this permit shall be submitted to the water company.

In addition, a copy of this registration and the Stormwater Pollution Control Plan shall be available upon request to the local wetlands agency or its equivalent, or its duly authorized agent.

(g) *Action by Commissioner*

- (1) The commissioner may reject without prejudice a registration if he determines that it does not satisfy the requirements of subsection 4(c) of this general permit. Any registration refiled after such a rejection shall be accompanied by the fee specified in subdivision (1) of Section 4(c) of this general permit.
- (2) The commissioner may disapprove a registration if he finds that the subject activity is inconsistent with the requirements for authorization under Section 3 of this general permit, or for any other reason provided by law.
- (3) Disapproval of a registration under this subsection shall constitute notice to the registrant that the subject activity must be authorized under an individual permit.
- (4) Rejection or disapproval of a registration shall be in writing.

Section 5. Termination Requirements

(a) *Notice of Termination*

At the completion of a construction project registered pursuant to Section 4 of this general permit, a Notice of Termination must be filed with the commissioner. A project shall be considered complete after the site has been stabilized for at least three months following the cessation of construction activities.

(b) *Termination Form*

A termination notice shall be filed on forms prescribed and provided by the commissioner and shall include the following:

- (1) Permit number as provided to the permittee on the permit certificate.
- (2) Name of the registrant as reported on form DEP-PERD-REG-015.
- (3) Address of the completed construction site.
- (4) Date all storm drainage structures were cleaned of construction debris per Section 6(b)(6)(c)(iv)3) of this general permit, the date of completion of construction, and the date of the final inspections per Section 6(b)(6)(D) of this general permit.
- (5) A description of the post-construction activities at the site.
- (6) Signature of the permittee.

(c) *Where to File a Termination Form*

A termination form shall be filed with the commissioner at the following address:

PERMIT COORDINATOR
BUREAU OF WATER MANAGEMENT
DEPARTMENT OF ENVIRONMENTAL PROTECTION
79 ELM STREET
HARTFORD CT 06106-5127

Section 6. Conditions of this General Permit

The permittee shall at all times continue to meet the requirements for authorization set forth in Section 3 of this general permit. In addition, a permittee shall assure that authorized activities are conducted in accordance with the following conditions:

(a) *Conditions Applicable to Certain Discharges*

- (1) Any person who or municipality which discharges stormwater into coastal tidal waters for which a permit is required under either the Structures and Dredging Act in accordance with Section 22a-361 of the Connecticut General Statutes or the Tidal Wetlands Act in accordance with Section 22a-32 of the Connecticut General Statutes, shall obtain such permit(s) from the commissioner. A tidal wetland permit is required for the placement of any sediment upon tidal wetland, whether it is deposited directly or indirectly.
- (2) Any site which has a post-construction stormwater discharge that is located less than 500 feet from a tidal wetlands which is not a fresh-tidal wetland, shall discharge such stormwater through a system designed to retain the volume of stormwater runoff

generated by 1 inch of rainfall on the site.

(b) *Stormwater Pollution Control Plans*

The permittee shall develop a Stormwater Pollution Control Plan ("Plan") for each site authorized by this general permit, shall perform all actions required by such Plan and shall maintain compliance with the Plan thereafter. The Plan shall be designed to address two components of stormwater pollution: (1) pollution caused by soil erosion and sedimentation during and after construction; and (2) stormwater pollution caused by use of the site after construction is completed, including, but not limited to, parking lots, roadways and the maintenance of grassed areas.

(1) Development of Plan

- (A) The permittee shall develop a Stormwater Pollution Control Plan ("Plan") for the site. Plans shall be prepared in accordance with sound engineering practices. The Plan shall ensure and demonstrate compliance with the guidelines.
- (B) For any stormwater discharges that were permitted under the General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities issued October 1, 1992, the existing Plan shall be updated in accordance with subsection (b)(6) of this section. The permittee shall maintain compliance with such Plan thereafter.

(2) Deadlines for Plan Preparation and Compliance

For construction activities authorized by this general permit which are initiated after the date of issuance of this general permit, the permittee shall prepare the Plan no later than thirty days before the date of initiation of the construction activity.

