

APRIL 10, 2017
REPLACEMENT OF METRO-NORTH RAILROAD BRIDGE NO. 08012R
FEDERAL AID PROJECT NO. H121(002) & N/A
STATE PROJECT NOS. 135-301 & 301 - 163
CITY OF STAMFORD

ADDENDUM NO. 1

This Addendum addresses the following questions and answers contained on the “CT DOT QUESTIONS AND ANSWERS WEBSITE FOR ADVERTISED CONSTRUCTION PROJECTS”:

Question and Answer No. 11 and 70

SPECIAL PROVISIONS
NEW SPECIAL PROVISIONS

The following Special Provisions are hereby added to the Contract:

- NOTICE TO CONTRACTOR – PRE-BID SITE VISIT
- ITEM NO. 1208932A – SIGN FACE - SHEET ALUMINUM (TYPE IV RETROREFLECTIVE SHEETING)
- ITEM NO. 1500006A – UTILITY ADJUSTMENT

REVISED SPECIAL PROVISIONS

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

- NOTICE TO CONTRACTOR – WORK ON RAILROAD PROPERTY
- SECTION 1.03 – AWARD AND EXECUTION OF CONTRACT
- SECTION 1.05 – CONTROL OF THE WORK
- ITEM NO. 0502182A – RUBBER GRADE CROSSING

- ITEM NO. 0503020A – RAILROAD TRACK WORK
- ITEM NO. 0503471A – TURNOUT INSTALLATION
- ITEM NO. 0503004A – LIFT AND LINE EXISTING TRACK

- ITEM NO. 0969000A – PROJECT COORDINATOR
- ITEM NO. 0969050A – DOCUMENT CONTROL SPECIALIST

DELETED SPECIAL PROVISIONS

The following Special Provisions are hereby deleted in their entirety:

- ITEM NO. 1014910A – UTILITY RELOCATION
- ITEM NO. 1208928A – SIGN FACE - SHEET ALUMINUM (TYPE III REFLECTIVE SHEETING)

CONTRACT ITEMS

REVISED CONTRACT ITEMS

<u>ITEM NO.</u>	<u>DESCRIPTION</u>	<u>ORIGINAL QUANTITY</u>	<u>REVISED QUANTITY</u>
0202000A	EARTH EXCAVATION	13,293 C.Y.	11,193 C.Y.
0502182A	RUBBER GRADE CROSSING	720 L.F.	340 L.F.
0503004A	LIFT AND LINE EXISTING TRACK	3,880 L.F.	4,055 L.F.
1208932A	SIGN FACE – SHEET ALUMINUM (TYPE IV RETROREFLECTIVE SHEETING)	306 S.F.	324 S.F.

DELETED CONTRACT ITEMS

<u>ITEM NO.</u>	<u>DESCRIPTION</u>	<u>ORIGINAL QUANTITY</u>	<u>REVISED QUANTITY</u>
1208928A	SIGN FACE - SHEET ALUMINUM (TYPE III REFLECTIVE SHEETING)	18 S.F.	0 S.F.

PLANS

NEW PLANS

The following Plan Sheets are hereby added to the Contract:

01.03.025-1.A1, 01.03.026-1.A1, 01.03.027-1.A1, 01.03.038-1.A1, 01.03.039-1.A1, and 01.03.040-1.A1

REVISED PLANS

The following Plan Sheets are hereby deleted and replaced with the like-numbered Plan Sheets:

01.02.001.A1, 01.03.020.A1 and 01.05.029.A1

DELETED PLANS

The following Plan Sheets are hereby deleted in their entirety:

01.03.025, 01.03.026, 01.03.027, 01.03.038, 01.03.039, and 01.03.040

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

The Detailed Estimate Sheets do not reflect these changes.

There will be no change in the Construction Completion Date due to this Addendum.

The foregoing is hereby made a part of the contract.

NOTICE TO CONTRACTOR – PRE-BID SITE VISIT

A Pre-Bid Site Visit will be held at 10:00 AM on WEDNESDAY, APRIL 19, 2017 at Stamford Railroad Station, located at 30 Station Place in Stamford, CT. Prospective bidders are encouraged to commute via train into the station to ensure timely arrival; otherwise, fee-based parking is available at the adjacent parking garage located at 48 Station Place, Stamford CT. Prospective bidders shall meet inside the railroad station concourse no later than 10:00 AM, and will be escorted throughout the project site under the supervision of a qualified uniformed railroad flagman.

Work for this Project involves areas that are part of the railroad right-of-way and access to the area is restricted. Therefore, all bidders are strongly encouraged to attend this Pre-Bid Site Visit. **There will be no other opportunity afforded to bidders to inspect the portion of the Project site which is at track level.**

The Pre-Bid Site Visit will include a review of the project site, of the limitations of operations, and of the necessary compliance with Metro-North Railroad requirements for the Project.

All attendees must bring the following personal protective equipment: hard hats, safety vests, safety glasses, and safety shoes. No one will be allowed on the site visit without the proper safety gear.

Those planning to attend must contact Mr. Philip J. Melchionne, Contract Section, prior to April 13th, 2017, at DOTContracts@ct.gov for confirmation. You must provide your name, name of firm, phone number, and number of attendees.

Bidders are advised that no questions will be entertained at the site visit. All questions generated, as a result of the site visit must be submitted through the Pre-Bid Questions and Answers website located below:

<http://dot-contractsqanda.ct.gov/Proposals.aspx>

ITEM #1208932A - SIGN FACE-SHEET ALUMINUM (TYPE IV RETROREFLECTIVE SHEETING)

This work shall conform to Article 12.08 supplemented as follows:

Description: Add the following:

Work under this item consists of the fabrication and installation of signs designated Type A and B on all new railroad structures, including catenary structure trusses as shown on the plans or as directed by the Engineer. Work also includes the fabrication and installation of signs on all existing trusses and where missing or to be replaced as shown on the plans or as directed by the Engineer. Work also includes the fabrication and installation of phase break signs and of car marker signs at each end of the passenger platforms as applicable.

Materials: Add the following:

Type A and B signs (Sign Face - Sheet Aluminum) shall have yellow high visibility background as specified in Form 817, Section M.18.09, Type IV, and black letters.

The Contractor shall submit shop drawings and samples of the signs prior to fabrication.

Construction Methods: Add the following:

Railroad structure mounted signs shall be permanently secured using fasteners suitable for the installation of aluminum plate including Ramset fasteners subject to the Engineers approval.

Signs shall bear the number of the structure as shown on the plans.

Car Marker signs shall be permanently secured to metal sign post, which shall be installed to a minimum depth of two feet into the ground.

Pay Item	Pay Unit
SIGN FACE – SHEET ALUMINUM (TYPE IV RETROREFLECTIVE SHEETING)	SF

ITEM #1500006A – UTILITY ADJUSTMENT

Description: Work under this item shall consist of the replacement of Eversource Monopole No. 991 along with the relocation of associated conductors and static wires.

Eversource (formerly CL&P) is responsible for designing, furnishing and installing of new Monopole 991, along with relocation of conductors and removal of abandoned 991. It shall be the responsibility of the Contractor to coordinate this work with the utility company.

Materials: The materials for this work shall be furnished by Eversource per their plans and specifications.

Construction Methods: Prior to start of construction, the Contractor shall arrange and meet with the utility for scheduling and coordination regarding the work. He shall inform the Engineer of the scheduled meeting at least 5 days before the meeting. The Engineer may attend at his discretion. The Contractor shall, within five (5) days after the meeting, file documentation of that meeting and the resulting agreements in a project memorandum to the Engineer. The memorandum shall indicate the scheduled date for the start of the utility relocation work and a proposed sequence of operations.

The contract plan shows the approximate location of the existing utility structure, as well as the new utility pole. Eversource is solely responsible for the design and implementation of the utility pole.

The Contractor shall contact the following personnel at Eversource:

Engineering: Dan Garstka (860)728-4533

Eversource will perform following described work:

- Design New Monopole 991;
- Install New Monopole 991;
- Relocate 115kV conductors and static wire from old pole to new pole;
- Remove abandoned Monopole 991 and foundation;

Method of Measurement: Work under this item will be measured for payment by the actual invoice submitted to the Contractor by Eversource for work related to 991.

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

The Department will pay the Contractor its actual costs for UTILITY ADJUSTMENT plus an additional 5% as reimbursement for the Contractor's administrative expense in connection with the services provided.

03/10/17

The invoice must include documentation/invoice(s) from Eversource.

Pay Item
UTILITY ADJUSTMENT

Pay Unit
EST

NOTICE TO CONTRACTOR - WORK ON RAILROAD PROPERTY

The Contractor acknowledges that work to be accomplished under this Contract is to be performed on Railroad territory, which consists of territory operated by Metro-North Commuter Railroad (Railroad). The Contractor's work must be accomplished simultaneously with ongoing daily railroad operations. Such operations include, but are not limited to, the passage of trains, storage of trains, flagging, inspection, repair, construction, reconstruction, and maintenance of the railroad right-of-way and facilities.

The Contractor is advised that the Railroad controls all activity in their respective right-of-way, and the Department expects that these conditions may cause delays and possibly a complete suspension of construction activity. If the Contractor is delayed or suspended in the completion of the work by railroad operations, the Contractor will be entitled to a time extension for every day that he can demonstrate that the delays affected the completion date of the contract. This extension of time will be considered non-compensable. The Contractor will not be entitled to any additional compensation for damages incurred for all direct and indirect costs including, but not limited to, all delay and impact costs, and inefficiencies as a result of railroad operational delays.

Additionally, the Contractor is advised, that this contract contains periods reserved exclusively for work that must be performed by the Railroad and the contractor will not be allowed on the tracks or to interfere with Railroad while that work is conducted. The Railroad shall notify the Engineer upon completion of their work and the Engineer shall notify the contractor when work may resume.

The Contractor shall be responsible for the coordination of the work of his various subcontractors. The Contractor shall coordinate his operations with those of the Railroad Company in carrying out railroad force account work.

The Contractor's employees, and the employees of all subcontractors, who will be entering the jobsite within railroad territory, must undergo the new online railroad safety training program. The Contractor is responsible for ensuring that all employees on the jobsite have been trained. No additional compensation will be allowed to the Contractor for employees' time for taking this training. Refer to the special provisions and to Article 1.05.06 entitled "Cooperation with Utilities (Including Railroads)."

