

860-594-3150

December 15, 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

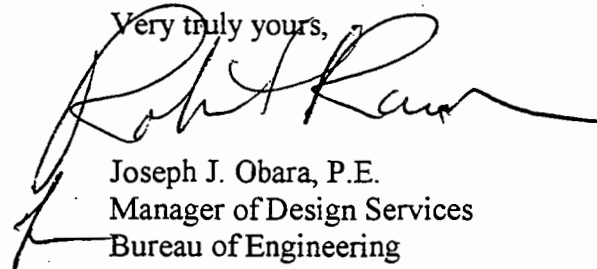
Forwarded herewith is a copy of Addendum No. 3 for the above-captioned project.

This Addendum is necessary 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

DECEMBER 13, 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. 3

SPECIAL PROVISIONS

NEW SPECIAL PROVISIONS

The following Special Provisions are hereby added:

ITEM #507901A - LAWN DRAIN
ITEM #921001A - CONCRETE SIDEWALK

REVISED SPECIAL PROVISIONS:

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

ITEM #0100780A - CRANES
ITEM #0204210A - HANDLING CONTAMINATED GROUNDWATER
ITEM #0904042A - METAL RIDGE RAIL (COMBINATION) (EXTRUDED
ALUMINUM)
ITEM #0904885A - METAL BRIDGE RAIL PROTECTIVE FENCE (5' HIGH) (CHAIN
LINK)
ITEM #0904908A - METAL BRIDE RAIL - PROTECTIVE FENCE (TYPE C)
ITEM #0904950A - METAL BRIDGE RAIL (SOLID PANEL) (TYPE A)
ITEM #0904951A - METAL BRIDGE RAIL (SOLID PANEL) (TYPE B)
ITEM #1204122A - INSTALL CITY-FURNISHED SIGNS

CONTRACT ITEMS

NEW CONTRACT ITEMS:

<u>ITEM NO.</u>	<u>DESCRIPTION</u>	<u>UNIT</u>	<u>QUANTITY</u>
507901A	LAWN DRAIN	EA.	4
921001A	CONCRETE SIDEWALK	S.F.	28,000
1801002	REPAIR OF IMPACT ATTENUATION SYSTEM TYPE A MODULE 700 LB.	EA.	4
1801003	REPAIR OF IMPACT ATTENUATION SYSTEM TYPE A MODULE 1,400 LB.	EA.	8

DELETED CONTRACT ITEMS

<u>ITEM NO.</u>	<u>DESCRIPTION</u>	<u>ORIGINAL QUANTITY</u>	<u>REVISED QUANTITY</u>
507901	LAWN DRAIN	4 EA.	0
921001	CONCRETE SIDEWALK	28,000 S.F.	0

PLANS

REVISED PLAN SHEETS

The plan sheets numbered 1-1, 23, 76, 138, 239, 241-1 and 243 are hereby deleted in their entirety and replaced with the attached like-numbered plan sheets.

On Plan Sheet Number 114-1, remove the notations "MATCH SHEET PF-4A" and on Plan Sheet Number 114-2, remove the notation "MATCH SHEET PF-7A."

QUESTIONS AND ANSWERS:

The following three questions pertain to the specifications for Metal Bridge Rail Systems. Items 904042A, 904885A, 904908A, 904950A and 904951A.

- Q. The spec for stainless steel bolts in the specs. and on the drawings is ASTM A193, grade B8 class 2 (AISI Type 316). Our bolt suppliers have told me this spec is wrong. B8 is 304 and 316 is B8M. Which spec is correct? Class 2 means strained hardened is this required? What is the spec for nuts?
- A. The requirements for the hardware supplied under these Items have been revised under this Addendum. The bolts shall conform to AISI Type 316 Stainless Steel.

Remove existing Special Provision for Item Nos. 904042A, 904885A, 904908A, 904950A and 904951A in their entirety and replace with revised Item Nos. 904042A, 904885A, 904908A, 904950A and 904951A, respectively, all of which are provided in Addendum No. 3. Also see Revised Plan Sheets 239, 241-1 and 243.

- Q. The specs. for anodizing is gray in color AA-M12-C22-A42 Architectural Class I min thickness 0.7 mils. The anodizers I have spoken to say they can not anodize gray. The A-42 0.7 mil color range is from Champagne (light bronze) to black. They can offer a Sulfuric clear anodizing Class II A-31 0.4-0.7 mils or Class I A41 0.7 mils or thicker. Is one of these specs for a clear anodizing the one you want for a "gray" color?

- A. The anodizing of these items has been revised under Addendum No. 2 to specify a clear anodized finish.
- Q. The specs. say all stainless steel hardware shall be colored gray by a thermo-chemical conversion process. The thermo-chemical conversion process changes the color to bronze only, not gray. Please advise what, if any, finish should be given to stainless steel hardware?
- A. The anodizing of these items has been revised under Addendum No. 2 to specify a clear anodized finish.
- Q. Your bid documents and detailed drawings, for the above referenced project, show the following requirements for 5' x 18' granite curb, Item #813001 and #813011. Your bid information does not include an "A" after either of the item numbers.

We find that the project specifications and detailed drawings are in conflict. The bid request form and project specifications indicate that the granite curb will comply with your Connecticut DOT Specifications Form 814. The drawings on the other hand, show something other than Connecticut DOT Specifications. They show the requirement for a 3" dress-back on the back of the curb. Our standard price for straight 5" x 18" curb is \$9.65 per lineal foot and \$13.50 per lineal foot for 5" x 18" curved stone curbing.

In order for us to comply with the detail drawing we must add to the unit prices \$5.00 per lineal foot. Was it your intention to add \$5.00 per lineal foot to your cost for granite curb? The job is scheduled to be bid on December 13, 2000. We would like to get this item clarified so that we may get our bids out to prospective bidders prior to the bid date.

- A. The Bid Proposal Form and project specifications for the granite curb Item #813001 and #813011 comply with ConnDOT Standard Specifications Form 814A.

City of New Haven Granite Curb Details are included in the drawings as mentioned. The details provided are based upon Connecticut DOT standard drawings and specifications.

Section 8.13.02 – Materials states that "materials for this work shall conform to the requirements of Article M.12.06 for granite and bluestone curbing". A review of Article M.12.06-Stone Curbing states that "On the back surface of the curbstone there shall be no projection for 3 inches down from the top which would fall outside of a plane having a batter of 4 inches in 12 inches from the back arris line."

Your company unit prices for granite curbing should reflect the standard requirements for granite curbing as stated in ConnDOT Standard Specifications Form 814A.

Q. Sheet #35 includes the typical sidewalk details. The note on the drawing states the details have been provided by the City of New Haven and have not been modified. The note #3 under Section D-D of sheet #35 differs with note #3 of the City of New Haven typical engineering standards drawing for typical sidewalk details. Please define the limits of areas adjacent to heavy traffic or vehicle loading zones, as one may interpret adjacent to heavy traffic to mean adjacent to the roadway, requiring mesh in the entire sidewalk area. The Standard Form 814A does not include reinforcement in sidewalk under Section 9.21 Concrete Sidewalks. Please clarify the payment for the wire mesh.

A. Sheet #35 shows typical Sidewalk details provided by the City of New Haven. City of New Haven Engineering Department Drawing No. STD-NH-05,06,07 dated July 1, 1998 is cited.

Mat reinforcing shall be provided in all areas specifying concrete sidewalks on the plans as shown in the above-mentioned details.

The Bid Proposal Form has been revised to delete Item No. 921001 and replace with Item No. 921001A. New Special Provision for Item No. 921001A – Concrete Sidewalk is provided.

Q. The note “Limited Time Period” under Step #4 of sheet #75 reads “Work 24 hours/day, 7 days/week from Jct. Chamber #3 Station 29+00”. Are we to interpret this to mean work 24 hours/day, 7 days/week on the installation of the 4’ x 12’ P.C. box culvert from junction chamber #3 to Station 29+00? Please clarify.

A. Yes, work 24 hours/day, 7 days/week on the installation of the 4’ x 12’ P.C. box culvert from junction chamber #3 to Station 29+00. This also includes the backfilling/compaction and preparation of the roadway, so as to provide access to the rear of the Community Health Care Clinic.

Q. Sheet #PF-5A calls to match sheet PF-4A and sheet #PF-6A calls to match sheet PF-7A for new feeders. Please provide these drawings and the limits of new feeders.

A. Sheets PF-4A and PF-7A are not required for this project. The Work Areas, Special Provisions, and Quantities are sufficient to determine the work required. The subject match call outs have been deleted by means of this Addendum (Addendum #3).

Q. Please supply the list of signs for item #1204122A “Install City Furnished Signs” pertaining to sheet #77 to #80 so we may distribute the signing on the project properly to items #1204122A and #1208922 “Sign Face – Sheet Aluminum”.

A. Under Item #1204122A “Install City Furnished Signs”, the City of New Haven will supply all Parking Regulation Signs which are to be installed by the Contractor as specified in the special provision provided.

The cost for this work shall not be distributed to #1208922 "Sign Face – Sheet Aluminum" but rather shall be paid for as Lump Sum under the Item #1204122A "Install City Furnished Signs".

The contractor bid shall be based on installation of City supplied Parking Regulation Signs spaced approximately 120 feet or where directed by the engineer.

Remove existing Special Provision for Item #1204122A – Install City Furnished Signs in its entirety and replace with revised Item No. 1204122A – Install City Furnished Signs.

- Q. Item #507901 "Lawn Drain". Please furnish the special provision and details for this item.
- A. The Bid Proposal Form has been revised to delete Item No. 507901 and replace with Item No. 507901A. New Special Provision for Item No. 507901A – Lawn Drain is provided.
- Q. Plan sheet 258 (Suggested Erection Plan Segments 1&3) what size and model crane was used to determine the crane locations?
- A. See Note 5 on Sheet No. 261. The crane locations shown were based on a generic lattice-boom crawler crane with sufficient capacity to accomplish the picks shown in the Controlling Crane Picks Table, in accordance with the Plans and Special Provisions, including any and all applicable requirements of Metro-North and AMTRAK Railroad. See also the Erection Notes on Sheet No. 256, in particular the "Note Well".
- Q. Plan sheet 258 (Suggested Erection Plan Segments 1&3) some of the tracks have hash marks over them. What do the hash marks mean?
- A. See Note 4 on Sheet No. 257. The areas shown with cross hatching are areas within the horizontal limits of the work areas that are either on or adjacent to railroad tracks, and work in areas on or adjacent to railroad tracks must be completed during outages coordinated with Metro-North and AMTRAK. Please see also the Notice to Contractor – Work on Railroad Property and the Notice to Contractor – Allowable Track and Power Outages.
- Q. Plan sheet 258 (Suggested Erection Plan Segment 1&3) why does the crane pick the girders over pier 5 from location no. 5 instead of locating approximately 120 ft. east between the tracks? Is this area off limits for some reason.
- A. See Sheet No. 257. The area to the West of Pier 5 will be occupied partially by the Waste Stockpile Area (WSA) and serves as the only access area to the WSA.
- Q. It appears from a site visit that several (if not all) of the tracks between abutment no. 1 and pier no. 1 are missing. Will these tracks be installed during or prior to this contract? If not, will the restriction that disallows simultaneous work on abutment no. 1 and pier no. 1 still be required?