(3) Signature and Plan Review

- (A) The Plan shall be signed by the permittee in accordance with subsection 6(h). The Plan shall be certified by all contractors and subcontractors in accordance with subsection (b)6(E) of this section.
- (B) The permittee shall provide a copy of the Plan, and the registration defined in Section 4 of this general permit to the following immediately upon request:
 - (i) the commissioner;
 - (ii) the local agency approving sediment and erosion plans, grading plans, or stormwater management plans, and the local official responsible for enforcement of such plans;
 - (iii) in the case of a stormwater discharge through a municipal separate storm sewer system, the municipal operator of the system;
 - (iv) in the case of a stormwater discharge located within a public drinking water supply watershed or aquifer area, the water company.

For all sites submitting a stormwater pollution control plan in accordance with part

(i) of this section, a plan review fee of \$250.00 established by Section 22a-430-6 of

the Regulations of State Agencies shall be submitted with the plan

General
Addendum No. 2

- (C) For construction activities which result in the disturbance of ten or more total acres of land area on a site at one time, the Plan shall be submitted to the commissioner no later than thirty days before the initiation of construction activities. Plans shall be submitted in conjunction with the registration submitted in compliance with Section 4 of this general permit.
- (D) The commissioner may notify the permittee at any time that the Plan and/or the site does not meet one or more of the minimum requirements of this permit. Within 7 days of such notice the permittee shall make the required changes to the Plan, perform all actions required by such revised Plan; and within 15 days of such notice submit to the commissioner a written certification that the requested changes have been made and implemented, and such other information as the commissioner requires, in accordance with subsections 6(g) and 6(h) of this general permit.

(4) Keeping Plans Current

The permittee shall amend the Plan whenever there is a change in contractors or subcontractors at the site, or a change in design, construction, operation, or maintenance at the site which has the potential for the discharge of pollutants to the waters of the state and which has not otherwise been addressed in the Plan or if the actions required by the Plan fail to prevent pollution.

(5) Failure to Prepare, Maintain or Amend Plan

In no event shall failure to complete, maintain or update a Plan in accordance with subsections (b)(1) and (4) of this section relieve a permittee of responsibility to implement any actions required to protect the waters of the state and to comply with all conditions of the permit, including but not limited to installation and maintenance of all controls and management measures described in subsection (b)(6)(C) of this section and in the guidelines.

(6) Contents of the Plan

The Plan shall include, at a minimum the following items:

(A) Site Description

- (i) A description of the nature of the construction activity;
- (ii) Estimates of the total area of the site and the total area of the site that is expected to be disturbed by construction activities;
- (iii) An estimate, including calculations if any, of the average runoff coefficient of the site after construction activities are completed and existing data describing the soil or the quality of any discharge from the site;
- (iv) A site map indicating drainage patterns and approximate slopes anticipated after major grading activities, areas of soil disturbance, the location of major structural and non-structural controls identified in the Plan, the location of areas where stabilization practices are expected to occur, areas which will be vegetated following construction, surface waters (including inland wetlands, tidal wetlands, and fresh-tidal wetlands), and locations where stormwater is discharged to a surface water (both during and post-construction); and

- (v) The name of the immediate receiving water(s) and the ultimate receiving water(s), of the discharges authorized by this general permit and areal extent of wetland acreage on the site.

(B) Construction Sequencing

Each Plan shall clearly identify the expected sequence of major construction activities on the site, including but not limited to installation of erosion and sediment control measures, clearing, grubbing, grading, cut and fill operations, drainage and utility installation, and paving and stabilization operations. This section shall include an estimated timetable for all activities, which shall be revised in accordance with subsection (4) above as necessary. Whenever possible, the site shall be phased to avoid the disturbance of over five acres at one time. The Plan shall clearly show the limits of disturbance for the entire activity and for each phase. Any Plan which shows and/or any site which disturbs over ten acres at one time requires submittal of the Plan to the commissioner, in accordance with subsection (3)(C) of this section.