The Contractor must make his own arrangements with the Railroad for the use of railroad equipment or changes in railroad facilities made solely to facilitate the Contractor's operations. The expense incurred by making such arrangements shall not be a part of this contract.

All matters requiring Railroad Company approval or coordination shall be directed to:

Mr. David Willard
Assistant Director - Capital Projects
Metro-North Railroad Company
525 Water Street, 3rd Floor
Bridgeport, CT 06601

GENERAL INSURANCE INFORMATION FOR THE NEW HAVEN LINE:

For the purpose of complying with Section 1.03, the following information is provided:

Normal speed of passenger trains is **50 mph** in the area of the work. Normal speed of freight is **40 mph** in the area of the work.

In the Stamford Station area, there are in a 24 hour weekday period:

- (250) Scheduled Metro-North Passenger Trains
- (8) Extra Trains
- (50) Amtrak Trains
- (4) Freight Trains

SECTION 1.03 - AWARD AND EXECUTION OF CONTRACT

Article 1.03.07 – Insurance - is supplemented as follows:

The first paragraph is revised as follows:

Before the Contract is executed, the Contractor must file with the Commissioner a certificate of insurance, fully executed by an insurance company or companies satisfactory to the Commissioner, on a form acceptable to the Department, for the insurance policy or policies required below, which policy or policies shall be in accordance with the terms of said Certificate of Insurance. Continuance of the required insurance during the entire term of the Contract shall be the responsibility of the Contractor and is a condition of the Contract.

Add the following to the second paragraph:

"In addition, the contractor is required to file certificates of insurance with Metro-North Commuter Railroad at least 30 days prior to commencing any work within the Railroad right-of-way. Certificates are to be sent to: Ms. Sharon Sebro, Risk Analyst, Metro-North Railroad Risk and Insurance Management Department, 2 Broadway, 21st floor, New York, NY, 10004, Phone: 646-252-1429, Email: ssebro@mtahq.org. Ms. Priscilla Yen may also be contacted for questions at 646-252-1437 or Pyen@mtahq.org. "

"The Contractor is warned that entrance to the railroad property will not be allowed by the Railroad Company if there are outstanding charges remaining against the Contractor for Railroad Services rendered on prior projects. No request for an extension of time will be considered as a result of any delay to the Contractor's operations caused by the Contractor's indebtedness to the railroad. It is agreed that providing of any conductors, flagmen, or other employees shall not relieve the contractor from liability or payment for any damages caused by his operations.

If any insurance specified within this Article shall be provided on a claims-made basis, then in addition to coverage requirements, such policy shall provide that:

- 1) The policy retroactive date must coincide with or precede the Contractor's start of work (including subsequent policies purchased as renewals or replacements),
- 2) The Contractor shall maintain insurance for at least two years following project completion,
- 3) If insurance is terminated for any reason, the Contractor agrees to purchase an extended reporting provision of at least two years to report claims arising from Work performed in connection with this Contract, and,
- 4) The policy must allow for reporting of circumstances or incidents that might give rise to future claims.

"The Contractor shall assume any and all deductibles in the described insurance policies contained herein. Except as otherwise indicated in the detailed coverage paragraphs below, self-insured retentions and policy deductibles shall not exceed \$100,000, unless such increased deductible or retention is approved by the State and Metro-North Railroad/MTA."

GENERAL

For coverage provided as per Article 1.03.07, Subarticle 2, 3, 5, and 6 as amended herein, the State shall be named as additional insured."

Add the following after the second paragraph:

The Contractor shall produce, within five (5) business days, a copy or copies of all applicable insurance policies when requested by the State. In providing said policies, the Contractor may redact provisions of the policy that are proprietary. This provision shall survive the suspension, expiration or termination of this contract.

In Subarticle 1 - Worker's Compensation Insurance, after ". . . in accordance with the requirements of State law", add the following: ". . ., or with limits of liability of not less than \$1,000,000 for each accident or illness, whichever is greater."

In Subarticle 1 – Worker’s Compensation Insurance, in the second paragraph, replace the first sentence “Employer’s Liability...amounts not less than \$100,000 per accident...\$100,000 per employee...”with the following:

“Employer’s Liability insurance shall be provided in amounts not less than \$2,000,000 which limit may be met by a combination of primary and excess insurance meeting the statutory limits of the laws of the state in which the work is preformed, whichever is greater."

In Subarticle 2 – Commercial General Liability Insurance, delete the end of the first sentence after: ". . . which shall provide coverage . . ." (ie: "for each accident or occurrence destruction of property."), and replace with: ". . . which shall provide coverage under this policy, or policies, with limits of liability of not less than \$2,000,000 per occurrence, combined single limit for bodily injury, (including disease or death), personal injury and property damage (including loss of use) liability."

Add the following to Subarticle 2 – Commercial General Liability Insurance:

"Contractual Liability, Products, and Completed operations, Broad Form Property Damage and Independent Contractors coverages shall have all railroad exclusions deleted. The “named as an additional insured” shall be as noted in Subarticle 15. Any Umbrella/Excess Policy used to meet the minimum contract requirements must follow form of the underlying policy and be extended to “drop down” to become primary in the event the primary policy is exhausted."

Replace the “Limits of Coverage” chart in Subarticle 2 – Commercial General Liability Insurance with the following:

Contract Amount (\$)	Minimum Single Occurrence Limit (\$)	Minimum Annual Aggregate Limit (\$)
0-10,000,000	3,000,000	3,000,000

GENERAL

>10,000,000	4,000,000	8,000,000
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Add the following to Subarticle 3 - Automobile Liability Insurance:

"A policy is issued to and covering the Contractor's tools and equipment, including automotive equipment used by the Contractor in the work which is the subject of this contract. Coverage shall be on all-risk basis. The State of Connecticut is to be named as an additional insured as respects its interest in the covered property, and the insurance shall include an insurer's waiver of subrogation in favor of each Party insured thereunder."

Replace Subarticle 4 - Owner's and Contractor's Protective Liability Insurance for and in the Name of The State with the following:

With respect to the Contractor's Project operations and also those of its subcontractors, the Contractor shall carry, for and on behalf of the State, insurance which shall provide coverage of at least \$1,000,000 for each accident or occurrence resulting in damages from (1) bodily injury to or death of persons and/or (2) injury to or destruction of property. Subject to that limit per accident or occurrence, the policy shall provide an aggregate coverage of at least \$3,000,000 for all pertinent damages arising during the policy period.

Delete Subarticle 5 - Railroad Protective Liability Insurance, and replace with the following:

"5. Railroad Protective Liability and Property Damage Liability Insurance: The Contractor shall carry this insurance with respect to the Project operations it performs, and also those performed by its subcontractors, on ISO/RIMA Form, for and on behalf of (in the name of) those appearing in Subarticle 14. Those entities under Subarticle 14, shall be listed and named as additional insured on all policies taken for this project. The policy shall carry combined single limits for both coverages A and B of not less than \$2,000,000 per occurrence for losses arising out of bodily injury or death, and for damage to or destruction of railroad property. "Physical Damage to Property" under the Railroad Protective shall mean the direct and accidental loss of or damage to rolling stock and their contents, mechanical construction equipment or motive power equipment, railroad tracks, roadbed, catenaries, signals, bridges, or buildings.

This policy shall be endorsed to the effect that for the purposes of this insurance, the employees of the Railroad Company, as listed below, shall be considered the same as regular employees of the Contractor: a) Any watchman, flagman, and similar employee who is employed by the Railroad and is specifically assigned or furnished by the Railroad for work in connection with the project, or, b) Any employee of the Railroad while operating the work trains or other equipment assigned to the project by the Railroad and while engaged in the performance of work directly involved in the Contract."

Revise Subarticle 7 – Termination or Change of Insurance as follows:

GENERAL

In the first sentence, after "...notify the Department...", add "and the Railroad...".

Delete subsections 8, 9, and 10 and replace them with the following:

8. Compensation:

There shall be no direct compensation allowed the Contractor on account of any premium or other charge necessary to obtain and keep in effect any insurance or bonds in connection with the Project, but the thereof shall be considered included in the general cost of the Project work.

Add Subarticle 11 after Subarticle 10, as follows:

"11. Contractual Liability Insurance: The Contractor shall provide Insurance to indemnify the State against all claims as described in Article 1.07.10."

Add Subarticle 12 after Subarticle 11, as follows:

"12. Structural Injury and Builders Risk: For vertical (building) construction work only, the Contractor shall furnish evidence of insurance to the Department with respect to the operations the Contractor performs, and also those performed by its subcontractors, it carries on its own behalf Structural Injury Insurance providing for a total limit of \$1,500,000 for all damages arising out of bodily injuries to or death of all persons in any one accident or occurrence, and, subject to that limit per accident, a total (or aggregate) limit of \$3,000,000 for all damages arising out of injury to or destruction of property in any one accident or occurrence. In addition to structural injury coverage for property damages caused by covered perils, the Contractor must carry builder's risk (fire extended coverage) insurance, at a level not less than Fifty Percent (50%) of the Total Bid Amount for this project. Coverage shall be All Risk and on a Completed Value basis, including labor and materials in place, on site, in storage off-site, or in transit. Those entities appearing in Subarticle 14 and the Construction Contractors shall be named as insured with respects to their interests in the property."

Add Subarticle 13 after Subarticle 12, as follows:

"13. Proof of Insurance: Upon receipt of written request, the contractor shall furnish to the Railroad, a signed copy of the policy for Contractor's Commercial General Liability Insurance, Protective Liability Insurance and the Railroad Protective Liability Insurance. If any work is subcontracted, the Contractor shall furnish a signed copy of the policy for Contractor's Public Liability Insurance for each subcontractor requested."

Add Subarticle 14 after Subarticle 13, as follows:

"14. Additional Insured: Change the last sentence of the only paragraph as follows:

GENERAL

“Each policy shall waive the right of recovery (waiver of subrogation) against the State of Connecticut or the Railroad and the described insurance shall be primary coverage.”