- A. See the New Haven Rail Yard Projects note in the General Notes on Sheet No. 138. The existing and proposed tracks between Abutment No. 1 and Pier No. 1 are subject to the AMTRAK Project RFP No. UGJP 0026 "Locomotive Shop, Office and Materials Control Building" currently in progress.
- Q. On the Schedule of Prices, Bid Item 0978002, Traffic Drums, the item is paid for by the each, however the standard specifications 9.78.05 states they shall be paid by the day. Please clarify.
- A. Refer to Final Contract Special Provisions for Project No. 92-526, Supplemental Specifications (January 2000), page 105 shows that Section 9.78 Traffic Drums has been revised. Previous Traffic Drum pay unit of DAY is deleted and has been replaced with Each.
- Q. On the Schedule of Prices, Bid Item 07020428 Test Pile, the item is paid for by the Linear Foot, however the bid quantity is 5. Should the quantity be paid by the each instead?
- A. Addendum No. 2 revised the Bid Proposal Form to show the unit payment for Item No. 702428 Test Pile (14" Square Prestressed Concrete Piles – Pretensioned – 75' Long) as **Each**.
- Q. In discussions concerning the railroad insurance, Mr. David Jacobs (Metro North) stated that all temporary crossings would be installed and removed by Metro-North and billed directly to the Connecticut D. O. T. This is contrary to the note on plan sheet 138 which states the contractor shall construct the crossings at his own cost. Please confirm which is correct? Also, if the contractor is responsible for the construction and costs, what are the acceptable designs and specifications for these crossings?
- A. The Contractor shall make requests to the State for temporary crossings. The Department and Metro-North/AMTRAK will determine if a crossing is needed. If a temporary crossing is found to be needed, it will be provided, installed and removed by Metro-North/AMTRAK at no expense to the Contractor. The note on Sheet No. 138 has been revised under Addendum No. 3.
- Q. Sheet No. 74, M & P of T - Church St. Ext., calls out for temporary sheet piling from Sta. 24+50 to 27+00. This sheet piling is also shown on the cross sections drawing Nos. 120, 121 and 122. The unit of payment for Item #0714020A "Temporary Sheet Piling" is per square foot based on the vertical measurement from existing grade to the bottom of excavation for the length of sheet piling. There is no vertical exposed face of excavation for this length of sheet piling. How are we to be paid for the installation of this temporary sheet piling if there is no square area of measurement?
- A. Square area of measurement of temporary sheet piling shown on sheet #74 from Sta 24+50 to 27+00 shall be calculated by the length depicted multiplied by the vertical difference between finished grade and to a depth of El -12 ft.

- Q. Sheet Nos. 73 and 74, M & P of T – Church St. Ext. show construction fencing on the north side of Church Street South Ext. Please provide the details and item for payment for the construction fencing.
- A. Construction Fencing shown on Sheet Nos. 73 and 74 is for the protection of pedestrian traffic, and as such shall be paid for at the contract lump sum price under Item 971001A – Maintenance and Protection of Traffic. No separate measurement or payment shall be made.
- Q. Please provide the vertical payment limit for item #715020 “Sheet Piling Material Left-in-place”.
- A. As shown on Sheet No. 74, M & P of T – Church St. Ext., modified by Addendum No.1, Vertical pay limits for Item #715020 “Sheet Piling Material Left-in-place” shall be the difference between 2 feet below finished grade and to a depth of El -20.
- Q. The bid proposal includes the items for Temporary Impact Attenuation System Type A Module but does not include the items for Repair of Impact Attenuation System Type A Module.
- A. Item #1801001 "REPAIR OF IMPACT ATTENUATION SYSTEM TYPE A MODULE 700 LB." and ITEM #1801003 - "REPAIR OF IMPACT ATTENUATION SYSTEM TYPE A MODULE 1400 LB." have been added to the contract by means of this addendum (Addendum No. 3).
- Q. We request that CONNDOT review the representations made in the Special Provisions for item #0204210A – Handling Contaminated Groundwater. The specification provides that the system shall be capable of treating 250 gallons per minute.

We understand that this is a representation by CONNDOT that a dewatering rate of 250 gallons per minute will be sufficient to carry out the various needs for dewatering on the site.

Recently on CONNDOT Contract #301-0031 Installation of East Cut Drainage, the Contract Documents advised that a pumping (and water treatment rate) of 500 gallons per minute would be adequate to install 100’ of trench per day.

There were considerable problems with the dewatering and no significant progress was possible until CONNDOT installed an auxiliary pump in the railroad drainage system. CONNDOT would not make information available to us but we believe that the auxiliary pump was handling in excess of 1,000 gpm. Thus the total pumping required was over 1500 gpm.

Since this proposal indicates that 100’ of box culvert excavation is to be excavated at one time, and other structure footings and drainage structures will be excavated at the same time, it seems likely that dewatering pumpage will exceed 250 gallons per minute.

We suggest that CONNDOT:

1. Engage a qualified hydrologist to determine the likely rate of dewatering necessary to carryout the simultaneous dewatering necessary to maintain the required schedules on this project.
 2. Determine and advise bidders what structures must have their effluent pumped through the treatment plant and which structures may have their dewatering effluent pumped directly to sanitary sewers or storm drains.
 3. Upon carrying out 1 and 2 above modify the Specifications to provide under the item "Handling Contaminated Groundwater" a treatment plant that has an adequate capacity to treat the largest flow of contaminated groundwater expected. The plant should be designed to be operated around the clock, seven days per week, and have adequate capacity to allow shutting down portions of the plant for unloading frac tanks, changing filters and other necessary services.
- A. The Special Provisions for Item No. 0204210A – Handling Contaminated Groundwater has been modified in response to this question, to limit the amount of discharge from the groundwater treatment system.

Remove existing Special Provision for Item No. 0204210A – Handling Contaminated Groundwater in its entirety and replace with revised Special Provision for Item No. 0204210A – Handling Contaminated Groundwater.

- Q. The mast arm on the east side of the Church Street and Union Avenue intersection seems to be integral with the wall renovation for the bridge construction. I can not find any detail that shows this situation. Does one exist? Will the mast arm foundation be part of the wall pay item, or do we modify the wall to install the mast arm foundation?
- A. See Sheet No. 155. The mast arm at the east side of the Church Street and Union Avenue intersection is supported off Wingwall 1A at Station 20+65 on Union Avenue. The Mast Arm Anchorage is part of Wingwall 1A and is detailed in Section B-B and Section C-C on that same sheet. The Mast Arm Anchorage shall be paid for under the unit prices of the materials required to construct the Wingwall.
- Q. On page 8 of the Special Provisions under "Amtrak", Item 5, it is noted that work areas for Abutment 1 and Pier 1 cannot be utilized at the same time. Question. Can the contractor work on Pier 1 during the 11pm to 6am allowable work period (night shift) and then work on Abutment 1 during the day shift? Please clarify.

- A. No. When the Contractor stages his work from one of the two work areas in Parcel "G", AMTRAK will stage train maintenance, refueling, cleaning and other activities from the other work area. When the Contractor requests to switch operations from one work area to the other, AMTRAK must relocate their staging to provide an open area for the Contractor. AMTRAK has requested that the switching between areas be kept to an absolute minimum. The Contractor should plan his operations to complete as much work as possible once he occupies a work area until requesting to switch locations within Parcel "G".
- Q. Also on that same page Item 4 references tracks S1, S2 & S3, however, the plans do not show these track designations. Please clarify.
- A. Tracks S1, S2 and S3 are proposed under AMTRAK Project RFP No. UGJP 0026 as called out on the General Notes on Sheet No. 138.
- Q. What is the specification for Bid Item 0702428 – Test Pile (14" Square Prestressed Concrete Piles – Pretensioned – 75' Long)?
- A. The Specification for Bid Item 0702428 is detailed under **Section 7.02 – Piles** of the Connecticut Department of Transportation Form 814A (1995) as amended by the Supplemental Specifications and the Special Provisions.
- Q. What is the estimated length of pile for piers? (Note 3 on sheet 150 only refers to abutments, wingwalls and retaining wall 101.)
- A. See Note 10 on Sheet No. 153. The estimated pile length is such that the pile will extend to an elevation 70' below the bottom of footing.
- Q. On plan sheet 268, Note 6 states that soil borings were done in the crane work area under State Project No. 301-0039. These borings are needed to estimate the Crane item. Would you please provide these borings to the prospective bidders?
- A. The borings are included in the revised Special Provision for Item No. 0100780A for informational use.
- Remove existing Special Provision for Item No. 0100780A – Cranes in its entirety and replace with revised Special Provision for Item No. 0100780A – Cranes.
- Q. Are there any borings available for Union Street that would give an indication of soil conditions from the rail yard level to the higher elevation of Union Street?
- A. There are no borings available for Union Avenue that would give an indication of the soil conditions from the rail yard level to the higher elevation of Union Avenue.

- Q. Page 4 of the Special Provisions states that "all vehicles, equipment and materials for demolition, stockpiling and associated activities shall be delivered via existing at-grade crossings across yard tracks." Where are these crossing located? Could a plan showing their location be given to prospective bidders?
- A. Existing at-grade crossing are located where the existing yard roads cross existing yard tracks. Refer to the General Plan on Sheet Nos. 136 and 137 and the Work Area Layout Plan on Sheet No. 257.
- Q. This is a request for the "Non-Destructive Testing Report" for the existing Union Avenue retaining wall. This report is referred to in the substructure notes for Project No. 92-526 on Drawing #STR-25, Sheet #159. Note #7 reads, "Non-Destructive Testing Report for the Existing Union Avenue Retaining Wall WILL BE MADE AVAILABLE FOR THE CONTRACTOR'S REFERENCE, IF REQUESTED." Please inform me of the procedure for securing this document for review.
- A. The subject document is available for review Monday through Friday, between the hours of 7:30 a.m. to 4:30 p.m. at the location listed below:

State of Connecticut
Department of Transportation
Contracts Section, Rm. 1319 NW
2800 Berlin Turnpike
Newington, Connecticut 06131-7546

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.

ITEM #100780A – CRANES

Article 6.03.01 - Description:

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

This special provision provides requirements for the erection of the structural steel truss of Segment 2 within the New Haven Interlocking and Rail Yard. A specific erection sequence has been developed for completing the erection of the truss by the use of a single crane (hereinafter referred to as "the crane"), as shown on the Structure Drawings. The crane has a sufficient load and movement capacity to lift and move the fully assembled truss segment from temporary supports south of the Proposed Pier 2 to its final position over the Interlocking and Main Line Tracks. The fully assembled truss is the completed structure of Segment 2, including all components of the truss, remain-in-place forms, inspection platforms, proposed utilities and drainage and protective shielding/work platforms, but exclusive of the concrete bridge deck, as indicated on the plans and in these specifications. Additional permanent and/or temporary components may be included in the lift as determined by the Contractor and approved by the Engineer, with the purpose being to minimize the work required over the tracks. No temporary bents or towers will be allowed between Proposed Piers 1 and 2.

This item shall consist of all work necessary and required to complete the following: securing the crane for use on the project; mobilization and assembly of the crane; completion of the lifting and moving of the proposed truss segment into its final position; and disassembling and demobilization of the crane and the restoration of the site to its original condition.

For additional information related to the use of the crane see, "Notice to Contractor – Erection of Structural Steel Truss (Segment 2)" and the Structure Drawings.