(C) Controls

Each Plan shall include a description of appropriate controls and measures that will be performed at the site to prevent pollution of the waters of the state. The Plan shall clearly describe for each major activity identified in subsection (B) above, the appropriate control measures and the timing during the construction process that the measures will be implemented. (For example, perimeter controls for one portion of the site will be installed after the clearing and grubbing necessary for installation of the measure, but before the clearing and grubbing for the remaining portions of the site. Perimeter controls will be actively maintained until final stabilization of those portions of the site upgradient of the perimeter control. Temporary perimeter controls will be removed after final stabilization.) Controls shall be designed in accordance with the guidelines. Use of controls to comply with subsection (i) below which are not included in the guidelines must be approved by the commissioner or his designated agent. The description of controls shall address the following minimum components:

(i) Erosion and Sediment Controls

1) Stabilization Practices

The Plan shall include a description of interim and permanent stabilization practices, including a schedule for implementing the practices. Site plans shall ensure that existing vegetation is preserved where attainable and that disturbed portions of the site are stabilized. Stabilization practices may include but not be limited to: silt fences, temporary seeding, permanent seeding, mulching, geotextiles, sod stabilization, vegetative buffer strips, protection of trees, preservation of mature vegetation, and other vegetative and non-structural measures as may be identified by the guidelines. Where construction activities have permanently ceased or have temporarily been suspended for more than seven days, or when final grades are reached in any portion of the site, stabilization practices shall be implemented within three days. Areas which remain disturbed but inactive for at least thirty days shall receive temporary seeding in accordance with the guidelines. In all cases, stabilization measures shall be implemented as soon as possible in accordance with the guidelines.

(D) Inspection

A description of the inspection procedures which must be addressed and implemented in the following manner:

Qualified personnel (provided by the permittee) shall inspect disturbed areas of the construction activity that have not been finally stabilized, structural control measures, and locations where vehicles enter or exit the site at least once every seven calendar days and within 24 hours of the end of a storm that is 0.1 inches or greater. Where sites have been temporarily or finally stabilized, such inspection shall be conducted at least once every month for three months.

- (i) Disturbed areas and areas used for storage of materials that are exposed to precipitation shall be inspected for evidence of, or the potential for, pollutants entering the drainage system. Erosion and sediment control measures shall be observed to ensure that they are operating correctly. Where discharge locations or points are assessable, they shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving waters. Locations where vehicles enter or exit the site shall be inspected for evidence of off-site sediment tracking.
- (ii) Based on the results of the inspection, the description of potential sources and pollution prevention measures identified in the Plan shall be revised as appropriate as soon as practicable after such inspection. Such modifications shall provide for timely implementation of any changes to the site within 24 hours and implementation of any changes to the Plan within 3 calendar days following the inspection. The Plan shall be revised and the site controls updated in accordance with sound engineering practices, the guidelines, and subsections (4) and (6) (C)(i)3) above.
- (iii) A report summarizing the scope of the inspection, name(s) and qualifications of personnel making the inspection, the date(s) of the inspection, major observations relating to the implementation of the Stormwater Pollution Control Plan, and actions taken shall be made and retained as part of the Plan for at least three years after the date of inspection. The report shall be signed by the permittee, or his authorized representative.

(E) Contractors

- (i) The Stormwater Pollution Control Plan shall clearly identify each contractor and subcontractor which will perform on the site actions which may reasonably be expected to cause or have the potential to cause pollution of the waters of the State, and shall include a copy of the certification statement shown below signed by each such contractor and subcontractor. All certifications shall be included in the Plan.

(ii) Certification Statement

The Stormwater Pollution Control Plan shall include the following certification signed by each contractor and subcontractor identified in the Plan as described above:

"I certify under penalty of the law that I have read and understand the terms and conditions of the General Permit for the Discharge of Stormwater and

2) Structural Practices

The Plan shall include a description of structural practices to divert flows away from exposed soils, store flows or otherwise limit runoff and the discharge of pollutants from the site. Such practices include but may not be limited to earth dikes (diversions), drainage swales, sediment traps, check dams, subsurface drains, pipe slope drains, level spreaders, storm drain inlet protection, outlet protection, reinforced soil retained systems, gabions, and temporary or permanent sediment basins and chambers. Unless otherwise specifically approved in writing, structural measures shall be installed on upland soils.