In Subarticle 15 – State Named as Additional Insured, change the last sentence of the only paragraph to as follows:

“Each policy shall waive the right of recovery (waiver of subrogation) against the State of Connecticut or the Railroad and the described insurance shall be primary coverage.”

After the only paragraph, add the following:

“For coverage provided under this Article, Subarticle 5 – Railroad Protective Liability Insurance, as amended herein, the names of the “Additional Insured” shall be as indicated below:

Metro-North Railroad (MNRR)
Metropolitan Transportation Authority of New York (MTA)
State of Connecticut, Its Agents and Assigns
CSX Transportation, Inc. & New York Central Lines LLC
National Railroad Passenger Corporation (AMTRAK)
Providence and Worcester Railroad Company (P&W)
Housatonic Railway

Note: For projects with limits of construction that cross the Connecticut/New York State Line into New York, “American Premier Underwriters” shall also be shown as an additional insured.”

In Subarticle 16 – Termination or Change of Insurance, following every occurrence of “...the Department...” add “and the Railroad...”

Article 1.03.08 - Notice to Proceed and Commencement of Work:

Change the first paragraph to read as follows:

The Contractor shall commence and proceed with the Contract work on the date specified in a written Notice to Proceed issued by the Engineer to the Contractor. The date specified will be no later than 45 calendar days after the date of the execution of the Contract by the Department, however, the contractor is hereby put on notice that it is the Department’s intent to issue the Notice to Proceed no later than 24 calendar days after the date of the execution of the Contract by the Department.

GENERAL

SECTION 1.05 - CONTROL OF THE WORK

Article 1.05.02 - Plans, Working Drawings and Shop Drawings: Amend as follows:

Add the following:

Each submittal shall include the name and contact information for an individual familiar with the submittal and who will be available to answer questions should they arise during the review.

Sub-article 1.05.02 (2) – Working Drawings: is supplemented by the following:

Delete the first paragraph and add the following:

When required by the contract documents or when ordered by the Engineer, the Contractor shall prepare and submit in digital format complete set(s) of working drawings for review before fabrication. When working drawing submittals include materials, parts, fabrications, etc. supplied by others, any shop drawings, catalog cuts, assembly drawings, etc. for those materials, parts, fabrications, etc., shall be included for information only with the working drawing submission, to the following:

Mr. Domenic LaRosa, P.E.
Assistant District Engineer – District 3
Connecticut Department of Transportation
140 Pond Lily Ave, New Haven, CT 06515

Sub-article 1.05.02 (3) – Shop Drawings: is supplemented by the following:

Add the following:

When required by the contract documents or when ordered by the Engineer, the Contractor shall prepare and submit in digital format complete set(s) of shop drawings for review and approval before fabrication. When shop drawing submittals include materials, parts, fabrications, etc. supplied by others, any shop drawings, catalog cuts, assembly drawings, etc. for those materials, parts, fabrications, etc., shall be included for information only with the shop drawing submission, to the Engineer for review and approval before fabrication.

The Contractor shall submit one (1) copy of the transmittal only for all submittals of shop drawings, catalog cuts, data sheets and other descriptive literature to the following:

Mr. Domenic LaRosa, P.E.
Assistant District Engineer – District 3
Connecticut Department of Transportation
140 Pond Lily Ave, New Haven, CT 06515

Mr. Ronald G. Sacchi, P.E.

AECOM
500 Enterprise Drive
Rocky Hill, Connecticut 06067
(860) 529-8882

Traffic Signals

When required by the contract documents or when ordered by the Engineer, The Contractor shall prepare and submit in digital format complete set(s) of shop drawings, catalog cuts, data sheets and other descriptive literature for all State owned traffic signal and illumination items to the Division of Traffic for approval before fabrication, to the following:

State Owned Traffic Signals:

Connecticut Department of Transportation
Division of Traffic
2800 Berlin Turnpike
P.O. Box 317546
Newington, Connecticut 06131-7546
(860) 594-2791

When required by the contract documents or when ordered by the Engineer, The Contractor shall prepare and submit in digital format complete set(s) of shop drawings, catalog cuts, data sheets and other descriptive literature for all City owned traffic signal and illumination items for approval before fabrication, to the following:

City Owned Traffic Signals:

Traffic Engineering Department
Stamford Government Center
888 Washington Boulevard
7th Floor
Stamford, CT 06901
(203) 977-5466

Illumination

When required by the contract documents or when ordered by the Engineer, The Contractor shall prepare and submit in digital format complete set(s) of shop drawings, catalog cuts, data sheets and other descriptive literature for all State owned highway illumination items to the Division of Traffic for approval before fabrication, to the following:

State Owned Highway Illumination:

Mr. Christopher Bonsignori
Principal Engineer of Facilities Design
Bureau of Engineering and Construction
Connecticut Department of Transportation
P.O. Box 317546
Newington, Connecticut 06131-7546
Attention: Jon H. Andrews

After review of such drawings, the Engineer will digitally stamp each drawing as "No Exceptions Noted," "Exceptions as Noted," or "Revise and Resubmit." Each drawing stamped as "No Exceptions Noted" or "Exceptions as Noted" will be returned in digital format to the Contractor for its use. No resubmission of a drawing stamped "Exceptions as Noted" is required, but the Engineer's notes must be appropriately taken into account and implemented by the Contractor.

The Contractor shall transmit three (3) copies of the "No Exceptions Noted" or "Exceptions as Noted" shop drawings, catalog cuts, data sheets and other descriptive literature to the following:

Mr. Domenic LaRosa, P.E.
Assistant District Engineer – District 3
Connecticut Department of Transportation
140 Pond Lily Ave, New Haven, CT 06515

In the case of a drawing that is reviewed and stamped "Revise and Resubmit," the drawing will be returned in digital format to the Contractor, which shall take into account and implement all comments; the Contractor shall then resubmit in digital format the revised drawings for review and approval.

If the Contractor proposes a revision of a previously-submitted shop drawing that has been stamped "No Exceptions Noted" or "Exceptions as Noted," the Contractor shall submit in digital format the revised drawing incorporating any original Engineers notes for the Engineer's review. Any such resubmitted shop drawing shall clearly indicate, in a revision block, the date and precise nature of the revision, as well as its location on the revised drawing.

Article 1.05.06—Cooperation with Utilities (Including Railroads) – is supplemented as follows:

Add the following after the last paragraph:

The construction of the utility corridor under the railroad as part of Project 135-326 and the relocation by the utilities of existing electric, telephone and cable ducts in Atlantic Street needs to be completed prior to construction of the center pier and lowering of Atlantic Street. The Contractor, as part of the work, shall make himself aware of the utility work schedule and coordinate his work activities so as not to conflict with the utility work. Coordination to include but not be limited to reviewing utility work schedules, attendance at Project 135-326 project meetings, contacting Project 135-326 State personnel and or Contractor and or contacting the utility company representatives.

“Special Requirements Regarding Work in Metro-North territory:”

Description:

This section covers authority, definitions, regulatory requirements, traffic regulation and coordination of the Contractor's work schedule with the operation of train service, construction equipment and safety requirements for working within railroad right-of-way, and provisions for storage of materials and equipment and worker safety rules. Subsequent to the Engineer's

Pre-construction meeting and prior to commencement to contract activities, a working on the railroad meeting will be held by the Engineer to emphasize these Specifications.

Permission to Enter Upon Railroad Property

Permission is hereby granted to the Contractor to enter property of the State, under the custody and control of the Department and managed by Metro-North Commuter Railroad Company (hereinafter called "Railroad"), a public benefit corporation and subsidiary of Metropolitan Transportation Authority (hereinafter called "MTA"). The purpose of this permission shall be solely for those outlined in this contract and under the following terms and conditions:

- I. Location and Access. Permission is hereby granted to the Contractor and its subcontractor(s), if any, to enter the property within the Project Limits identified on the Contract Plans (hereinafter called the "Property").
- II. Liability. The Contractor covenants and agrees to at all times indemnify, protect and save harmless the "Additional Insureds", as defined under Article V, from and against any and all losses, damages, detriments, suits, claims, demands, costs, and charges which the "Additional Insureds" may directly or indirectly suffer, sustain, or be subjected to by or on account of the Contractor's entry upon, occupancy or use of the Property, or the conduct thereon of the Contractor, its subcontractors, officers, employees, agents or invitees, whether such loss or damage be suffered or sustained by the "Additional Insureds" directly or persons (including employees of "Additional Insureds" or Corporations who may seek to hold the "Additional Insureds" liable therefore), and whether attributable to the fault, failure or negligence of the "Additional Insureds" or otherwise.
- III. Consideration. The Contractor will pay to the Railroad, the sum of Zero Dollars (\$0.00) for the right to enter upon the Property.
- IV. Terms of Permit. The Railroad reserves the right to revoke this permission at any time. Unless subsequently modified, this shall begin with Notice to Proceed and shall end at Contract Completion Date at which time it shall expire automatically. Under no circumstances shall this temporary permission be construed as granting the Contractor any rights, title or interest of any kind or character in, on, or about the land or premises of MTA or Railroad thereafter. The Permittee agrees to notify the Railroad when use of the Property or work is completed.
- V. Definitions of Terms and Permissible Abbreviations:

Authority of the Railroad Engineer - This supplements Section 1.05.01 in that all contract work upon or affecting railroad property, right-of-way or facilities, shall also be subject to the approval of the Senior Director, Capital Programs of the Railroad or his duly authorized representative, through coordination with the Engineer.

Additional Insureds - Those individuals or entities appearing under Article 1.03.07, Paragraph 14 of the Specifications.

Conductor/Flagman - A Railroad employee qualified on the Rules of the Operating Department and qualified on the physical characteristics of the portion of the railroad

involved. He/she is the contact employee qualified to obtain the use of track. Each conductor/flagman will have the proper flagging equipment, up-to-date Railroad Operating Rules, Timetables and Safety Rules.

Coordination of Work - This supplements Section 1.05.06 in that the Contractor shall be responsible for the coordination of the work of his sub-contractors with respect to the railroad property, right-of-way or facilities.

Groundman - Class "A" employee of the Railroad's Power Department authorized to de-energize/re-energize and ground high tension power lines.

Horizontal Clearance Point - A point 10 feet from the centerline of a track.