This item shall also include, but not necessarily be limited to, the following work required to incorporate the crane into the contract:

1. Providing all equipment for lifting and moving the fully assembled proposed truss (Segment 2) from the temporary location to the proposed location, as indicated on the plans and in these specifications.
2. Providing all materials, equipment, tools, labor, transportation, including any temporary works that may be required for mobilizing, assembling, completing the lifting and moving of the truss, and disassembling and demobilizing the crane.
3. Providing all equipment, materials and temporary shoring for the protection of the existing and proposed railroad tracks, as may be required, existing utilities, including drainage systems and existing structures impacted by the work included under this item. The work also includes the protection/relocation of utilities within the foundation limits of the crane and the crane work areas as required. The Contractor is responsible for the coordination with the owner of the facility impacted, and the design and construction required to relocate/protect the utilities as approved by the owner of the utility and the Engineer.
4. The use of the crane will require a foundation analysis and design by a geotechnical

engineer employed by the Contractor, including but not limited to determination of the soil bearing capacity and settlement analysis for the construction conditions covered under this item.

5. The results of the foundation analysis may require complete foundations and/or foundation improvements for the safe operation of the crane and all other equipment required. The Contractor is responsible for determining the foundation requirements, and for providing all engineering analysis and design services required.
6. Provide all materials, labor, equipment, and incidentals required to construct any foundations/foundation improvements required.
7. Hauling and legal disposal of all excavated materials from the foundation improvements, including the removal of any existing masonry, timbers, boulders, steel piles, and all other materials including natural and/or man made obstructions, including contaminated materials.
8. This item will also include the analysis, design, furnishing, fabricating, delivering, installing, removal, and disposal of any foundation improvements, as well as the restoration of the work area at the crane to the original condition in a timely manner when the work covered under this item is completed
9. Recording and documenting any foundation improvements made.
10. The Contractor shall provide all materials, equipment, tools, labor, transportation, operations and all work incidental to completing the work under this item.

Working drawings and computations prepared by the Contractor and stamped by a Professional Engineer licensed in the State of Connecticut, shall be submitted to the Engineer, as required, for any and all work required to complete the work covered under this item, including but not limited to the following:

- Crane layout drawings, including loading charts and computations.
- Crane detail and assembly drawings, catalog cuts, parts listing.
- Crane rigging working drawings and computations, including the layout and design and detailing of the attachment of the rigging to the proposed truss.
- Structural analysis and design for all components required for the operation of the crane as required.
- Crane foundation analysis and design and working drawings.
- Utility relocation/protection drawings.

The Contractor shall provide sufficient copies of all submittals to include distribution of the submittals to those parties identified elsewhere in these specifications and Metro-North Railroad, Amtrak and ConnDOT - Rails Unit. The Contractor may have to provide additional copies of the submittals as directed by the Engineer. The Department reserves the right to approve the use of any and all Professional Engineers performing the work.

Article 6.03.02 - Materials:

Delete the entire article and replace with the following:

The materials for this work shall conform to the requirements of the Standard Specifications Form 814A, these Special Provisions, and additional specifications and codes as required by the Department, the crane manufacturer, supplier and the Contractor's Engineer and as deemed necessary by the Contractor.

Foundation Improvements:

All materials used for any foundation improvements shall conform to Division III, Materials Section of Form 814A as amended by the Special Provisions.

Article 6.03.03 - Construction Methods:

Add the following to Subarticle 1 – Shop Drawings:

The contractor shall submit working drawings to the Engineer for approval in accordance with Article 1.05.02(2). The working drawings shall be prepared, sealed and signed by a Connecticut Licensed Professional Engineer. These drawings shall include, but not be limited to, the following information:

A layout and work area plan for the operation of the crane to lift and move the proposed truss into its final position, including timetable and sequencing of the work. This shall include the sequencing and timetable to move the crane away from the tracks after the truss has been placed in its final position.

The plan shall include complete details of all materials and parts of the crane, crane assembly details including the assembly sequencing and the required work area for the assembly, assembly time schedule, equipment used for assembling the crane, rigging member sizes, elevations, sections, attachment points, details of method of detaching rigging after setting, and lateral restraint to be used during the pick. It shall include the crane pick schedule, crane capacity charts, operators experience, crane certification, crane certification test results, monitoring procedures for the truss as well as the crane and foundation during the pick, rigging design including computations, wind load analysis, results of preloading the crane work area, and the approval of the crane owner of all foundation analysis and improvement designs and results of preloading. Sufficient crane charts including safe working loads and radii, factors of safety and any other crane capacity information as deemed necessary by the Contractor, his engineer, the crane manufacturer and regulations and codes.

It shall include foundation analysis results including allowable bearing pressures and predicted settlements, dimensions, sheeting for excavations, field measurements, utility relocation or protection plans. The plan shall be accompanied by computations which shall include field measurements, foundation analysis results including allowable bearing pressure and predicted settlements, analysis and design of any required foundation improvements, crane area preload procedure. The Contractor shall submit, in addition to the aforementioned working drawings, fully checked design computations prepared by a Professional Engineer licensed by the State of Connecticut with experience in this type of work.

In addition to these submittals, the Contractor shall submit a full report detailing the results of the preloading by the crane prior to lifting and moving the truss into its final position. The Contractor shall allow sufficient time for the Department to review this submittal, prior to completing the truss erection.

The Contractor shall develop contingency plans that can be used if the truss cannot be set into its final position and must be brought back to its staging area. This plan must be submitted to the Engineer for review.

Add the following general requirements:

Protection of Coated Structural Steel: All fully coated and cured assemblies shall be protected from handling and shipping damage with the prudent use of padded slings, dunnage, separators and tie downs. Loading procedures and sequences shall be designed to protect all coated surfaces.

Erection marks for field identification of members and weight marks shall be affixed in such a manner as to facilitate removal upon final assembly without damage to the coating system.

Add the following subarticle:

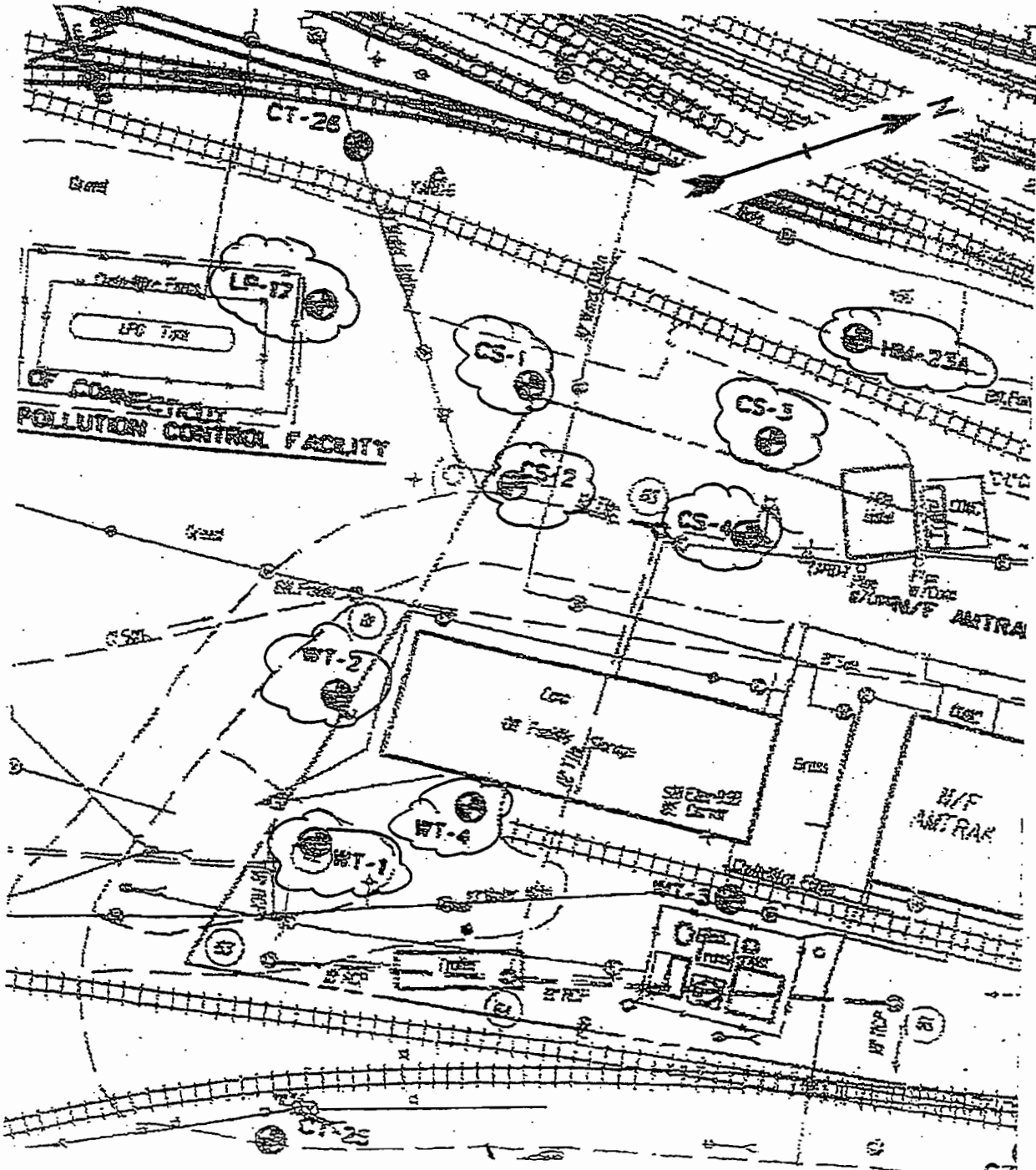
39 – High Capacity Crane

(a) Securing the Crane: The Contractor shall secure the use of a single crane with a sufficient load and movement capacity to lift and move the fully assembled structural steel truss of Segment 2 from temporary supports south of Proposed Pier 2 to the final location over the Interlocking and Mainline Tracks, as shown on the plans. The awarding of the contract will be contingent upon verification that the Contractor has secured a crane capable of completing the erection of the fully assembled truss without future modifications or waivers of the Metro-North Railroad requirement that the crane be capable of completing the operation using 150% of the load. The crane shall be provided by a company experienced in this type of work.

(b) Crane Foundation: The Contractor shall retain an experienced geotechnical engineer to analyze the foundation conditions and requirements in consultation with the owner of the crane to be used. The Contractor shall submit the resume of the Geotechnical Engineer he proposes to use for this work to the Department for approval, prior to beginning the work. The geotechnical engineer shall determine foundations required for the safe operation of the crane as required for the completion of the contract. The geotechnical engineer shall be a Professional Engineer licensed in the State of Connecticut, experienced in analysis and design of foundations for large construction loads. The geotechnical engineer shall perform the analysis and design based on loadings, bearing pressures, and settlement requirements, etc. provided by the owner of the crane to be used. The foundation analysis and the proposed crane foundation design shall be submitted to the Engineer for review. Any and all foundations required to adequately support the crane shall meet the requirements of the crane owner.

The Contractor shall submit working drawings for the as-built foundations. Drawings shall be on Mylar sheets of approved size and shall be sealed by a Registered Land Surveyor in the State of Connecticut. The Contractor shall note that limited subsurface investigations have been completed in the areas designated for the placement of the crane as shown on the "Erection

Sequence (Segment 2)" drawings. The existing subsurface borings are shown in the contract drawings in the vicinity of the bridge and work area. The Contractor shall perform additional subsurface investigations that are required to complete the analysis and design. The borings shall be coordinated with Metro-North, Amtrak, and Department and shall be performed at no cost to the State. The results of the borings shall be provided to the Engineer for review. Existing borings performed under a separate project in the location of the crane work area are included below and on the following pages for informational use.