At a minimum, for discharge points that serve an area with between 2 and 5 disturbed acres at one time, a sediment basin, sediment trap, or other control as may be defined in the guidelines for such drainage area, designed in accordance with the guidelines, shall be designed and installed. All sediment traps or basins shall provide a minimum of 134 cubic yards of water storage per acre drained and shall be maintained until final stabilization of the contributing area. This requirement shall not apply to flows from off-site areas and flows from the site that are either undisturbed or have undergone final stabilization where such flows are diverted around the sediment trap or basin. Any exceptions must be approved in writing by the commissioner.

For discharge points that serve an area with more than 5 disturbed acres at one time, a sediment basin designed in accordance with the guidelines, shall be designed and installed, which basin shall provide a minimum of 134 cubic yards of water storage per acre drained and which basin shall be maintained until final stabilization of the contributing area. This requirement shall not apply to flows from off-site areas and flows from the site that are either undisturbed or have undergone final stabilization where such flows are diverted around the sediment basin. Outlet structures from sedimentation basins shall not encroach upon a wetland. Any exceptions must be approved in writing by the commissioner.

3) Maintenance

Maintenance shall be performed in accordance with the guidelines, provided that if additional maintenance is required to protect the waters of the state from pollution, the Plan shall include a description of the procedures to maintain in good and effective operating conditions all erosion and sediment control measures, including vegetation, and all other protective measures identified in the site plan.

(ii) Dewatering Wastewaters

A description of the operational and structural practices which will be used to ensure that all dewatering wastewaters will not cause scouring or erosion or contain suspended solids in amounts which could reasonably be expected to cause pollution of waters of the State. Dewatering wastewaters shall be discharged in a manner which minimizes the discoloration of the receiving waters. Unless otherwise specifically approved by the commissioner in writing, dewatering wastewaters shall be infiltrated into the ground.

(iii) Post Construction Stormwater Management

Each plan must include a description of measures that will be installed during the construction process to control pollutants in stormwater discharges that will occur after construction operations have been completed. Unless otherwise specifically provided by the commissioner in writing, structural measures shall be placed on upland soils. This general permit only addresses the installation of stormwater management measures, and not the ultimate operation and maintenance of such structures included in such measures after the construction activities have been completed and the site has undergone final stabilization. The following measures must be implemented:

- 1) For construction activities initiated after October 1, 1992, the permittee shall install post-construction stormwater management measures designed to remove suspended solids from stormwater. A goal of 80 percent removal of total suspended solids from the stormwater discharge shall be used in designing and installing stormwater management measures. Such measures may include but are not limited to: stormwater detention structures (including wet ponds); stormwater retention structures; flow attenuation by use of open vegetated swales and natural depressions; infiltration of runoff on-site; vegetated buffer strips; sediment removal chambers or structures; and sequential systems (which combine several practices).
- 2) Velocity dissipation devices shall be placed at discharge locations and along the length of any outfall channel as necessary to provide a non-erosive velocity flow from the structure to a water course so that the natural physical and biological characteristics and functions are maintained and protected (e.g., maintenance of hydrologic conditions, such as the hydrodynamics present prior to the initiation of construction activities).
- 3) Any site which has a post-construction stormwater discharge located less than 500 feet from a tidal wetlands which is not a fresh-tidal wetland, shall discharge such stormwater through a system designed to retain the volume of stormwater runoff generated by 1 inch of rainfall on the site.

(iv) Other Controls

A description of other controls used at the site. The following controls must be implemented:

1) Waste Disposal

A description of best management practices to be performed at the site, which practices shall ensure that no litter, debris, building materials, or similar materials are discharged to waters of the State.

2) Off-site vehicle tracking of sediments and the generation of dust shall be minimized.

3) All post-construction stormwater structures shall be cleaned of construction sediment prior to filing of a termination notice pursuant to Section 5 of this general permit.