Obstruction - An entering of the traffic envelope, also referred to as fouling.

Occupancy - Any use of track other than direct crossing.

On or Adjacent to - shall be interpreted to include space on, above and below the railroad right-of-way operated by the Railroad, as well as space on, above, and below adjacent property which the Railroad determines to affect the safe operations of service.

Qualified Railroad Employee - For the purpose of these specifications, a Qualified Railroad Employee is a Railroad employee qualified to remove track or tracks from service.

Railroad - Whenever the term "Railroad" is used without further qualification, it shall be taken to mean Metro-North Commuter Railroad Company.

Right-of-Way - The limits of railroad property on either side of tracks.

The Safety Rules - All work shall be performed in accordance with rules, regulations, procedures, and safe practices of the Railroad, FRA, OSHA, NESC and all other government agencies having jurisdiction over this project.

Track - The space between the rails plus not less than 4 feet outside each rail.

Traffic Envelope - The area encompassed by the vertical and the horizontal clearance points.

Vertical Clearance Point - A point 22 feet and 6 inches above the top of a running rail unless otherwise authorized by the Railroad.

Use of Track - Obtaining permission from the proper authority of the Railroad for track occupancy.

1 – Requirements for Performing Work on or Adjacent to the Railroad Right-of-Way

(a) General

- (1)** The Contractor should note that the proposed work involves construction operations on or adjacent to property owned by State and operated by the Railroad. In working

near an operating railroad, great care must be exercised and the Railroad's safety rules must be strictly observed.

- (2) If while completing the work covered by this contract, the tracks or other facilities of the Railroad are endangered, the Contractor shall immediately do such work as directed by the Railroad through the Engineer to restore safety. Upon failure of the Contractor to carry out such orders immediately, the Railroad may take whatever steps as are necessary to restore safe conditions. The cost and expense to the Railroad of restoring safe conditions, or of any damage to the Railroad's trains, tracks or other facilities caused by the Contractor's or subcontractor's operations, shall be considered a charge against the Contractor and shall be paid for by him, or may be deducted from any monies due or that may become due him under this contract.

(b) Rules and Regulations

- (1) Railroad traffic shall be maintained at all times, and the Contractor shall conduct all of his operations on or adjacent to the Railroad right-of-way fully within the rules, regulations, and requirements of the Railroad. The Contractor shall be responsible for acquainting himself with such requirements as the Railroad may demand. The Contractor shall include in his bid any expenses occasioned by delay or interruption of his work by reason of the operation or maintenance of the Railroad facilities.
- (2) The Contractor shall obtain verification of the time and schedule of track occupancy from the Railroad before proceeding with any construction or demolition work on or adjacent to the Railroad right-of-way.
- (3) All work to be done on or adjacent to the Railroad right-of-way shall be performed by the Contractor in a manner satisfactory to the Railroad and shall be performed at such times and in such manner as not to interfere with the movement of trains or traffic upon the tracks of the Railroad. The Contractor shall use all necessary care to avoid accidents, damage, delay or interference with the Railroad's trains or property.
- (4) If deemed necessary by the Railroad, it may furnish or assign an inspector who will be placed on the work during the time the Contractor or any subcontractor is performing work under the contract on Railroad property.
- (5) Before proceeding with any construction or demolition work on or adjacent to the Railroad Right-of-Way, a pre-construction meeting shall be held at which time the Contractor shall submit for approval of the Railroad, plans, computations, and a detailed description of his method and procedure for accomplishing the specific construction work required under this contract, including methods of protecting Railroad traffic. Such approval shall not serve, in any way, to relieve the Contractor of his responsibility for the adequacy and safety of his methods and procedures for conducting the work.
- (6) The Contractor shall conduct his work and handle his equipment and materials in such manner that neither fouls a live track or wire line without the written permission of the Railroad.

- (7) Equipment shall be considered to be potentially fouling the track when located in such a position that its failure, with or without load, brings the equipment within the traffic envelope. No equipment shall be placed in this position without prior approval of the Railroad.
- (8) Equipment of the Contractor to be used:**
- (A) Equipment of the Contractor to be used adjacent to the tracks shall be in first-class condition so as to fully prevent failures of defective equipment that might cause delay in the operations of trains or damage to Railroad facilities. His equipment shall not be placed or put into operation adjacent to tracks without first obtaining permission from the Railroad. Under no circumstances shall any equipment or materials be placed or stored within 25 feet from the near rail of a track in operation, unless approved, in advance, by the Railroad.
- (B) High rail equipment of the Contractor to be used on the tracks shall be subject to prior approval of the Railroad. The equipment must be inspected and approved in advance at the Railroad's facility by Railroad inspectors. The equipment inspection must be renewed every three months.
- (C) On track vehicles shall be equipped with a Railroad approved tow bar and coupler. Multiple vehicles shall move in tandem and coupled when directed by the Railroad. Movement of on track vehicles shall proceed only under the direct supervision of a Qualified Railroad Employee.
- (9) Materials and equipment belonging to the Contractor shall not be stored on Railroad property without first having obtained permission from the Engineer and Railroad. Such permission will be on the condition that the Engineer and Railroad will not be liable for damage to such materials and equipment from any cause. The Contractor shall keep the tracks adjacent to the site clear of all refuse and debris that may accumulate from his operations and shall leave the Railroad property in the condition existing before the start of his operations.
- (10) The Contractor shall coordinate with the Engineer and the Railroad in order to determine the type of protection required to insure safety and continuity of Railroad traffic incidental to the particular methods of operation and equipment to be used on the work.
- (11) The Railroad will require protection during all periods when the Contractor is working on, or over, the right-of-way of the Railroad, or as may be found necessary in the opinion of the Railroad. When protection is required, refer to Paragraph 1(g).
- (12) It shall be expressly understood that this contract includes no work for which the Railroad is to be billed by the Contractor, and it shall be further understood that the Contractor is not to bill the Railroad for any work which he may perform, unless the Railroad gives a written request that such work be performed at its expense.

(13) Upon completion of the work, and before final payment is made, the Contractor shall remove from within the limits of the Railroad’s right-of-way, all machinery, equipment, surplus materials, falsework, rubbish and temporary buildings, and other property of the Contractor/sub-contractor, and shall leave the right-of-way in a condition satisfactory to the Railroad.

(c) **Railroad Protective Services** - will be provided in accordance with the Roadway Worker's Protective Act, Title 49, Part 214, Sub-part C. Railroad protective services will also be performed to insure safe operations of trains when construction work would, in the Railroad’s opinion, be a hazard to Railroad operations.

(d) **Definition of Hazard** – the Railroad has furnished the statements quoted below, explaining when they consider a hazard to operations exists:

“Protective services will be required whenever the Contractor is performing work on or adjacent to the Railroad tracks or right-of-way, such as excavating, sheeting, shoring, erection and removal of forms, handling materials, using equipment which by swinging or by failure could foul the track, and when any other type of work being performed, in the opinion of the Railroad, requires such service.”

(e) **Contractor Requirements for Work Affecting the Railroad**

(1) All matters requiring Railroad Company approval or coordination shall be directed to the Engineer or a duly authorized representative thereof, for forwarding to the Railroad Engineer.

(2) Detailed plans and appurtenant data and calculations for any operation which, in the opinion of the Railroad, affect the Railroad, must be submitted to the Engineer or a duly authorized representative thereof, for forwarding to the Railroad Engineer for approval prior to commencement of the work. All plans and calculations submitted must be stamped by a Connecticut registered Professional Engineer.

(3) Permissible Track Outages - are identified in the SECTION 1.08 – PROSECUTION AND PROGRESS – Article 1.08.04 – “Limitation of Operations” - Contractor Requirements for Work Affecting the Railroad contained within the General Provisions of the Contract. The times identified are the times that the track may be removed from service. **If power outages are required, the de-energizing/re-energizing and grounding of the wires will subtract approximately forty-five minutes from the start and forty-five minutes at the end of the indicated outage period for a total of up to ninety minutes.**

(4) The Contractor shall maintain a minimum of 1 foot level shoulder from ends of ties to maintain lateral track support for all excavations and shall not excavate any slope steeper than 1 (vertical) on 2 (horizontal) from the edge of the shoulder. Sheeting shall be required on all excavations where the side of the excavation is intercepted by the Railroad live load influence line. The live load influence line is defined as a line originating at the bottom edge of tie and extending downward at a slope of 1 (vertical) on 1½ (horizontal). Such excavations must be designed to withstand, in

addition to all common loads such as soil pressure and hydrostatic pressure, a railroad live load of Cooper E-80.

- (5) The Contractor shall be required to design and install protective scaffolding over the right-of-way where, at the sole discretion of the Railroad, such scaffolding is necessary to protect the Railroad from possible falling debris; paint or other materials; to protect personnel working about the right-of-way or to provide a platform for personnel, materials and/or equipment. Said scaffolding shall be designed for live load of 200 pounds per square foot applied uniformly over the entire structure and a 2 kips concentrated load placed anywhere on the structure. The two loads are not to be applied simultaneously for design purposes.
 - (6) All excavation area shall be located by the Contractor and inspected by the Railroad for the purpose of determining conflicts with underground facilities. Exploratory trenches, a minimum of 3 feet deep and 15 inches wide in the form of an "H" with outside dimensions matching and outside of sheeting dimensions are to be hand dug, as directed by the railroad. In some locations, excavations may exceed 3 feet in depth. Specialty excavations such as screw anchors, cat pole foundations, etc will require additional trenching to ensure all possible conflicts are located. These trenches are for exploratory purposes only and are to be backfilled and compacted immediately. All work outlined above must be done in the presence of a Railroad inspector.
 - (7) Cavities adjacent to sheet piling, created by driving of sheet piling, shall be filled with sand and any distributed ballast must be restored and tampered immediately.
 - (8) Sheet piling shall be cut off at top of tie during construction and at 3 feet below bottom of tie after construction just prior to completion of back filling.
 - (9) Plans and calculations for sheeting and scaffolding must be submitted to the Engineer for forwarding to the Railroad for approval prior to construction. Further, plans and calculations must be stamped by a Connecticut registered Professional Engineer.
- (f) Requirements for Erection, Demolition and Other Rigging Operations On or Adjacent to Railroad Right-of-Way**

The Contractor will be required to furnish the following information to the Engineer or a duly authorized representative thereof, for forwarding to the Railroad Engineer for approval prior to the start of any rigging operation over or adjacent to the Railroad right-of-way:

- (1) Plan view showing locations of cranes, boom length and rigging operating radii, with delivery or disposal locations shown.
- (2) Crane rating sheets showing crane(s) to be adequate for 150% of the lift. Crane and boom nomenclature is to be indicated.
- (3) Plans and computations showing weight of pick.