BORING LOCATIONS

Soil Sampling Log



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STV Incorporated
 80 Ferry Boulevard
 Stratford, CT 06497

DATE START **10/11/96**
 DATE FINISHED **10/11/96**

WEIGHT OF HAMMER **140#**
 HAMMER FALL **30"**

GROUND WATER OBSERVATIONS
 DATE TIME DEPTH
10/11 0 hrs. 4'-6"

SAMPLER O.D. **2"** I.D. **1-3/8"**

TYPE OF RIG **CME 75 - Truck**

SHEET **1** OF **2**
 PROJ. NO. **96169**

LOCATION **50 Union Avenue
 New Haven, CT**

OFFSET **E551355.0 N168500.0**

GROUND ELEVATION **10.4**
 HOLE NO. **CS-1**

CASING	SAMPLER	CORE	BARREL
TYPE HSA	SS		
SIZE I.D. 3 1/4"	1-3/8"		

DEPTH	SAMPLE DEPTHS (FEET)	SAMP TYPE	BLOWS PER 6 IN. - ON SAMPLER FROM - TO				DENSITY OR CONSIST MOIST.	PROFILE CHANGE DEPTH ELEV	FIELD IDENTIFICATION OF SOILS REMARKS	SAMPLE			BORE / WELL NOT DRAWN TO SCALE
			0-6	6-12	12-18	18-24				NO.	PEN	REC.	
- 5	5' - 7'	SS	3	6	9	9	H. COMP. WET	2'	BLACK SILTY SAND, LITTLE F-C GRAVEL RED BROWN F-C SAND, TRACE OF SILT ** HARD AUGERED FIRST 5' OF BORING ** PID = 185 PPH	1	24"	15"	
- 10	10' - 12'	SS	4	3	3	6	LOOSE WET	3'	RED BROWN F-SAND, TRACE OF SILT PID = 20 PPH	2	24"	12"	
- 15	15' - 17'	SS	5	6	15	15	H. COMP. WET	13'	RED BROWN F-SAND, LITTLE SILT PID = 16 PPH	3	24"	10"	
- 20	20' - 22'	SS	2	3	3	4	LOOSE WET		PID = 3 PPH	4	24"	10"	
- 25	25' - 27'	SS	3	3	4	4	LOOSE WET		PID = 5 PPH	5	24"	14"	
- 30	30' - 32'	SS	3	3	3	3	LOOSE WET		PID = 2 PPH	6	24"	14"	
- 35	35' - 37'	SS	2	3	3	4	LOOSE WET		PID = 1 PPH	7	24"	24"	
- 40	40' - 42'	SS	3	5	6	6	H. COMP. WET		PID = 0 PPH	8	24"	24"	
- 45	45' - 47'	SS	3	6	5	11	H. COMP. WET	45' 6"	PID = 8 PPH	9	24"	24"	
- 50	50' - 52'	SS	4	3	9	12	H. COMP. WET		RED BROWN F-SAND & SILT PID = 8 PPH	10	24"	24"	

Proportions used: trace = 0-10%, Silty = 10-20%, sandy = 20-35%, and SS-60%

013

Soil Sampling Log



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STV Incorporated
 80 Ferry Boulevard
 Stratford, CT 06497

DATE START **10/11/96**
 DATE FINISHED **10/11/96**

WEIGHT OF HAMMER **140#**
 HAMMER FALL **30"**

GROUND WATER OBSERVATIONS
 DATE **10/11** TIME **0 hrs.** DEPTH **4'-6"**

SAMPLER O.D. **2"** I.D. **1-3/8"**

TYPE OF RIG **CME 75 - Truck**

SHEET **2** OF **2**
 PROJ. NO. **96169**

LOCATION **50 Union Avenue
 New Haven, CT**

OFFSET **E551355.0 N168500.0**

GROUND ELEVATION **10.4**
 HOLE NO. **CS-1**

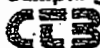
CASING	SAMPLER	CORE	BARRE
HSA	SS		
SIZE I.D.	3 1/4"	1-3/8"	

DEPTH	SAMPLE DEPTHS (FEET)	SAMP TYPE	BLOWS PER 8 IN. ON SAMPLER FROM - TO				DENSITY OR CONSIST. MOIST.	PROFILE CHANGE DEPTH ELEV	FIELD IDENTIFICATION OF SOILS REMARKS	SAMPLE			BORE / WELL *NOT DRAWN TO SCALE
			0-8	8-12	12-18	18-24				NO.	PEN	REQ.	
- 55	55'- 57'	SS	5	6	12	12	M. COMP. MET	51'-6"	RED BROWN F-SAND & SILT PID = 8 PPH	11	24"	24"	
- 60	60'- 62'	SS	5	8	10	13	M. COMP. MET		RED BROWN SAND, LITTLE SILT PID = 0 PPH	12	24"	20"	
- 65	65'- 67'	SS	4	5	10	15	M. COMP. MET		PID = 0 PPH	13	24"	24"	
- 70	70'- 72'	SS	4	7	11	15	M. COMP. MET	67'	RED BROWN SAND & SILT W/ OCCASIONAL V-TRIN LAYER OF CLAY PID = 0 PPH	14	24"	24"	
- 75	75'- 77'	SS	3	5	9	13	M. COMP. MET		PID = 0 PPH	15	24"	20"	
- 80	80'- 82'	SS	4	8	8	16	M. COMP. MET		PID = 0 PPH	16	24"	24"	
- 85								82'	BOTTOM OF BORING				
- 90									NOTE: GROUTED BORING TO SURFACE				
- 95													
- 100													

Proportions used: trace = 0-10%, Silt = 10-20%, some = 20-35%, and 35-50%

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Soil Sampling Log



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DATE START **10/16/96**
 DATE FINISHED **10/16/96**

WEIGHT OF HAMMER **140#**
 HAMMER FALL **30"**

GROUND WATER OBSERVATIONS
 DATE TIME DEPTH
10/16 9:00 am 5'-0"

SAMPLER O.D. **2"** I.D. **1-3/8"**

TYPE OF RIG **CME 45 B - Truck**

SHEET **1 OF 1**
 PROJ. NO. **96169**

LOCATION **50 Union Avenue
 New Haven, CT**

OFFSET **E551324.0 N168483.0**

GROUND ELEVATION **10.9**
 HOLE NO. **CS-2**

CASING SAMPLER CORE BARRIE
 TYPE **HSA SS**
 SIZE I.D. **3 1/4" 1-3/8"**

DEPTH	SAMPLE DEPTHS (FEET)	SAMP TYPE	BLOWS PER 6 IN. ON SAMPLER FROM - TO				DENSITY OR CONSIST. MOIST.	PROFILE CHANGE DEPTH ELEV	FIELD IDENTIFICATION OF SOILS REMARKS	SAMPLE			BORE / WELL NOT DRAWN TO SCALE
			0-6	6-12	12-18	18-24				NO.	PEN	REC.	
- 5'	5'- 7'	SS	2	1	3	3	V. LOOSE MET	BROWN F-C SAND, TRACE OF SILT, F-GRAVEL, BRICK (PETROLEUM ODR) (FILL) ** SAND AUGERED FIRST 5' OF BORING ** PID = 122 PPH	1	24"	18"		
- 10'	10'- 12'	SS	2	1	0	3	V. LOOSE MET	PID = 29 PPH	2	24"	20"		
- 15'	15'- 17'	SS	4	7	10	10	H. COMP. MET	BROWN F-SAND, LITTLE SILT RED BROWN F-C SAND, TRACE OF SILT PID = 3 PPH	3	24"	20"		
- 20'	20'- 22'	SS	4	3	3	3	LOOSE MET	PID = 0 PPH	4	24"	25"		
- 25'	25'- 27'	SS	0	0	1	1	V. LOOSE MET	RED BROWN F-SAND, LITTLE SILT PID = 8 PPH	5	24"	20"		
- 30'	30'- 32'	SS	1	2	3	4	LOOSE MET	PID = 8 PPH	6	24"	22"		
- 35'	33'- 35'	SS	1	1	2	3	V. LOOSE MET	PID = 8 PPH	7	24"	20"		
- 40'								BOTTOM OF BORING WATER LEVEL IN AUGERS IMMEDIATELY AFTER DRILLING - 11'5"					
- 45'								NOTE: GROUTED BORING TO SURFACE					
- 50'													

Proportions used: trace = 0-10%, fine = 10-20%, some = 20-35%, and 35-60%

Soil Sampling Log



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Stratford, CT 06497

SHEET 1 OF 1
PROJ. NO. 96169
LOCATION 50 Union Avenue
New Haven, CT
OFFSET E551400.0 N162566.0
GROUND ELEVATION 10.8
HOLE NO. CS-3
CASE NO. HSA
SAMPLER SS
CORE BARREL
SIZE I.D. 3/4" 1-3/8"

DATE START 10/17/96
DATE FINISHED 10/17/96
WEIGHT OF HAMMER 140#
HAMMER FALL 30"
GROUND WATER OBSERVATIONS
DATE 10/17 TIME 8:45 am DEPTH 5'-0"
SAMPLER O.D. 2" I.D. 1-3/8"
TYPE OF RIG CME 45 B - Truck

DEPTH	SAMPLE DEPTHS (FEET)	SAMP TYPE	BLOWS PER 6 IN. ON SAMPLER FROM - TO				DENSITY OR CONSIST. MOIST.	PROFILE CHANGE DEPTH ELEV	FIELD IDENTIFICATION OF SOILS REMARKS	SAMPLE			BORE / WELL NOT DRAWN TO SCALE
			0-6	6-12	12-18	18-24				NO.	PEN.	REC.	
- 5	5' - 7'	SS	3	2	1	2	V. LOOSE WET	4	BROWN F-C SAND, LITTLE F-M GRAVEL, TRACE OF SILT, CONCRETE, BRICK, COBBLES (FILL) ** HAND AUGERED FIRST 5' OF BORING **	1	24"	22"	
- 10	10' - 12'	SS	1	4	8	11	H. COMP. WET	10.5'	DARK BROWN F-C SAND, TRACE OF SILT, F-GRAVEL (PROBABLE FILL) PID = 87 PPH	2	24"	20"	
- 15	15' - 17'	SS	3	8	8	10	H. COMP. WET	10.5'	RED BROWN F-C SAND, TRACE OF SILT PID = 6 PPH	3	24"	18"	
- 20	20' - 22'	SS	6	9	9	15	H. COMP. WET	21'	PID = 4 PPH	4	24"	18"	
- 25	25' - 27'	SS	4	5	5	7	H. COMP. WET	21'	RED BROWN F-SAND, LITTLE SILT PID = 0 PPH	5	24"	22"	
- 30	30' - 32'	SS	2	4	4	4	LOOSE WET	21'	PID = 0 PPH	6	24"	24"	
- 35	33' - 35'	SS	10	6	2	6	LOOSE WET	35'	PID = 8 PPH	7	24"	20"	
- 40									BOTTOM OF BORING WATER LEVEL IN AUGERS IMMEDIATELY AFTER DRILLING - 8'4"				
- 45									NOTE: GROUTED BORING TO SURFACE				
- 50													

Proportions used: trace = 0-10%, Esp = 10-20%, some = 20-35%, and 35-50%

Soil Sampling Log



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DATE START 10/17/96
 DATE FINISHED 10/17/96

WEIGHT OF HAMMER 140#
 HAMMER FALL 30"

GROUND WATER OBSERVATIONS
 DATE 10/17 TIME 9:00 am DEPTH 4'-0"

SAMPLER O.D. 2" I.D. 1-3/8"