Dewatering Wastewaters from Construction Activities. I understand that as a contractor or subcontractor at the site, I am authorized by this general permit, and must comply with the terms and conditions of this permit, including but not limited to the requirements of the Stormwater Pollution Control Plan prepared for the site."

The certification shall include the name and title of the person providing the signature; the name, address and telephone number of the contracting firm; the address (or other identifying description) of the site; and the date the certification is made.

(c) Reporting and Record Keeping Requirements

- (1) The permittee shall retain copies of Stormwater Pollution Control Plans and all reports required by this general permit, and records of all data used to complete the registration to be authorized by this general permit, for a period of at least three years from the date that construction at the site is completed unless the commissioner specifies another time period in writing.
- (2) The permittee shall retain an updated copy of the Stormwater Pollution Control Plan required by this general permit at the construction site from the date construction is initiated at the site until the date construction at the site is completed.
- (3) Upon completion of construction, for sites authorized by the General Permit for the Discharge of Stormwater Associated with Commercial Activity or the General Permit for the Discharge of Stormwater Associated with Industrial Activity, the Stormwater Pollution Control Plan shall be kept as an appendix to the Stormwater Management Plan or Stormwater Pollution Prevention Plan (as applicable) for a period of at least three years from the date of completion of construction.

(d) Regulations of Connecticut State Agencies Incorporated into this General Permit

The permittee shall comply with the following Regulations of Connecticut State Agencies which are hereby incorporated into this general permit, as if fully set forth herein:

(1) Section 22a-450-3:

Subsection (b) General - subparagraph (1)(D) and subdivisions (2),(3),(4) and (5)

Subsection (c) Inspection and Entry

Subsection (d) Effect of a Permit - subdivisions (1) and (4)

Subsection (e) Duty to Comply

Subsection (f) Proper Operation and Maintenance

Subsection (g) Sludge Disposal

Subsection (h) Duty to Mitigate

Subsection (i) Facility Modifications, Notification - subdivisions (1) and (4)

Subsection (j) Monitoring, Records and Report Requirements - subdivisions (1), (6), (7), (8), (9) and (11) (except subparagraphs (9) (A) (2) and (9) (c))

Subsection (k) Bypass

Subsection (m) Effluent Limitation Violations

Subsection (n) Enforcement

Subsection (p) Spill Prevention and Control

Subsection (q) Instrumentation, Alarms, Flow Recorders

Subsection (r) Equalization

(2) Section 22a-430-4

Subsection (t) Prohibitions

Subsection (p) Revocation, Denial, Modification

Appendices

(e) *Reliance on Registration*

In evaluating the permittee's registration, the commissioner has relied on information provided by the permittee. If such information proves to be false or incomplete, the permittee's authorization may be suspended or revoked in accordance with law, and the commissioner may take any other legal action provided by law.

(f) *Duty to Correct and Report Violations*

Upon learning of a violation of a condition of this general permit, a permittee shall immediately take all reasonable action to determine the cause of such violation, correct and mitigate the results of such violation, prevent further such violation, and report in writing such violation and such corrective action to the commissioner within five (5) days of the permittee's learning of such violation. Such information shall be filed in accordance with the certification requirements prescribed in subsection 5(h) of this general permit.

(g) *Duty to Provide Information*

If the commissioner requests any information pertinent to the authorized activity or to compliance with this general permit or with the permittee's authorization under this general permit, the permittee shall provide such information within fifteen (15) days of such request. Such information shall be filed in accordance with the certification requirements prescribed in subsection 5(h) of this general permit.

(h) *Certification of Documents*

Any document, including but not limited to any notice, information or report, which is submitted to the commissioner under this general permit shall be signed by the permittee, or a duly authorized representative of the permittee, and by the individual or individuals responsible for actually preparing such document, each of whom shall certify in writing as follows:

"I have personally examined and am familiar with the information submitted in this document and all attachments thereto, and I certify that, based on reasonable investigation, including my inquiry of those individuals responsible for obtaining the information, the submitted information is true, accurate and complete to the best of my knowledge and belief. I understand that a false statement made in this document or its attachments may be punishable as a criminal offense, in accordance with Section 22a-6 of the General Statutes, pursuant to Section 53a-157b of the General Statutes, and in accordance with any other applicable statute."