- (4) Location plan showing obstructions, indicating that the proposed swing is possible.
- (5) Plans showing locations and details of mats, planking or special decking as may be required by the Railroad.
- (6) Written statement from crane owner giving the date of last crane condition and safety inspection and the results of said inspection.
- (7) Data sheet listing number, type, size and arrangement of slings, spreader bars or other connecting equipment. Include copies of catalog or information sheets of specialized equipment. All such equipment shall be shown adequate to safely carry 150% of the calculated loading.
- (8) A complete procedure is to be included, indicating the order of lifts and repositioning or rehitching of the crane or cranes.
- (9) Temporary support of any components or intermediate stages is to be shown.
- (10) A time schedule of the various stages must be shown, as well as a schedule for the entire lifting procedure.
- (11) All erection, demolition and rigging plans and calculations submitted to the Railroad must be stamped by a Connecticut licensed Professional Engineer.
- (12) Operations directly on or adjacent to the operating right-of-way will be performed only at times and under conditions specified by the Railroad's representative.

(g) Ordering Protective Personnel

The Railroad will furnish Protective Service Personnel (conductors, flagmen, groundmen, inspectors, maintenance and/or other railroad personnel deemed necessary) to protect the operation of train traffic during the Contractor's construction activities. Railroad Protective Services will also be provided in conformance with the Roadway Worker's Protective Act as stated in Paragraph 1(c). There will be no charge to the Contractor for Railroad Protective Services provided. The providing or failing to provide Protective Services shall not relieve the Contractor from liability or payment for any damage caused by his or his subcontractor's operations conducted in their absence.

- (1) The Contractor must obey all instructions from Railroad representatives on the job site promptly. Failure to follow instructions shall be deemed sufficient cause for closing the job site to the Contractor and its employees.
- (2) The Railroad will, at its sole discretion, determine the need for and the availability of protective personnel. The Railroad will provide protective personnel to the extent possible considering its operational and maintenance priorities. The Railroad does not guarantee that protective personnel will be available to meet the Contractor's preferred schedule. Further, no work will commence until the assigned Railroad

representative affirmatively advises the Contractor that the necessary protective personnel are stationed and that he may proceed.

- (3) The assessment of the need for protective services will be based upon a weekly Railroad Construction Coordination Meeting. At these meetings, the Contractor shall provide a Bi-weekly Schedule that will begin on the following Saturday. Based on that schedule, the Railroad will determine the Protective Services required for the two-week period. Protective Services will be reserved for the following week beginning on the Saturday and ordered for the second week of the schedule. It will be the Contractor's responsibility to perform work in accordance with the submitted schedule. Variations from the submitted schedule may result in additional and unnecessary costs to the Engineer, Railroad and Contractor.
 - (A) The Contractor shall base his operations on a 5 consecutive day work week. The hours of operation during this time shall remain constant. Multiple shifts may be worked.
 - (B) The Contractor must demonstrate maximum use of Protective Service Personnel ordered. Failure to do so may result in the inability to consistently obtain services.
 - (C) The Contractor shall be responsible for forwarding all Protective Service requests from his subcontractors and suppliers in his Bi-weekly schedule submittal.
- (4) Requests to cancel construction activities, and subsequently the scheduled Protective Service Personnel, will be also submitted at the weekly Railroad Construction Coordination Meeting. At these meetings, the previously scheduled Protective Services for the week beginning on the following Saturday may be cancelled. This will be the only time for cancellation. Once cancelled, no re-ordering of Protective Services for the following week will be allowed.
- (5) Weather conditions will be considered the only basis upon which the Railroad will accept the Contractor's cancellation of scheduled work and will only be recognized on items of work which have been clearly identified and determined to be weather dependent in the Contractor's schedule. Activities not presented on the Bi-weekly schedule at the weekly Railroad Construction Coordination Meeting will not be able to commence until it has been inserted into the schedule and presented at the next meeting.
- (6) Work that requires the support of Railroad personnel shall not be scheduled on the following days, unless the work is of an emergency nature:
 - Holiday's Observed: *Independence Day *Christmas Day
 - *New Year's Day *Labor Day *New Year's Eve
 - *President's Day *Thanksgiving Day
 - *Good Friday *Day Following Thanksgiving Day
 - *Memorial Day *Christmas Eve
 - * The Saturday and Sunday preceding a Monday holiday.

- * The Saturday and Sunday following a Friday holiday.
- * The Friday and Monday preceding and following a weekend holiday.

(h) Requirements for Requesting Track Outages

Track outages as described in the plans and specifications must be requested at the weekly Railroad Construction Coordination Meeting.

- (1) All procedures, material and equipment must be approved and on site prior to the Railroad accepting the track outage request(s). This applies to all track outage requests.
- (2) Track outages will be granted based on need for constructability not for convenience.
- (3) The Contractor must demonstrate the maximum use of track outages by coordinating his activities and work so that various elements and multiple activities are performed during approved outages. Failure to consistently utilize track outages may cause the inability to gain approval of future requests for outages.
- (4) No new track outages may be initiated the weekend preceding or following these holidays:

Thanksgiving, Christmas and New Year's.

However, long-term continuous outages may extend through these periods.

(i) Catenary and Transmission Systems/Power Outages

- (1) Catenary and Transmission Systems - The Contractor shall assume that all the wires on the Railroad Company are energized at all times and must be governed by the restrictions imposed by the Railroad with respect to such electrical circuits. Should it become necessary, in the opinion of the Railroad Engineer to de-energize any wire or wires to insure safety of operation, such wires will be de-energized by the Railroad only during such period that will not interfere with the Railroad's operation. When the de-energizing and re-energizing of wires is deemed necessary, a representative of the Power Department of the Railroad must be on duty and present to arrange for the same. He will notify the Contractor in writing when the wires have been de-energized and also when said wires are to be re-energized.
 - (A) The Contractor is advised that the overhead electrification will remain in place for the duration of the entire project, except where called for on the drawings and in the specifications.
 - (B) Track rails of the Railroad are energized. Particular care must be taken to see that no contact is made between adjoining rails with any material, which is a good conductor of electricity when dry, or material of any nature when wet.

Particular care is necessary when any work involving the use of chains, steel rods, cables, pipes, etc., is done. Since the Contractor shall assume the wires and rails of the Railroad will be energized at all times, the Contractor shall require all of his employees, sub-contractors, and others to sign a form similar to the form shown in the Contractor Requirements for Work Affecting the Railroad contained within the General Provisions of the Contract.

(2) Power Outages

(A) Catenary Power Outages - A catenary power outage must be scheduled concurrently with a track outage for the track and is restricted to the same periods as specified in the plans and specifications.

(B) Railroad Power and Signal Distribution Feeder Outages - Outages for feeders can be allowed only during off-peak hours. These outages should be requested at the weekly Railroad Construction Coordination Meeting. One set of power and signal feeders, either the north or south side of the railroad, must remain energized at all times.

NOTE: During peak hours (5:00 a.m. to 10:00 a.m. and 3:30 p.m. to 10:00 p.m., Monday through Friday) of railroad traffic, both the north and south sets of power and signal feeders must be energized.

(j) Safety for Contractor's Employees Working on or Adjacent to the Right-of-Way of the Railroad

(1) Personal Protection Equipment

(A) Approved hard hats, reflectorized vest and clothing must be worn by all Contractor employees while on the Right-of-Way, in yard, shop facilities, and construction and/or work sites. Approved safety eyewear must be worn by all Contractor employees while on Right-of-Way, in yard, shop facilities and construction and/or work sites and in the operating control cab of a moving locomotive or train. Any exclusion must be jointly approved by Railroad's department head and Director of Safety.

(B) Other protective equipment such as goggles, face shields, safety belts, floatation vests, gloves and respirators shall be issued by the Contractor when required. Protection devices for hearing conservation may be used when determined necessary and safe to do so.

(2) Possession or Use of Intoxicants and Illegal Substances

The use of intoxicants, alcohol, narcotics, marijuana, amphetamines, hallucinogens or other illegal substances while working within the Railroad Right-of-Way, is prohibited and is sufficient cause for immediate removal from the Railroad property. Contractor employees under medication before or while on duty, must be certain that such use will not affect the safe performance of their duties.

(3) Surveying Equipment

- (A) Measuring tape must be non-metallic to avoid shunting the signal system electric circuits. This will occur when a metallic object is laid across the top of two rails of any track.
- (B) Electrically rated fiberglass elevation rods must be used to avoid injury in the event contact is made with energized catenary or signal/communication lines. Elevations of catenary wires must be obtained by or under direct supervision of a qualified Railroad Groundman.

(4) Conduct On or About Track

- (A) Contractor employees must not enter the track envelope unless it is absolutely necessary in performance of their duty. If it is deemed necessary, then the Contractor employees must walk on tracks or cross tracks only when accompanied by or with permission from a Qualified Railroad Employee of the Railroad. Always use approved walkways when available; otherwise identify and take the shortest safe route after looking in both directions. If more than one track is to be crossed, stop and look before crossing each track.
- (B) The possession of an umbrella on or about tracks is prohibited.
- (C) Do not rest any object on your shoulder while in close proximity to a moving train or high-rail equipment.
- (D) Expect equipment to move on any track, in any direction, at any time. Contractor employees must look in both directions and have permission from a Qualified Railroad Employee before:
 - 1. Fouling track
 - 2. Crossing track
 - 3. Going between or around end of equipment or structure
 - 4. Moving out from between or under equipment of structure
 - 5. Getting on or off equipment
 - 6. Performing any other applicable operation
- (E) When required by a conductor/flagman or other Qualified Railroad Employee to vacate tracks, the Contractor employees must comply immediately.