TYPE OF RIG CME 55 - Truck

SHEET 1 OF 2
 PROJ. NO. 96169

LOCATION 50 Union Avenue
 New Haven, CT

OFFSET E551425.0 N168548.0

GROUND ELEVATION 10.6
 HOLE NO. CS-4

CASING SAMPLER CORE BARREL
 TYPE FWC SS
 SIZE I.D. 4" 1-3/8"

DEPTH	SAMPLE DEPTHS (FEET)	SAMP TYPE	BLOWS PER 4 IN. ON SAMPLER FROM - TO				DENSITY OR CONSIST. AGST.	PROFILE CHANGE DEPTH ELEV.	FIELD IDENTIFICATION OF SOILS REMARKS	SAMPLE			BORE / WELL *NOT DRAWN TO SCALE
			0-4	6-12	12-18	18-24				NO.	PEN.	REC.	
								BROWN & BLACK F-C SAND, LITTLE GRAVEL, TRACE OF SILT (FILL) ** HARD MARGED FIRST 5' OF BORING ** BROWN BLACK F-C SAND, LITTLE SILT, F-H GRAVEL (FILL) PID = 0 PPM PIS = 0 PPM	1	24"	20"		
								RED BROWN F-C SAND, TRACE OF GRAVEL, SILT PID = 0 PPM CONDUCTED FIELD PERMEABILITY TEST AT 8' BELOW GRADE	2	26"	14"		
								PID = 0 PPM RED BROWN F-C SAND, TRACE OF SILT	3	24"	10"		
								PID = 0 PPM SAME AS ABOVE W/ LITTLE SILT	4	24"	10"		
								PID = 0 PPM	5	24"	10"		
								PID = 0 PPM	6	26"	12"		
								PID = 0 PPM	7	24"	14"		
								PID = 0 PPM	8	26"	10"		
								PID = 0 PPM	9	24"	20"		
								BOTTOM OF BORING					
								WATER LEVEL AT 4'9" ON 11/22/96					
								** 3" SPT SAMPLER USED					

Proportions used: trace = 0-10%, little = 10-20%, some = 20-35%, and 35-50%

017

Soil Sampling Log



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ESPECIALLY COMPILED FOR

STV Incorporated
80 Ferry Boulevard
Stratford, CT 06497

DATE START **10/17/96**
DATE FINISHED **10/17/96**

WEIGHT OF HAMMER : **140#**
HAMMER FALL **30"**

GROUND WATER OBSERVATIONS
DATE **10/17** TIME **9:00 am** DEPTH **4'-0"**

SAMPLER O.D. **2"** I.D. **1-3/8"**

TYPE OF RIG **CME 55 - Truck**

SHEET **2** OF **2**
PROJ. NO. **96169**

LOCATION **50 Union Avenue
New Haven, CT**

OFFSET **E551426.0 N168548.0**

GROUND ELEVATION **10.6**
HOLE NO. **CS-4**

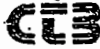
CASING **FWC** SAMPLER **SS** CORE **BARRE**

TYPE **FWC** **SS**
SIZE I.D. **4"** **1-3/8"**

DEPTH	SAMPLE DEPTHS (FEET)	SAMP TYPE	BLOWS PER 6 IN. ON SAMPLER FROM - TO				DENSITY OR CONSIST MOIST.	PROFILE CHANGE DEPTH 'ELEV'	FIELD IDENTIFICATION OF SOILS REMARKS	SAMPLE			BORE / WELL NOT DRAWN TO SCALE
			0-6	6-12	12-18	18-24				INCL	PEN	REC.	
-55								SET 2" PVC WELL PIPE 12' BELOW GRADE					
-60								GROUT -40' TO -12' SCREEN -12' TO -2' RISER -2' TO 0' SAND -12' TO -1' BENTONITE -1' TO -6" CONCRETE -6" TO 0' CURB BOX					
-65													
-70													
-75													
-80													
-85													
-90													
-95													
-100													

Proportions used: trace = 0-10%, silt = 10-20%, some = 20-35%, and 35-50%

Soil Sampling Log



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Stratford, CT 06497

SHEET 1 OF 2
PROJ. NO. 96169

LOCATION 50 Union Avenue
New Haven, CT

OFFSET E551372.0 N168604.0

GROUND ELEVATION 9.23
HOLE NO. HM-23A

CASING SAMPLER CORE BARREL

TYPE HSA SS

SIZE LD. 4" 1-3/8"

DATE START 10/07/96
DATE FINISHED 10/07/96

WEIGHT OF HAMMER 140#
HAMMER FALL 30"

GROUND WATER OBSERVATIONS
DATE TIME DEPTH
10/07 3:00 pm 4'-0"

SAMPLER O.D. 2" LD. 1-3/8"

TYPE OF RIG CME 45 B - Track

DEPTH	SAMPLE DEPTHS (FEET)	SAMP TYPE	BLOWS PER 6 IN. ON SAMPLER FROM - TO				DENSITY OR CONSIST. MORST.	PROFILE CHANGE DEPTH ELEV	FIELD IDENTIFICATION OF SOILS REMARKS	SAMPLE			BORE / WELL NOT DRAWN TO SCALE
			0-6	6-12	12-18	18-24				NO.	PEN.	REC.	
- 5	5' - 7'	SS	2	3	3	2	LOOSE WET	3*5"	BROWN F-C SAND, TRACE OF SILT, F-GRAVEL (FILL) ** HAND AUGERED FIRST 5' OF BORING **	1	24"	20"	
- 10	10' - 12'	SS	0	1	2	2	V. LOOSE WET	PSD = 11 PPM	2	24"	20"		
- 15	15' - 17'	SS	1	2	2	2	LOOSE WET	PID = 2 PPM	3	24"	20"		
- 20	20' - 22'	SS	2	1	1	1	V. LOOSE WET	PID = 0 PPM	4	24"	20"		
- 25	25' - 27'	SS	1	2	2	3	LOOSE WET	PID = 0 PPM	5	24"	16"		
- 30	30' - 32'	SS	4	5	3	4	LOOSE WET	PID = 0 PPM	6	24"	19"		
- 35	35' - 37'	SS	3	5	4	4	LOOSE WET	PID = 0 PPM	7	24"	20"		
- 40	33' - 40'	SS	5	3	3	4	LOOSE WET	PID = 0 PPM	8	24"	22"		
- 40								40'	BOTTOM OF BORING				

Proportions used: trace = 0-10%, silt = 10-20%, some = 20-35%, and 35-50%

Soil Sampling Log



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 Stratford, CT 06497

DATE START **10/07/96**
 DATE FINISHED **10/07/96**

WEIGHT OF HAMMER **140#**
 HAMMER FALL **30"**

GROUND WATER OBSERVATIONS
 DATE TIME DEPTH
10/07 3:00 pm 4'-0"

SAMPLER O.D. **2"** I.D. **1-3/8"**

TYPE OF RIG **CME 45 B - Track**

SHEET **2 OF 2**
 PROJ. NO. **96169**

LOCATION **50 Union Avenue
 New Haven, CT**

OFFSET **E551378.0 N168604.0**

GROUND ELEVATION **9.23**
 HOLE NO. **HM-23A**

CASING	SAMPLER	CORE	BARRE
HSA	SS		
SIZE I.D.	4 1/2"	1-3/8"	

DEPTH	SAMPLE DEPTHS (FEET)	SAMP TYPE	BLOWS PER 4 IN. ON SAMPLER FROM - TO				DENSITY OR CONSIST MOIST.	PROFILE CHANGE DEPTH ELEV	FIELD IDENTIFICATION OF SOILS REMARKS	SAMPLE			BORE / WELL NOT DRAWN TO SCALE
			0-6"	6-12"	12-18"	18-24"				NO.	PEN	REC.	
- 55								SET 2" PVC WELL PIPE 13' BELOW GRADE					
- 60								GROUT -40' TO -14' SAND -14' TO -13' SCREEN -13' TO -3' RISER -3' TO 0 SAND -13' TO -2' BENTONITE -2' TO -1' CONCRETE -1' TO 0 CURB BOX					
- 65													
- 70													
- 75													
- 80													
- 85													
- 90													
- 95													
- 100													

Proportions used: trace = 0-10%, Silt = 10-20%, some = 20-35%, and 35-50%

077

Soil Sampling Log



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 Stratford, CT 06497

DATE START **10/04/96**
 DATE FINISHED **10/04/96**

WEIGHT OF HAMMER **140#**
 HAMMER FALL **30"**

GROUND WATER OBSERVATIONS
 DATE TIME DEPTH
10/04 Start 5'-0"
10/04 Finish 7'-0"

SAMPLER O.D. **2"** I.D. **1-3/8"**

TYPE OF RIG **CME 45 B - Truck**

SHEET **1** OF **1**
 PROJ. NO. **96169**

LOCATION **50 Union Avenue
 New Haven, CT**

OFFSET **E551306.0 N168446.0**

GROUND ELEVATION **10.4**
 HOLE NO. **LP-17**

CASING SAMPLER CORE BARREL
 TYPE **HSA SS**
 SIZE I.D. **3 3/4" 1-3/8"**

DEPTH	SAMPLE DEPTHS (FEET)	SAMP TYPE	BLOWS PER 6 IN. ON SAMPLER FROM - TO				DENSITY OR CONSIST. MOIST.	PROFILE CHANGE DEPTH ELEV.	FIELD IDENTIFICATION OF SOILS REMARKS	SAMPLE			BORE / WELL *NOT DRAWN TO SCALE
			0-6	6-12	12-18	18-24				NO.	PEN	REC.	
								GREY BLACK F-C SAND, LITTLE F-GRAVEL (FILL) ** HAND AUGERED FIRST 5' OF BORING **					
- 5	5'- 7'	SS	2	2	2	6	LOOSE WET	4'	RED BROWN F-C SAND, TRACE OF SILT, TRACE OF F-GRAVEL PID = 50 PPM	1	24"	16"	
- 10	10'- 12'	SS	2	3	2	3	LOOSE WET		RED BROWN F-C SAND, TRACE OF SILT PID = 5 PPM	2	24"	16"	
- 15	15'- 17'	SS	2	5	3	3	LOOSE WET		RED BROWN F-SAND, LITTLE SILT PID = 0 PPM	3	24"	15"	
- 20	20'- 22'	SS	2	2	2	4	LOOSE WET		PID = 0 PPM	4	24"	14"	
- 25	23'- 25'	SS	3	5	2	4	LOOSE WET	25'	PID = 0 PPM	5	24"	15"	
- 25								BOTTOM OF BORING					
- 30													
- 35													
- 40													
- 45													
- 50													

Proportions used: trace = 0-10%, Sds = 10-20%, some = 20-35%, and 35-50%

Soil Sampling Log



CONNECTICUT TEST BORINGS, INC.
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CT: 1-800-782-8085 FAX(203) 888-0555

ESPECIALLY COMPILED FOR
STV Incorporated
80 Ferry Boulevard
Stratford, CT 06497

DATE START 09/26/96
DATE FINISHED 09/26/96

WEIGHT OF HAMMER 140#
HAMMER FALL 30"

GROUND WATER OBSERVATIONS
DATE 09/26 TIME 9:35 am DEPTH 5'-0"

SAMPLER O.D. 2" I.D. 1-3/8"

TYPE OF RIG CME 45 B - Truck

SHEET 1 OF 2
PROJ. NO. 96169

LOCATION 50 Union Avenue
New Haven, CT

OFFSET E551472.0 N168383.0

GROUND ELEVATION 9.61
HOLE NO. WT-1

CASING HSA
TYPE HSA SS
SIZE I.D. 3 1/4" 1-3/8"