(i) *Date of Filing*

For purposes of this general permit, the date of filing with the commissioner of any document is the date such document is received by the commissioner. The word "day" as used in this general permit means the calendar day; if any date specified in the general permit falls on a Saturday, Sunday, or legal holiday, such deadline shall be the next business day thereafter.

(j) *False Statements*

Any false statement in any information submitted pursuant to this general permit may be punishable as a criminal offense, in accordance with Section 22a-6, under Section 53a-157b of the General Statutes.

(k) *Correction of Inaccuracies*

Within fifteen days after the date a permittee becomes aware of a change in any information in any material submitted pursuant to this general permit, or becomes aware that any such information is inaccurate or misleading or that any relevant information has been omitted, such permittee shall correct the inaccurate or misleading information or supply the omitted information in writing to the commissioner. Such information shall be filed in accordance with the certification requirements prescribed in subsection 5(h) of this general permit.

(l) *Transfer of Authorization*

Any authorization under this general permit shall be non-transferable. However, any person registering a discharge which has previously been registered under this permit may adopt by reference the stormwater pollution control plan developed by the previous permittee. The new permittee shall amend the Plan as required by Section 6(b)(4) prior to submitting a new registration.

(m) *Other Applicable Law*

Nothing in this general permit shall relieve the permittee of the obligation to comply with any other applicable federal, state and local law, including but not limited to the obligation to obtain any other authorizations required by such law.

(n) *Other Rights*

This general permit is subject to and does not derogate any present or future rights or powers of the State of Connecticut and conveys no rights in real or personal property nor any exclusive privileges, and is subject to all public and private rights and to any federal, state, and local laws pertinent to the property or activity affected by such general permit. In conducting any activity authorized hereunder, the permittee may not cause pollution, impairment, or destruction of the air, water, or other natural resources of this state. The issuance of this general permit shall not create any presumption that this general permit should or will be renewed.

Section 7. Commissioner's Powers

(a) *Abatement of Violations*

The commissioner may take any action provided by law to abate a violation of this general permit, including but not limited to penalties of up to \$25,000 per violation per day under Chapter 446k of the General Statutes, for such violation. The commissioner may, by summary proceedings or otherwise and for any reason provided by law, including violation of this general permit, revoke a permittee's authorization hereunder in accordance with Sections 22a-3a-2 through 22a-3a-6, inclusive, of the Regulations of Connecticut State Agencies. Nothing herein shall be construed to affect any remedy available to the commissioner by law.

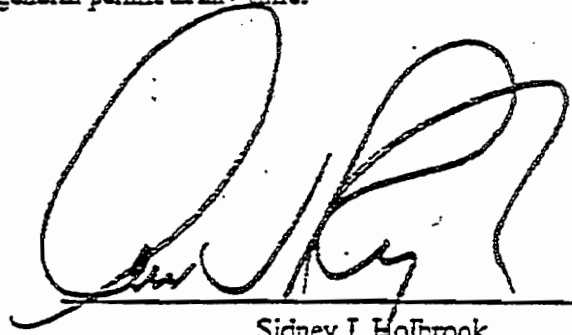
(b) *General Permit Revocation, Suspension, or Modification*

The commissioner may, for any reason provided by law, by summary proceedings or otherwise, revoke or suspend this general permit or modify to establish any appropriate conditions, schedules of compliance, or other provisions which may be necessary to protect human health or the environment.

(c) *Filing of an Individual Application*

If the commissioner notifies a permittee in writing that such permittee must obtain an individual permit if he wishes to continue lawfully conducting the authorized activity, the permittee must file an application for an individual permit within thirty (30) days of receiving the commissioner's notice. While such application is pending before the commissioner, the permittee shall comply with the terms and conditions of this general permit and the subject approval of registration. Nothing herein shall affect the commissioner's power to revoke a permittee's authorization under this general permit at any time.

Issued: October 1, 1997



Sidney J. Holbrook
Commissioner