(5) Catenary Electric Systems

- (A) All overhead wires must be considered energized (LIVE) at all times except when it is known they have been de-energized and properly grounded.
- (B) Until the wires are de-energized, properly grounded, and a Groundman has notified that the overhead wires are such, all Contractor employees must not approach within 10 feet of transmission systems wires, catenary system or signal power wires.

- (C) At the beginning of each tour of duty, the Groundman will instruct the Contractor foreman and each Contractor employee, in the crew, of the dangers surrounding them, calling their particular attention to any hazards to be avoided in performance of the work.
 - (D) Whether due to inadequate knowledge of the English language or for any other reason, a Contractor employee who, in the opinion of the Groundman, does not understand the instructions given, shall not be permitted to work or observe.
 - (E) When clearances have been obtained and the wires, equipment or apparatus properly grounded, the Groundman will indicate to the Contractor foreman and the crew the location of wires, equipment or apparatus from which power has been removed and the location of the grounding devices applied. The Groundman must obtain on standard form, the signature of the Contractor foreman indicating that he and the crew have been so instructed, and will confine their work within the limits as outlined to them by the Groundman.
 - (F) When the Groundman leaves his crew for any reason, he must notify the Contractor foreman and each person in the crew to stop all work in the vicinity of the wires, personally assuring himself that all persons have moved to a safe distance away from the work area before his departure. The Groundman will obtain the signature of the Contractor foreman on standard form, that he and the crew have been informed that the Groundman is leaving the gang and they will not resume work until advised to do so on return of the Groundman.
 - (G) When the clearances are to be released, the Groundman will inform the Contractor foreman and each person in the crew and will personally observe that all persons have moved to a safe distance from the wires, equipment or apparatus to be energized, before removing the grounding devices. The Groundman will obtain the signature of the Contractor foreman, on a standard form, stating that he and the gang have been advised that the wires, equipment or apparatus have been energized, and that they will remain at a safe distance from them until informed otherwise by the Groundman.
 - (H) The Groundman will inform the Contractor foreman if any Contractor employee on the job is unsafe and will not comply with instructions. If trouble is experienced with the Contractor foreman in maintaining safe working conditions, the Groundman will immediately notify his supervisor.
- (6) Aerial Catenary Construction by Qualified Contractor Employees**
- (A) Aerial catenary work addressed in this Section shall include all overhead wire work shown in the contract.
 - (B) Aerial catenary work by the Contractor shall be done in accordance with the Railroad's safety rules and in accordance with the National Electric Safety Code. Failure to comply with these rules could result in removal of "Qualified" privileges and or removal from the project.

- (C) Due to the specialty nature of the work, limited construction periods available, and high quality of work required, the aerial catenary construction is to be done only by qualified Contractor employees (except as outlined in section (E)). Only Contractor employees that meet the requirements of the International Brotherhood of Electrical Worker's standards for Journeyman Lineman and who have successfully completed a Metro-North power orientation class shall be considered a Qualified Employee. The Power orientation class will be given periodically and will require less than one-half day to complete. Approval for qualification shall be determined by Metro-North and that approval shall not be unreasonably withheld.
- (D) Metro-North approved Journeyman Lineman shall be issued identification as workers qualified to perform aerial catenary work. Qualified Contractor employees shall work according to the Railroad's MN-290 Electrical Operating Instructions. Metro-North approved Journeyman Lineman are authorized and expected to work within 3 feet of 13.5 kV energized overhead catenary. Contractor employees shall not de-energize circuits, place initial grounds, or provide protection for others.
- (E) Apprentice Lineman shall be permitted to assist qualified Journeyman Lineman and work under their direct supervision within the following guidelines:
- i. The number of apprentice linemen allowed to work on the catenary will be one less than the total number of Metro-North Railroad Power Department Class "A" employees assigned to each contractor work operation. Additional groundmen will not be assigned to facilitate the use of Apprentices. (ex. 3,5 men crews are working a section of wire removal under the power outage protection of 2 Metro-North Railroad Power Department Class "A" employees, This contractor work operation can utilize one apprentice lineman.)
 - ii. No additional track or power outages shall be granted for the protection of apprentice Linemen.
 - iii. The Apprentice Linemen shall maintain an extended reach minimum approach distance of 10 feet to all railroad transmission wires, Catenary system, and signal power wires until such wires are de-energized, tested for potential, properly grounded, and proper protection afforded by a qualified Power Department Class "A" employee.
 - iv. The Contractor and his Safety Officer shall enforce the minimum approach distances and submit to the engineer a program to monitor and audit compliance of this procedure.

Apprentice Lineman are prohibited from coming closer than 10 feet from all overhead wires or circuits regardless of whether they have been de-energized or not.

(7) Safety Program and Plan

- (A) Prior to the commencement of work the Contractor shall submit a “Working on the Railroad Safety Plan” that will include a Program which implements the plan. The submission shall be made to the Engineer or a duly authorized representative and forwarded to the Railroad for compliance with this specification. This plan is separate to the Health and Safety Plan required for other aspects of the project (i.e., lead, excavations, etc.).
- (B) Each employee of the Contractor, subcontractor or others on site shall take and pass the Railroad Safety Training available online at www.contractororientation.com prior to being allowed to work on the project. In accordance with Section 3 below, there is no direct payment for all costs associated with this training process. Upon completing the on-line training, each employee will be able to print a temporary certification of completion. The temporary certificate will be valid only until the employee receives their photo ID card and sticker by mail in 7-10 business days. Until the ID card and sticker arrive, the employee must carry the temporary certificate and be prepared to present it at all times while on railroad property. All employees receiving this training will receive a Registered Hard Hat sticker that will identify them as a trained employee. No Contractor employees are permitted on the Railroad Right-of-Way without evidence of this training. Contractor employees shall renew this training annually.
- (C) All contractor employees entering the railroad right-of-way must attend and acknowledge the daily job briefings prior to commencing any work. The qualified railroad employees will conduct the job briefings.
- (D) The Contractor shall hold "TOOL BOX" safety meetings for their employees at least once a week that will be documented and attendees listed.
- (E) The Contractor supervisor shall attend a monthly Railroad Safety Meeting.

2. Insurance Requirements – Metro-North Railroad

The Contractor engaged in work on the project shall be required to comply with the requirements set forth under Article 1.03.07 – Insurance of the Standard Specifications, its supplements and special provisions contained herein.

3. Cost Associated with this Specification

- (a) There shall be no direct payment for compliance to this specification. All costs associated with any regulatory requirements, traffic regulation, specification administration, coordination, materials and incidentals required to fulfill the requirements of this specification will be considered as included in the general cost of the work and distributed in all items.

- (b) Any work, material's supplied, inspections and protective services by the Railroad as described in the plans and specification, expressly needed for the construction of the project, will be compensated to the Railroad by the Engineer under a separate agreement.”

Article 1.05.07—Coordination with Work by Other Parties— is supplemented as follows:

After the first sentence in the first paragraph, add the following:

Project 135-326 will be under construction during this project and work activities and work areas for Project 135-301 may be restricted by Project 135-326 work. Work activities in Project 135-326 that could affect Project 135-301 work area and schedule includes but is not limited to the following:

- Construction and completion of the Utility Corridor and utility duct work.
- Construction and completion of the Exit 8 SB Off Ramp “Flyover” Structure over Atlantic Street.
- Construction and completion of the north side of South State Street.
- Drainage in South State Street and connection to Canal Street.
- Construction and completion of the Sanitary Sewer work in South State Street.
- Construction and completion of water main work in South State Street.
- Relocation of RR Catenary Tower 370B.

The Contractor shall, as part of the work, coordinate his activities with the Project 135-326 work. Coordination will include but not limited to reviewing Project 135-326 work schedules, attendance at Project 135-326 project meetings, contacting Project 135-326 State personnel and or Contractor and or contacting utility company representatives.

In addition, the Metro-North Railroad will have the following project under construction during this project and work activities may be restricted by this work: Construction of Communications & Signals (C&S) replacement including overhead wires, supported along the northerly catenary portal columns, and relocation of the ‘Location A’ hut. In particular, this project is expected to affect the schedule for construction of the Track 7 passenger platform and canopies.

ITEM #0502182A - RUBBER GRADE CROSSING

Description: Work under this item shall consist of furnishing, installing, maintaining and removal of full depth rubber grade crossing material for track crossings with timber or concrete ties at access points shown on the plans.

Materials: Materials shall conform to the following as specified by Metro-North Railroad:

Specifications for Rubber Crossings for Concrete Ties

Elastomer Classification:	ASTM D2000
Tensile Strength	ASTM D412, 2,000 psi
Hardness:	ASTM D2240 55-75 Durometer Shore A
Ultimate Elongation:	ASTM D412, 350% Min.
Resistance to Ozone Cracking:	ASTM D1171, C12
Accelerated Aging:	ASTM D573, A13
Fasteners Used in Crossing:	Pandrol Fast Clips

Field Panels: Must be full depth rubber panels with width to match Metro-North Standard Concrete Cross Tie (enclosed drawing). Panels must interlock and be capable of installation without use of lag screws.

Gauge Panels: Must be full depth rubber panels that encompass the gauge of the track from inside web of both rails (see enclosed drawings for Metro-North Railroad Standard Concrete Cross-Tie). Panels must interlock and be capable of installation without use of lag screws.

End Ramps (deflector plates): To be included in price and needed for all crossings.

Specifications for Rubber Crossings for Timber Ties

Similar as for Rubber Crossings for Concrete Ties with following exceptions:

Fasteners Used In Crossing:	Track spikes
Width of Field Panels:	20" for 8'-6" Cross Tie

Materials shall be supplied by the following vendors or an approved equal:

Hi-Rail, Inc.
2539 Woodcliff Court
Lisle, Ill 60532
(630) 961-1659

Omni Grade Crossing, Inc.
Radnor Station Building #1, Suite 300
290 King of Prussia
Radnor, PA 19087
(610) 971-9966

Railway, Inc
120 Nixon Street
P.O. Box 849
Cascade, Iowa 52033
(319) 852-7794

The Contractor shall submit shop drawings of the Rubber Crossing for Timber or Concrete Ties to the Railroad for their review and approval. The crossing panels shall be full depth with the height of panel matching the rail size for the crossing location.