DEPTH	SAMPLE DEPTHS (FEET)	SAMP TYPE	BLOCKS PER 6 IN. ON SAMPLER FROM - TO				DENSITY OR CONSIST. MOIST.	PROFILE CHANGE DEPTH ELEV	FIELD IDENTIFICATION OF SOILS REMARKS	SAMPLE			BORE / WELL NOT DRAWN TO SCALE
			0-6	6-12	12-18	18-24				NO.	PEN	REC.	
- 5	5'- 7'	SS	2	4	6	11	N. COMP. MET	10'	BLACK & GREY F-C SAND, TRACE OF SILT, LARGE COBBLES, BRICK, GLASS, STEEL, ASH, CLINDERS, SLAG (FILL) ** SAND AUGERED FIRST 5' OF BORING ** PID = 278 PPM	1	24"	12"	
- 10	10'- 12'	SS	2	3	3	4	LOOSE MET	10'	LIGHT BROWN F-C SAND, LITTLE SILT, TRACE OF BRICK (PROBABLE FILL) PID = 120 PPM	2	24"	16"	
- 15	15'- 17'	SS	5	6	5	8	N. COMP. MET	16'-6"	PID = 68 PPM -	3	24"	24"	
- 20	20'- 22'	SS	3	4	5	5	LOOSE MET	17'	GREY CLAY & SILT RED BROWN F-SAND, TRACE OF SILT PID = 3 PPM	4	24"	20"	
- 25	25'- 27'	SS	1	2	1	2	V. LOOSE MET		PID = 0 PPM	5	24"	15"	
- 30	30'- 32'	SS	2	3	2	3	LOOSE MET.		PID = 0 PPM	6	24"	18"	
- 35	35'- 37'	SS	4	4	5	6	LOOSE MET		PID = 0 PPM	7	24"	24"	
- 40	40'- 42'	SS	5	5	6	7	N. COMP. MET		PID = 0 PPM BROWN F-SAND, LITTLE SILT	8	24"	24"	
- 45	45'- 47'	SS	2	3	4	4	LOOSE MET		PID = 0 PPM	9	24"	24"	
- 50	50'- 52'	SS	4	6	7	8	N. COMP. MET		PID = 0 PPM	10	24"	18"	

Proportions used: trace = 0-10%, fine = 10-20%, some = 20-35%, and 35-50%

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Soil Sampling Log



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ESPECIALLY EQUIPPED FOR

STV Incorporated
 80 Ferry Boulevard
 Stratford, CT 06497

DATE START **09/26/96**
 DATE FINISHED **09/26/96**

WEIGHT OF HAMMER **140#**
 HAMMER FALL **30"**

GROUND WATER OBSERVATIONS
 DATE TIME DEPTH
09/26 9:35 am 5'-0"

SAMPLER O.D. **2" 1-3/8"**

TYPE OF RIG **CME 45 B - Truck**

SHEET **2** OF **2**
 PROJ. NO. **96169**

LOCATION **50 Union Avenue
 New Haven, CT**

OFFSET **E551472.0 N168363.0**

GROUND ELEVATION **9.61**
 HOLE NO. **WT-1**

CASING SAMPLER CORE BARRIE
 TYPE **HSA SS**
 SIZE I.D. **3 1/4" 1-3/8"**

DEPTH	SAMPLE DEPTHS (FEET)	SAMP TYPE	BLOWS PER 6 IN. ON SAMPLER FROM - TO				DENSITY OR CONSIST. MOIST.	PROFILE CHANGE DEPTH ELEV	FIELD IDENTIFICATION OF SOILS REMARKS	SAMPLE			BORE / WELL
			0-6	6-12	12-18	18-24				NO.	PEN	REC.	
								RED BROWN F-SAND, LITTLE SILT					
- 55	55'- 57'	SS	4	5	6	7	LOOSE MST	PID = 0 PPH	11	24"	24"		
	58'- 60'	SS	4	5	6	6	LOOSE MST	PID = 0 PPH	12	24"	24"		
- 60								60'					
- 65								BOTTOM OF BORING WATER LEVEL IN AUGERS IMMEDIATELY AFTER DRILLING - 8'					
- 70													
- 75													
- 80													
- 85													
- 90								NOTE: GROUTED BORING TO SURFACE					
- 95													
- 100													

Proportions used: trace = 0-10%, Xbs = 10-20%, some = 20-35%, and 35-50%

Soil Sampling Log



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 CT: 1-800-782-8085 FAX(203) 889-0555

ESPECIALLY COMPILED FOR

STV Incorporated
 80 Ferry Boulevard
 Stratford, CT 06497

DATE START 09/24/96
 DATE FINISHED 09/25/96

WEIGHT OF HAMMER 140#
 HAMMER FALL 30"

GROUND WATER OBSERVATIONS
 DATE TIME DEPTH
 09/25 9:25 am 5'-6"

SAMPLER O.D. 2" I.D. 1-3/8"

TYPE OF RIG CME 45 B - Truck

SHEET 1 OF 1
 PROJ. NO. 96169

LOCATION 50 Union Avenue
 New Haven, CT

OFFSET E551429.0 N163406.0

GROUND ELEVATION 10.61
 HOLE NO. WT-2

CASING SAMPLER CORE SARR
 TYPE FWC SS
 SIZE I.D. 4" 1-3/8"

DEPTH	SAMPLE DEPTHS (FEET)	SAMP TYPE	BLOWS PER 6 IN. ON SAMPLER FROM - TO				DENSITY OR CORRECT MOST.	PROFILE CHANGE DEPTH ELEV	FIELD IDENTIFICATION OF SOILS REMARKS	SAMPLE			SCORE / WELL *NOT DRAWN TO SCALE
			0-6	6-12	12-18	18-24				NO.	FEN	REC.	
								1'-6"	BLACK & DARK BROWN F-C SAND, CRUSHED STONE, ASH, CINDERS, BRICK (FILL) PID = 0 PPM				
	5'- 7'	SS	5	9	11	16	H. COMP. MET		BROWN F-SAND, TRACE OF SILT, ASH, BRICK (FILL) PID = 29 PPM ** SAND AUGERED FIRST 5' OF BORING **	1	26"	12"	
	10'- 12"	SS	23	9	8	5	H. COMP. MET		BROWN F-SAND, LITTLE F-C GRAVEL, TRACE OF SILT (STRONG FUEL ODOR) PID = 0 PPM	2	26"	10"	
	13'- 15'	SS	8	5	3	3	LOOSE MET		PID = 0 PPM	3	26"	16"	
	15'- 17'	ST	P	U	S	H		14'	GREY SILT & CLAY, TRACE OF F-SAND	4	26"	13"	
	17'- 19'	SS	1	2	3	6	LOOSE MET		BROWN F-SAND, TRACE OF SILT PID = 8 PPM	5	26"	16"	
	20'- 22'	SS	5	7	7	9	H. COMP. MET		PID = 0 PPM	6	26"	10"	
	25'- 27'	SS	3	5	6	7	H. COMP. MET		PID = 0 PPM	7	26"	10"	
	30'- 32'	SS	3	2	3	2	LOOSE MET		PID = 0 PPM	8	26"	14"	
	35'- 37'	SS	4	2	2	2	LOOSE MET		PID = 0 PPM	9	26"	10"	
	38'- 40'	SS	3	2	1	2	V. LOOSE MET		PID = 0 PPM	10	26"	16"	
								40'	BOTTOM OF BORING WATER LEVEL IN CASING IMMEDIATELY AFTER DRILLING - 5' 0"				
									NOTE: GROUTED BORING TO SURFACE * 3" SPT SAMPLER USED				

Proper Bore used: trace = 0-10%, fine = 10-20%, some = 20-35%, and 35-50%

Soil Sampling Log



CONNECTICUT TEST BORINGS, INC.
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ESPECIALLY COMPILED FOR

STV Incorporated
80 Ferry Boulevard
Stratford, CT 06497

SHEET 1 OF 2
PROJ. NO. 96169

LOCATION 50 Union Avenue
New Haven, CT

OFFSET E551479.0 N168281.0

GROUND ELEVATION 10.1
HOLE NO. WT-4

CASING SAMPLER CORE BARRE

TYPE HSA SS

SIZE LD. 3 1/8" 1-3/8"

DATE START 09/24/96
DATE FINISHED 09/24/96

WEIGHT OF HAMMER 140#
HAMMER FALL 30"

GROUND WATER OBSERVATIONS
DATE TIME DEPTH
09/24 9:05 am 6'-10"

SAMPLER O.D. 2" LD. 1-3/8"

TYPE OF RIG CME 45 B - Truck

DEPTH	SAMPLE DEPTHS (FEET)	SAMP TYPE	BLOWS PER 6 IN. ON SAMPLER FROM - TO				DENSITY OR CORREST. MOIST.	PROFILE CHANGE DEPTH ELEV	FIELD IDENTIFICATION OF SOILS REMARKS	SAMPLE		SCORE / WELL NOT DRAWN TO SCALE
			0-6	6-12	12-18	18-24				NO.	PER. REC.	
- 5	51'- 7'	SS	2	4	4	4	LOOSE MET	3'6"	ASPHALT (1") BLACK & DARK BROWN F-C SAND, CRUSHED STONE, CINDER, ASH (FILL) PID = 3 PPM	1	26" 10"	
- 10	10'- 12'	SS	1	1	1	2	V. LOOSE MET	15'6"	BROWN F-C SAND, TRACE OF SILT (FUEL OIL) ** HARD ANGERED FIRST 5' OF BORING ** PID = 102 PPM	2	26" 20"	
- 15	15'- 17'	SS	1	1	1	1	V. LOOSE MET	15'6"	PID = 7 PPM	3	26" 26"	
- 20	17'- 19'	UT	9	9	5	8	H	18'	GREY CLAY, SOME SILT, TRACE OF F-SAND, ORGANICS PID = 0 PPM	4	26" 0"	
- 20	20'- 22'	SS	2	2	2	3	LOOSE MET	18'	BED BROWN F-SAND, TRACE OF SILT PID = 0 PPM	5	26" 20"	
- 25	25'- 27'	SS	3	5	7	8	H. COMP. MET		PID = 0 PPM	6	26" 24"	
- 30	30'- 32'	SS	1	2	2	2	LOOSE MET		PID = 0 PPM	7	26" 26"	
- 35	35'- 37'	SS	3	3	3	4	LOOSE MET		PID = 0 PPM	8	26" 20"	
- 40	40'- 42'	SS	3	3	4	5	LOOSE MET		PID = 0 PPM	9	26" 26"	
- 45	45'- 47'	SS	6	7	7	9	H. COMP. MET	45'	BROWN F-SAND, LITTLE SILT PID = 0 PPM	10	26" 26"	
- 50	50'- 52'	SS	2	1	1	.3	V. LOOSE MET		PID = 0 PPM	11	26" 20"	

Proportions used: trace = 0-10%, silt = 10-20%, some = 20-35%, and 35-50%

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Soil Sampling Log



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ESPECIALLY COMPILED FOR
STV Incorporated
80 Ferry Boulevard
Stratford, CT 06497

SHEET: 2 OF 2
PROJ. NO. 96169

LOCATION: 50 Union Avenue
New Haven, CT

OFFSET: E551479.0 N168291.0

GROUND ELEVATION: 10.1
HOLE NO. WT-4

CASING	SAMPLER	CORE	BARR
HSA	SS		
SIZE I.D.	3 1/4"	1-3/8"	

DATE START: 09/24/96
DATE FINISHED: 09/24/96

WEIGHT OF HAMMER: 140#
HAMMER FALL: 30"

GROUND WATER OBSERVATIONS
DATE: 09/24 TIME: 9:05 am DEPTH: 6'-10"

SAMPLER O.D.: 2" I.D.: 1-3/8"

TYPE OF RIG: CME 45 B - Truck

DEPTH	SAMPLE DEPTHS (FEET)	SAMP. TYPE	BLOWS PER 6 IN. ON SAMPLER FROM - TO				DENSITY OR CONSIST. MOIST.	PROFILE CHANGE DEPTH ELEV.	FIELD IDENTIFICATION OF SOILS REMARKS	SAMPLE			BORE / WELL
			0-6"	6-12"	12-18"	18-24"				NO.	PER	REC.	
- 55	55' - 57'	SS	6	6	9	10	N. COSS. MET	RED BROWN F-SAND, LITTLE SILT	12	24"	24"	[Pattern]	
	58' - 60'	SS	5	8	10	12	LOOSE MET	PID = 0 PFW	13	26"	24"		
- 60								60'					
- 65								BOTTOM OF SOILING WATER LEVEL IN AUGERS IMMEDIATELY AFTER DRILLING - 6' 2"					
- 70													
- 75								SET 2" PVC BELL PIPE 13' BELOW GRADE					
- 80								GRAVEL - 60' TO - 15' SAND - 15' TO - 13' SCREEN - 13' TO - 3' RISER - 3' TO 0' SAND - 13' TO - 2' BENTONITE - 2' TO - 1' CONCRETE - 1' TO 0' CURB BOX					
- 85								WATER LEVEL AT 5:50 PM 11/22/96					
- 90													
- 95													
- 100													

Proportions used: trace = 0-10%, Silt = 10-20%, sand = 20-35%, and 35-60%

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(c) Existing Utilities: Prior to performing any work adjacent to or above any existing utilities, including drainage systems, the Contractor shall notify the owner of the facility to coordinate the work. For utilities that are impacted by the crane, the Contractor is responsible for providing protective measures to insure that the facility it is not damaged. The Contractor may elect to either temporarily or permanently relocate the facility in allowable locations as shown on the plans, and as approved by the owner of the facility and the property owner. All work performed by the Contractor shall be in accordance with the requirements of the owner of the facility involved.

If existing service lines, utilities, and utility structures to remain in service are uncovered or encountered during these operations, the Contractor shall relocate them, protect them from damage and provide support if necessary and as required. The following charted utilities are within the limits of the proposed locations of the crane foundations, as shown on the plans as follows: water mains, sanitary sewer main, underground electric line, propane gas line and tank, overhead electric and communications wires on poles and drainage system.

Should uncharted or incorrectly charted piping or other utilities be encountered during this work, the Contractor shall immediately notify the Engineer and the utility owner. The Contractor shall cooperate with the utility owner in keeping their respective service, utilities, and facilities in operation. The Contractor shall perform additional subsurface investigations to verify that the utilities within the influence of the crane have been adequately located and accounted for.

The Contractor is responsible for maintaining and protecting all existing facilities and shall repair any facility damaged due to his operations to the satisfaction of the Engineer and the owner of the facility, at no cost to the State.

The Contractor shall excavate with the utmost care in the vicinity of existing facilities to prevent damage. Hand digging shall be employed as required and as directed by the Engineer.

(d) Preloading: The Contractor shall survey the area to be used by the crane for completing the erection of the truss segment after all foundation improvements have been made. The area shall be preloaded to at least 125% of the intended loads during the full operation of the crane. The area shall be resurveyed and the results submitted to the geotechnical engineer, the crane owner and the Engineer for review. The Contractor shall provide any other additional data as required. The Contractor shall be responsible for correcting the foundation due to uneven settlement as a result of the preloading so as to insure that the operation of the crane is within the tolerances of the crane owner.

(e) Equipment: The equipment shall be in good working condition. No leaking, broken, temporarily repaired or missing parts will be allowed.

The Contractor shall have on the project site replacement parts for all major mechanical and electrical components of the crane and any non-major parts that are not locally readily available within 30 minutes during the operation of lifting and moving the truss segment into place. The Contractor shall provide proof of availability of any part as requested by the Engineer. The parts list shall be as approved and as ordered by the Engineer.

(f) Crane Operation: The crane shall be operated by a licensed operator(s) with a minimum of 10 years experience in lifts of comparable weight at the proposed radius, and successful completion of at least three lifts of comparable weight at the proposed radius. At the time of award of the contract, the crane shall be capable of making the lift as required without future modifications or waivers of Metro-North load requirements, including any required capacity chart increases above the pick weight of any governing agencies, as stated in the Special Provisions. The pick shall be performed with a heavy-duty crane with a demonstrated capacity chart in accordance with SAE J 786 and J 987. All equipment shall be maintained in satisfactory working condition and shall be operated by competent and experienced personnel throughout the operation.

Vibration or excessive wheel loads shall not be allowed within the immediate vicinity of any railroad tracks.

Track outages are required for the Contractor's work on and adjacent to the railroad right-of-way. Metro-North Railroad will determine the work that requires track outages. The Contractor shall coordinate track outages required with Metro-North Railroad.

The Contractor is required to comply with FAA requirements regarding the use of temporary cranes so that the Determination of No Hazard is granted. The markings and lights are to be included in the general cost of the project.

(g) Miscellaneous: If for any reason the truss can not be placed onto the final proposed bearings during the allowable railroad outage time, the Contractor shall be prepared to place the truss onto proposed Piers 1 and 2 on temporary supports. This will require the subsequent jacking of the truss onto its final bearings.

The Contractor is made aware that the location of the crane operation is within the 100 year flood plane, as shown on the Roadway Drawings. If necessary, the Contractor shall be prepared to follow the requirements of the "Best Management Practices for the Protection of the Environment", contained within the specifications.

Article 6.03.04 – Method of Measurement:

Add the following after the third paragraph:

The Contractor will be paid for the work under this item as follows: All labor, materials, equipment, parts, and incidentals required for the analysis, design, review, approval, furnishing, fabricating, transporting, delivery, excavation, handling, treatment, disposal, installation, preloading, measuring, adjusting, repairing, removal, treatment, and disposal of, or any other item of work associated with, any crane will not be measured for payment, but will be included under this item.

The work included under this item will be paid for upon the completion of the following milestones:

- Securing the Crane.
- Mobilization and Assembly of the Crane.
- Completion of the Lifting and Moving of the Proposed Structural Steel Truss (Segment 2).
- Disassembly and Demobilization of the Crane and Restoring the Site.

The Contractor will be paid at each milestone an amount that is based on his actual costs. Immediately after the Notice to Proceed, the Contractor shall submit to the Engineer for approval, a "Schedule of Values" that details the portion of the bid amount to be included under each milestone.

Article 6.03.05 - Basis of Payment:

Add the following after the second paragraph:

No additional payment will be made for engineering services performed by the Contractor and/or his engineers as required to incorporate the crane into the contract, in accordance with this specification and as directed by the Engineer. These services include but are not limited to structural, geotechnical, including subsurface investigations that the Contractor deems necessary to adequately design the proposed crane foundations.

No additional payment will be made for any foundation improvements required, either by the Engineer or the owner of the crane. Any foundation improvements required will be included in the unit price for structural steel completed in place.

No additional payment will be made for any utility protection or relocation associated with the crane foundation requirements or crane pick.

Immediately after the award of the contract, and included in the pay item for "Cranes", the Contractor may submit a request for payment for the full amount of the deposit that the Contractor has placed with the crane supplier to secure the crane. The Contractor shall submit with the request for this payment sufficient evidence of the amount and acceptance by the crane owner of the amount for the sole purpose of securing the crane for use on this project. The Contractor is advised that no additional payment will be made associated with any penalties invoiced by the crane company resulting from the Contractor rescheduling the time frame for use of the crane which are due to the Contractor's inability to progress the work in a timely manner.

ITEM NO. 0204210A - HANDLING CONTAMINATED GROUNDWATER

Description:

Under this item, the Contractor shall be responsible for designing, procuring, installing, operating, maintaining, cleaning and dismantling of a temporary groundwater treatment system to treat contaminated groundwater which will be generated during dewatering operations, as required within the project limits or by the Engineer. The Contractor shall be responsible for securing all necessary State and local permits, including required fees for permitting and discharging. This specification is performance based. It is anticipated that this work will involve specialty services and/or proprietary products.

Submittals:

The Contractor shall be responsible to design, procure and install materials and equipment suitable for the specified service conditions and shall submit a detailed drawing and specifications of the proposed system stamped by a Professional Engineer licensed in the State of Connecticut and shop drawings of all materials and equipment within sixty (60) days of award of contract. The Contractor shall submit working drawings showing the connection of the groundwater treatment system to the existing effluent line. The Contractor shall utilize one of the following specialty contractors:

Earth Technology
86 Leonardo Drive
North Haven, CT 06473
Phone (203) 230-2040

American Environmental Technologies
3 Trowbridge Drive
Bethel, CT 06801
Phone (203) 744-3477

EnviroShield Inc.
P. O. Box 1296
250 Moffitt Street
Stratford, CT 06615
Phone (203) 380-5644

Handex
569 Main Street
Monroe, CT 06468
Phone (203) 261-2673

Consulting Environmental Engineers, Inc.
100 Shield Street
West Hartford, CT 06110
(860) 953-0023

Within twenty (20) calendar days of the award of the contract, the Contractor shall submit to the Engineer written quotes from all five (5) environmental specialty contractors listed above, for the design, procurement, installation, operation, maintenance, and cleaning of the groundwater treatment system for the duration of the project and decontamination, demobilization, and dismantlement of the groundwater treatment system at the completion of the project.

The following information should be included in the submittal:

- Name, address and telephone and fax numbers of the firm
- Qualifications of the firm, including experience in designing, installing, operating, maintaining and cleaning a contaminated groundwater treatment system
- Resumes of key personnel to be assigned to the project
- Installation Fees
- Maintenance Fees
- Operation Fees
- Demobilization and Dismantling Fees

The Engineer will review the proposals submitted and notify the Contractor in writing of the firm(s) acceptance within ten (10) calendar days of receipt of the proposals.

The Engineer shall review the proposed design within three (3) weeks of submittal and shall provide comments as to deficiencies in the design, if any. The Contractor shall be responsible for addressing all deficiencies, including, but not limited to system redesign. The Contractor shall not be allowed to commence work activities within the project limits, as shown on the plans, until such time as the temporary groundwater treatment system design has been reviewed and accepted by the Engineer, installed and is operational. **No claim for delay in the progress of the work will be honored for failure by the Contractor to design a system to meet this performance specification.**

Materials:

Specific to system design. At a minimum the system shall consist of:

- 3-20,000 gallon fractionation tanks;
- Piping, valves, connections, union(s), wiring;
- Meters, sampling ports;
- 2 Submersible Flow Pumps;
- 4 Micron Particulate Filter Bags;
- 2-5,000 lb. Activated Carbon Filters;
- 1 heating system and other appurtenances which comprise the complete functioning system.

Construction Methods:

The groundwater treatment system shall be capable of treating groundwater contaminated with volatile organic compounds (VOCs), polynuclear aromatic hydrocarbons (PAHs), RCRA metals and Total Petroleum Hydrocarbons (TPH) to meet the discharge requirements specified in the Connecticut Department of Environmental Protection (CTDEP), General Permit for the Discharge of Groundwater Remediation Wastewater to a Sanitary Sewer. All equipment and materials used in the installation shall be resistant to these contaminants and surrounding site conditions. The maximum discharge from the groundwater treatment system is limited to two hundred fifty (250) gallons per minute (gpm). The Contractor is responsible for coordinating the excavation and dewatering activities incidental to this item to ensure the maximum discharge from the treatment system is not

exceeded. Discharge from the system shall be connected to the effluent line from the existing groundwater treatment system at the project site.