Submittals:

- Rubber Crossings and associated materials including but not limited to fasteners and deflector plates;
- Installation work plans and location survey;
- Maintenance plan and schedule; and
- Removal work plan

Construction Methods: The Contractor shall procure and deliver the rubber crossing material to the project site. Installation, maintenance and removal of the rubber crossing(s) shall be performed by the contractor.

Prior to scheduling the installation of access pads, an inspection shall be performed in conjunction with the Engineer and Railroad personnel, in order to locate where the access pads will be installed. If any defective ties or surfacing concerns are identified during the inspection, the Contractor shall resolve by replacing ties and/or surfacing the track prior to the installation of the rubber crossing(s).

The Contractor shall install the rubber crossing(s) as per the manufacturer recommendations.

The rubber crossing(s) shall be subject to inspection and acceptance by the Railroad Track Department supervisor prior to final acceptance of the installation.

A minimum 3” flangeway shall be maintained.

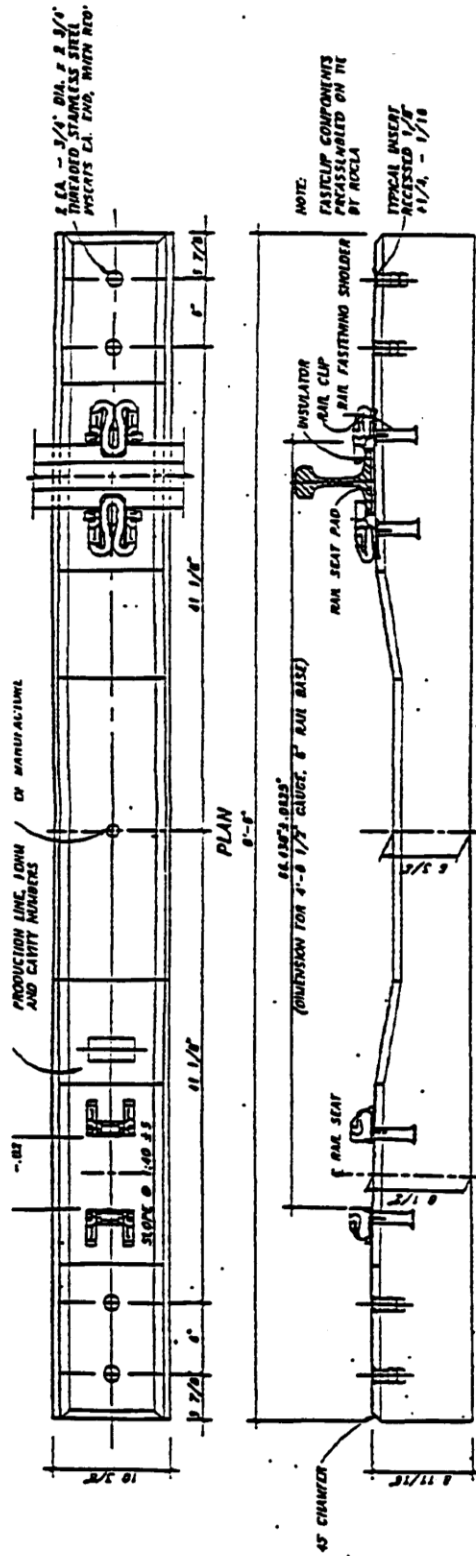
Method of Measurement: RUBBER GRADE CROSSING shall be measured for payment per linear foot of rubber crossing supplied, as measured along the centerline of the track. The deflector plates shall not be included in the above measurement. There will be no separate payment for the installation, maintenance and removal of the rubber crossing(s) but the cost thereof shall be included in the unit price for RUBBER GRADE CROSSING.

Should the initial track inspection require defective tie replacement and/or surfacing, they shall not be paid for as RUBBER GRADE CROSSING but shall be covered under the item LINE AND LIFT EXISTING TRACK.

Basis of Payment: This work will be paid for at the contract unit price per linear foot for RUBBER GRADE CROSSING, of the required depth and width, which price shall include materials, delivery, installation and subsequent removal.

No additional payment will be made for the required gauge and field deflector plates which price shall be considered incidental to the cost of the rubber grade crossing.

Pay Item	Pay Unit
RUBBER GRADE CROSSING	LF



GENERAL NOTES

THIS ITEM IS ENGINEERED AND MANUFACTURED IN ACCORDANCE WITH THE RECOMMENDATIONS, SPECIFICATIONS, AND SPECIFICATIONS OF THE AMERICAN RAILWAY ASSOCIATION, "MANUAL FOR RAILWAY ENGINEERING", CHAPTER 10, CONCRETE TIES.

WEIGHT OF THE CROSS IS APPROXIMATELY 710 LBS., INCLUDING 10 LBS. FOR SHOULDER.

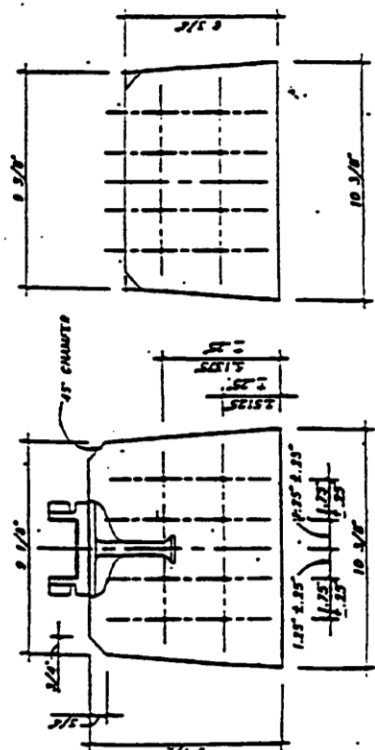
GENERAL:

- 1/4" = 4,000 PSI @ 28 DAYS
- 3/8" = 2,000 PSI @ 28 DAYS
- CASTING WITH 0.5% TO 0.6% AIR ENTRAINMENT
- STEEL FROM PRODUCE EFFECT ON BOTTOM OF CROSS IS, WHICH MAY HAVE WHICH FRISK
- SETTING WITH CUR
- SETTING WITH CUR. AIR 1000 CONTENT BY HARDENED CONCRETE
- SHOULDER 3.5K.

CONCRETE:

CONCRETE SHALL BE NORMAL 3/4" QUARTER, 7 GRADE UNCOVERED STRAINS, BRIST 21, 25, STRESSED RELATIVE AND CONFORM TO ASTM A118-74, ASTM A888-91

SECTION @ @ OF RAIL SEAT



SECTION @ @ OF CROSS TIE

	01 JAN 78 RAILROAD FASTENING & RAIL TIE CONN. TIE, P.	CROSS TIE FOR METRO-NORTH RAILROAD STANDARD CONCRETE CROSS TIE	0199, NO. 01-001
	This drawing is the property of Roda Concrete Tie, Inc. and is subject to return upon demand. It is submitted for use only in connection with proposals or contracts of big organizations upon the express condition that it is not to be used directly or indirectly in any way detrimental to the interests of Roda Concrete Tie, Inc. This drawing may not be copied or given to other parties without the expressed written approval of Roda Concrete Tie, Inc.		

ITEM #0503020A – RAILROAD TRACK WORK

ITEM #0503471A – TURNOUT INSTALLATION

ITEM #0503004A – LIFT AND LINE EXISTING TRACK

Description: This work shall consist of installing timber ties, rail, turnouts, tie plates, Pandrol clips or spikes, rail anchors, switch machines, and all other materials necessary to construct the railroad tracks to the lines and grades as shown on the Plans or as ordered by the Engineer.

A survey shall also be conducted on the final as-built conditions of any new or replaced track work, which shall include the new crossovers, new Track 7, new track over Atlantic St Bridge, new track replacing jump spans, as well as any length of track that has been surfaced.

Materials: All materials necessary to construct the track structure shall conform to the American Railway Engineering and Maintenance of Way Association's Manual for Railway Engineering (AREMA) and the MNR MW-4. A copy of the MNR MW-4 will be provided to the contractor after award of the project.

1. Contractor-Furnished Materials – Rail and Turnouts shall be furnished by the Contractor. Turnouts include rail, switch, frog, guard rails, turnout ties, rail braces, fasteners, and any and all other appurtenances required to complete a turnout.
2. Contractor-Furnished and Installed Materials – Switch Heaters and Switch Machines
3. Contractor-Furnished Materials – Per AREMA, MNR MW-4 and the following:
 - a. Standard Ties: New, 9” wide x 7” high x 8’-6” long, timber per MNR Spec #3-1-84 – Cross Ties.
 - b. Tie Plates: Canted double shoulder for 6-inch base rail, new or relay, not less than 14-inches in length.
 - c. Spikes: New, 5/8” x 6” high carbon steel track spikes per AREMA.
 - d. Compromise Joints: New, six-hole forged steel compromise joints per AREMA. Compromise bars shall be sized to fit the rail on both sides of joint
 - e. Bolt Assemblies: New, appropriate size for the compromise and joint bars, per AREMA.
 - f. Rail Anchors: New per AREMA.

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- g. Pandrol Rail Fastening Assemblies: As an alternative to conventional tie plates, cut spikes and rail anchors, the Contractor may supply Pandrol brand rail fastening assemblies as follows:
 - 1) Tie Plates – Canted design, new or fit second hand for six-inch base rail with round holes for screw spikes.
 - 2) Elastic Rail Clips – New, Pandrol design e-2055 or PR601A or accepted equal. For joint bars, provide either Pandrol “J” model clips or the Pandrol “C” clip assembly or approved alternative.
 - 3) Screw Spikes/Coach Screws – 15/16” diameter by 6” length.
- h. Bumping Posts: New bumping posts of a type as shown on the Plans.
- i. Hand Throw Switch Stand: New non-automatic type New Century Model 51-A, or approved equal, with bow style backsaver style handle
- j. SUBBALLAST and STONE BALLAST shall be furnished and installed in accordance with specification Sections 0213902A and 0728020A.
- k. Derail: New Western-Cullen-Hayes Model HB sliding derail and operating stand or approved equal, as shown on the Plans.