The Contractor is responsible for the installation of all equipment and connection of the treatment system to the existing effluent line. The Contractor shall submit working drawings showing the connection to the existing effluent line. The Contractor is also responsible for ensuring that the discharge from the installed system for this project does not influence, interfere, or backflow the effluent line to the existing treatment system. The connection structure to the existing effluent line shall be designed and installed in a manner to minimize disruption and impacts to the existing system. **No claim for delay will be considered based upon the Contractors failure to accommodate the permitting process or discharge requirements identified herein.**

The Contractor shall be responsible for securing all necessary permits, including fees, for treatment and discharge of contaminated groundwater to sanitary sewer.

The Engineer will sample the groundwater treatment system discharge as required by the Discharge Authorization Permit and furnish copies of the analytical results to the Contractor for submittal to the appropriate agencies. The Contractor shall submit copies of the analytical results and monitoring forms to the appropriate agencies and shall be responsible for any modifications to the system to meet the Discharge Authorization requirements.

Known groundwater contaminant concentrations from previous environmental investigations are provided in the attached tables.

The Contractor shall ensure that all personnel involved in the groundwater treatment operations understand the terms of the Discharge Authorization received from the CTDEP. In the event of a conflict between the requirements of this item and the Discharge Authorization, the terms of the Discharge Authorization shall have priority.

Prior to initial effluent discharge into the existing effluent discharge system from any level of treatment within the project limits, the Engineer will sample the treatment system discharge to verify conformance with requirements of the Discharge Authorization.

The Engineer will notify the Contractor as soon as practicable upon knowledge of an exceedance of the pollutant levels established in the Discharge Authorization upon such notification. The Contractor shall be responsible for ceasing the discharge immediately.

If required, the Contractor shall (re) start the discharge in accordance with all necessary approvals from the CTDEP and in full compliance with the Discharge Authorization and any amendments imposed thereto.

Upon completion of operations involving the use of the settling tanks/fractionation tanks or when the tanks reach 90 percent of their sediment capacity, the Engineer will sample silt and sediment collected in the settling tanks or fractionation tanks for waste characterization determination.

Disposal of the materials shall be in accordance with Item Number 202315A Disposal of Controlled Materials. The Contractor is hereby notified that laboratory turnaround time is expected to be fourteen (14) calendar days. **No claim for delay will be considered based upon the Contractor's failure to accommodate the laboratory turnaround time as identified above.**

No claim for delay will be considered based upon the environmental specialty contractor failing to operate, maintain and clean the system to meet the Contractor's production schedule.

During the periods between October 15 to April 15, the Contractor shall take precautions to ensure that the dewatering system is adequately protected against freezing. Freeze protection methods and equipment shall be approved by the Engineer.

The Contractor is responsible for all piping, valves, connections, unions, structures, etc., required to connect the temporary groundwater treatment system to the existing effluent line. The Contractor is also responsible for the closure and maintenance of the valve at the effluent line junction to prevent backflow of discharge waters to this system or to other existing system(s) utilizing the main effluent discharge pipe.

Method of Measurement:

Handling Contaminated Groundwater shall be paid for in accordance with Article 1.04.05 - Extra Work for the specialty contractor to design, procure, install, operate, maintain, clean and dismantle the contaminated groundwater treatment system, including obtaining all necessary permits and fees and electrical service for the system. This shall include all equipment, materials, appurtenances, tools, labor, and work incidental to completion of this item.

Furnishing and utilizing pumps and incidental conveyances of dewatering fluids to the treatment system will not be measured for payment under this item, as this equipment and labor associated with it are incidental to excavation items: earth excavation (Item No. 0202003A); trench excavation (Item Nos. 0205001, 0205003 & 0205005); rock in trench excavation (Item No. 0205004); and structure excavation - earth [complete] (Item No. 203004A).

The collection and disposal of materials and liquids generated during maintenance of contractor owned equipment, including decontamination activities, will not be measured for separate payment.

Basis of Payment:

The Basis of Payment for Handling Contaminated Groundwater" will include the services of a specialty contractor to design, procure, install, operate, maintain, clean and dismantle the contaminated groundwater treatment system, including obtaining all required permits and approvals, including fees for permitting and discharging. Handling Contaminated Groundwater" shall be paid for in accordance with Article 1.04.05 - Extra Work.

ITEM

PAY UNIT

Contaminated Groundwater Treatment

Estimate

ITEM #507901A – LAWN DRAIN

Description:

This item shall consist of furnishing and installing Lawn Drains where shown of the plans.

Materials:

Concrete Pipe shall be 18" Reinforced Concrete Pipe, Class IV, Wall C (ASTM C76), length as noted on the plans and conform to the requirements of Article M.08.01. Cast Iron Grate shall be Neenah Foundry Company Series R-6450-EG or approved equal. Mortar shall conform to Article M.11.04. Crushed Stone shall conform to the requirements of Article M.01.01 for No. 6 Crushed Stone. Geotextile Separation – Type A shall conform to the requirements of M.08.01-26.

Construction Methods:

Lawn Drains shall be constructed in accordance with the requirements herein and to the plans. Excavate and install a crushed stone layer wrapped in Geotextile Separation – Type A material. In a 4 foot section of pipe, cut out an opening for the outlet pipe to the invert elevation noted on the plans. The section of pipe shall then be installed vertically, with bell end upward on the crushed stone layer. Set the Grate in the bell end of the pipe. Backfill to finished grade.

Method of Measurement:

Lawn Drains will be measured for payment per each completed and accepted.

Basis of Payment:

Lawn Drains will be paid for at the contract unit price per each, complete in place, including all excavation, backfilling, materials, equipment, tools and labor incidental thereto.

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 hardware except as noted shall be stainless steel and conform to the requirements of ASTM A276, (AISI Type 316). Washers and nuts shall meet the chemical requirements of the bolts.

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 B8M (AISI Type 316). Washers shall be 316 stainless steel and conform to the requirements of ASTM A240.

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 #904885A – METAL BRIDGE RAIL PROTECTIVE FENCE (5' HIGH)(CHAIN LINK)

Description:

Work under this item shall consist of furnishing and installing chain link fencing in accordance with the details shown on the plans or as ordered and in conformance with these specifications.

Materials:

The Contractor shall provide Materials Certificates and Certificates of Compliance in accordance with Article 1.06.07 for all materials conforming to ASTM A53 (E or S Grade B) and AASHTO M181.

Materials for this work shall conform to the following:

1. Fabric: The fabric shall be aluminum coated steel woven wire of the chain link type. It shall be No. 9 gage wire woven to form a two-inch 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.
2. Posts and Rails: Metal posts and rails shall be standard steel pipe conforming to the requirements of ASTM A53 (E or S Grade B) or with AASHTO M181, Grade 2, all to be galvanized in conformance with Subarticle M.10.05-2.
3. Fittings: Fittings shall conform to AASHTO M181 Sections 29-36 and shall be of the fabricator's standard design. All except the stretcher bars shall be galvanized in accordance with ASTM A153. The stretcher bars shall be galvanized in conformance with ASTM A123.
4. Wire Clamps and Wire Ties: All clamps and wire ties shall conform to the requirements of Subarticle M.10.05-4.
5. Galvanizing Compound: Galvanizing compound shall be in conformance with the requirements of Federal Specification TT-P-641b or Military Specification MIL-P- 21035.
6. 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 B8M (AISI Type 316). All washers shall be 316 stainless steel standard size and conform to ASTM A240.

7. 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.

Construction Methods:

The protective fence shall be accurately fabricated in accordance with the plans.

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.

The protective fence shall be installed in accordance with the details shown on the plans. The posts shall be placed plumb with the top and bottom rails set parallel to the top of the parapets. The fabric shall be stretched tightly between end posts and securely fastened with stretcher bar bands. The fabric shall be attached to the rails and line posts as shown on the plans.

Dome caps shall be installed on top of all posts.

Galvanized areas damaged during shipment, storage and installation shall be given two coats of galvanizing compound.

Shop Drawings: 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 rail post locations, fence details materials lists and material designations.

Method of Measurement:

This work will be measured for payment by the number of linear feet of completed and accepted Metal Bridge Rail Protective Fence (5' High)(Chain Link) measured horizontally as shown on the plans.

Basis of Payment:

This work will be paid for at the contract unit price per linear foot for "Metal Bridge Rail Protective Fence (5' High)(Chain Link)" complete 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:

1. 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 except as noted shall be stainless steel and conform to the requirements of ASTM A276, (AISI Type 316). Washers and nuts shall meet the chemical requirements of the bolts.

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 B8M (AISI Type 316). All washers shall be 316 stainless steel and conform to ASTM A240.

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 alclad 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 except as noted shall be stainless steel and conform to the requirements of ASTM A276, (AISI Type 316). Washers and nuts shall meet the chemical requirements of the bolts. Self tapping screws shall conform to AISI Type 316 stainless steel.

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 #921001A – CONCRETE SIDEWALK

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

Materials:

Add the following to Subarticle 9.21.02:

Wire mesh / mat reinforcing shall conform to the requirements of ASTM 185 (AASHTO M55).

Construction Methods:

Add the following to Subarticle 9.21.03:

8 – Wire mesh / mat reinforcing : Provide 6" x 6" No. 10 gage wire mesh / mat reinforcing in the locations and to the details shown on the plans.

Basis of Payment:

Replace Subarticle 9.21.05 with the following:

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

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

ITEM #1204122A – INSTALL CITY FURNISHED SIGNS

Description:

This item shall consist of installing signs of the type specified, furnished by the City of New Haven locations indicated on the plans or as ordered and in conformance with the plans and these specifications. The Contractor shall furnish metal sign posts, span-mounted sign brackets, mast arm-mounted sign brackets or parapet mounted sign supports.

Material:

All signs shall be furnished by the City of New Haven. Metal sign posts and parapet mounted sign supports shall conform to the requirements of Article 18.14. Sign mounting bolts shall conform to the requirements of Article 18.15.

Construction Method:

The Contractor shall arrange a schedule to pick-up the sheet aluminum signs from the City of New Haven 45 days in advance to schedule a pick-up of signs. In addition, the Contractor shall telephone 24 hours prior to the scheduled date to confirm the location and time of pick-up. Telephone. A storage fee of ten dollars per day per sign shall be charged to the Contractor for any signs not picked-up on the scheduled date.

The Contractor shall sign a receipt listing all signs furnished by the City. All signs provided by the City shall be transported and stored if necessary with care. It shall be the Contractor's responsibility from the time of pick-up until the signs are installed and accepted to repair or replace any signs damaged during delivery or during installation.

Metal sign posts shall be driven, level and plumb. Parapet-mount sign supports shall be installed as shown on the plans and shall be level and plumb. Augered holes for the installation of sign posts will not be allowed.

Basis of Payment:

This work will be paid for at the contract lump sum price for "Install City Furnished Signs" of the type specified complete in place which price shall include transportation from the pick-up source to the location, storage, metal sign post(s), span-mounted sign brackets and mast arm-mounted sign brackets, mounting hardware, including reinforcing plates and all materials, equipment, labor and work incidental thereto. Excepted therefrom will be the price for parapet-mounted sign supports which will be paid for as structural steel.