Construction Methods: Track installation shall be in conformance provisions of Specifications, Standards, and recommended practices of the most recent edition, and addenda thereto, of the AREMA Manual and the MNR MW-4.

Clearing and grubbing shall be in accordance with Section 2.01.

Grading shall be in accordance with Sections 2.02 and 2.07.

Installation of ties, rail, turnouts and switch machines shall proceed in a sequence approved by the Engineer to yield as little impact as possible upon yard operations.

Following final surfacing, all rail shall be set to the neutral temperature specified in the MNR MW-4.

Track Criteria

- 1. Gage: Standard gage of track shall be 4 feet 8½ inches.
 - a. Gage shall be measured with a standard track gage. It shall be measured at right angles to rails between points 5/8 inch below top of rails. The Contractor’s track gages shall be checked at frequent intervals for accuracy.

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2. Alignment, Grade, Track Centers and Cross Level: Definitions are as follows:
 - a. Alignment – Horizontal location of track as described by curves and tangents. Alignments shall be as established on the Plans.
 - b. Grade – Ratio of rise, or fall, of the grade line to its length. Grade shall be as established by the profiles shown on the Plans.
 - c. Track Centers – The distance between center lines of adjacent tracks, measured in a horizontal plane and at right angles to one of the tracks.
 - d. Cross Level – The difference in elevation of the tops of opposing rail of a track measured in a horizontal plane at right angles to the alignment.
3. Tolerances: Deviation from established gage, cross level, profile grade and horizontal alignment shall not exceed the criteria specified below.

TRACK SURFACE AND ALIGNMENT

TOLERANCES

- | | |
|--|------|
| a. Deviation from a true gage of 4 feet – 8 ½ inches, measured at a plane 5/8 inch below top of rail on the inside face may not exceed | 1/8” |
| b. Deviation from design profile may not exceed | 1/2” |
| c. Deviation from uniform profile on either rail at the mid-ordinate of a 62-foot chord may not exceed | 1/4” |
| d. Deviation from zero cross level at any two points less than 62 feet apart on tangents or curves may not exceed | 1/8” |
| e. Deviation from uniform alignment between any two points less than 62 feet apart on tangent and curved track may not exceed | 1/8” |
| f. Deviation from design alignment may not exceed | 1/2” |

General Track Installation Procedures

1. SUBBALLAST and STONE BALLAST shall be installed in accordance with Item Nos. 0213902A and 0728020A, respectively.
2. Place timber ties on properly compacted ballast, normal to the centerline of track such that the heartwood of the ties is down and the bottom surface of the ties have uniform bearing against the ballast. The ends of 8’-6” ties shall be brought to a uniform line,

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18½” from the edge of the base of rail on the line side. The line side shall be the northern side of the track in tangent and curved track and the straight side of each turnout.

3. Install tie plates on the longitudinal centerline of each tie and place square to the centerline of the rail so that the outside shoulder of the plate bears fully against the rail base. Place plate with the downward cant toward the center of the track. Where using conventional tie plates and spikes, rail shall be spiked with a minimum of two rail holding spikes and one plate holding spike per tie plate. Where using Pandrol plates, place two screw spikes on the gage side of the rail and one screw spike on the field side. Holes must be pre-bored in the ties for the screw spikes and a minimum of three spikes per plate must be installed. Additional spikes shall be placed in curves per MW-4.
4. Rail joints must be staggered by a minimum of 36” and be secured by at least three bolts on each end of the joint. Outside of turnouts, the minimum length of rail allowed is 19 feet. Compromise joint bars must be fabricated and installed in such a manner that any gauge mismatch of rail ends is less than 3/32” and a vertical mismatch that is no greater than 3/32”. If CWR strings of greater than 78 feet in length are installed when the air temperature is below 80 degrees Fahrenheit, rail neutral temperature must be adjusted in accordance with procedures in the AREMA Manual and MNR’s MW-4. When cutting rails, cuts must be clean and square using a rail saw or abrasive cutting disc only. Do not cut rails with a torch.
5. Welding of rail to be done using specifications flash-butt or thermite weld process. Thermite welds shall be made per the manufactures, AREMA fabrication and inspection requirements.
6. Lay and weld CWR to produce zero thermal stress in the rail. Install rail in such a manner that damage to ties or other track materials is avoided, and ties are not dislodged from their proper position. Install temporary six hole 36-inch joints using 4 bolts prior to surfacing and aligning track. Before welding CWR strings, the track shall be brought to within one (1) inch of the final line and grade and the CWR strings shall have their lengths adjusted for zero thermal stress temperature, be vibrated to relieve internal rail stress, and be fully fastened. Contractor shall destress rail by vibration and thermal adjustment after track has been brought to within one inch of final line and grade through initial surfacing and aligning. Destressing of track shall be completed prior to final surfacing and aligning. Field cuts in rail shall be made only after receiving the approval of the Engineer. Designate locations of field cuts by track designation, station of cut end of rail string, and right or left rail determined by facing in the direction of increasing stationing. Lay rail so that shop welds in opposite strings are staggered at least ten feet. Handle, and move as necessary, rail in such a manner and by use of such equipment that will prevent bumping or striking of rail and will avoid damaging or excessively bending the rail. Lay rail in a manner, which will prevent damage to rail, ties, fasteners, and structures. Do not drop rail. Use rollers to facilitate movement and placement and to reduce risk of damage to ties, fasteners and track appurtenance. Cut rails square and

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clean using a rail saw. Do not cut rails for installation of a bolted joint within 30 inches of a shop weld. Accurately space and drill holes for bolting of rail in accordance with requirements of the current AREMA Manual for Railway Engineering, Specifications for Steel Rails, Chapter 4, Part 1. Drill holes with an approved rail drill. For temporary joints drill two holes only, leaving first hole blank. Drill cylindrical holes of specified diameter for the size bolt required through and perpendicular to web of rail. Use a template, as a drilling guide, to locate holes both vertically from bottom of rail and horizontally from rail end. In no case shall a joint bar be used for this purpose. Remove all rough edges from holes. Cut out rail segments containing holes that are rejected by the Engineer. Install 6 hole, 36 joints using 4 bolts per joint for temporary installations prior to initial surfacing. Allowable length of time that bolted joints may be in shall be 45 days. Welding will be as specified previously and the following:

- a. Closure welds shall be accomplished following initial surfacing and rail distressing.
- b. Closure welds will be made by the welding process specified previously and by personnel trained in the method.
- c. The electric flash butt weld will not be used in a turnout nor within 400 feet from each end of the turnout as measured from the limit shown on the Plans.
- d. Closure welds shall meet all criteria as specified previously.
- e. Closure weld inspection and magnaflux testing shall be performed by the welding crew and each weld certified free of defects. Cutout welds that fail the inspection and testing and re-weld in accordance with these Specifications.
- f. Closure weld manual and detector car ultrasonic testing shall be performed by independent testing companies.
- g. Manual ultrasonic testing acceptance criteria will be as specified.
- h. Any weld found to be defective during the above ultrasonic tests shall be cut out and replaced with a 19 foot section of new rail welded into the track at no additional cost to Railroad.
- i. Closure welds will be made in accordance with the welding contractor's recommendations.
- j. Removal of rail anchoring shall not exceed 200 feet in both directions when making a weld.

- k. Rail puller capable of exerting tension in excess of 70 tons will not be allowed unless approved by the Engineer.
- l. Closure welds will be warranted as specified.

Thermal adjustment shall follow initial surface and alignment to the tolerances as specified. Rail temperature shall be taken after track has been initially surfaced and lined just prior to rail adjustment. The temperature reading shall be used in computation of rail adjustment. Determine rail temperature by an AREMA standard rail thermometer as specified in the current AREMA Manual for Railway Engineering, Chapter 5, Plan Number 34-71. Determine temperature of rail by placing rail thermometer on shaded side of rail base next to web and leaving it there for not less than five minutes and until no change in its reading is detected. During adjustment of rail constantly monitor and record rail temperature readings of CWR on the Rail Clipping Record form made part of this Section.

During thermal adjustment, determine the gap or rail movement between CWR strings and between CWR and bolted rail by the equation:

$$G=(t-T) LK + Q$$

Where: G = Rail gap (inches)

t = Zero Thermal Stress temperature of 95 degrees Fahrenheit.

T = Actual rail temperature at time of laying (degrees Fahrenheit)

L = Length of CWR being laid (feet)

K = Coefficient of thermal expansion for rail steel (0.000078 inches per foot per degree Fahrenheit).

Q = Rail gap as required by respective manufacturer of field weld kit and bonded standard joint. For bolted standard joint Q = 0.125 inches, and for insulated joints Q equals the end post thickness. Q shall be deleted from above formula if field weld is not expected to be completed prior to operation of the first train over newly installed rail.

After rail has been laid and prior to thermal expansion insert between the ends of CWR strings a short piece of rail equal in length to "G" minus ½ inch were "G" is determined by the formula above. This requirement does not apply if calculated rail gap "G" is less than 1- ½ inches. Insert short rail at time rail is laid to prevent damage to rail ends during rail laying, ballasting, and other operations requiring passage of on-track equipment over

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rail joints. Remove short rail prior to anchoring and when rail temperature results in a calculated closure of the rail gap. In no case shall short pieces of rail remain in track when returning track in service for train operation.

Prior to placing equipment on newly laid rail, secure rail, allowing for proper gauge, surface, and alignment, in a manner that will prevent damage to CWR, rail fastening assemblies, ties, and other material. Move equipment over partially secured track in such a manner as to prevent damage to structures and track work materials. Prior to surfacing, fully spike all ties to allow for track raise and alignment. Remove fastenings to adjust rail to its zero thermal stress length.

7. Anchoring shall not proceed until the track has been sufficiently ballasted to prevent tie or track movement due to thermal expansion or contraction and until the track has been initially raised, tamped and aligned. Anchors shall be applied flush to the side of the tie, on each rail with every other tie fully box-anchored. Anchors shall be omitted from a point four ties in advance of and behind switch points and at all locations where it is not possible to install anchors on each rail. For strings of welded rail 78 feet in length or greater, a minimum of 10 consecutive ties on each side of the rail joint at the end of the string shall be fully box-anchored excepting the conditions in the previous sentence.
8. Surface and align track by methods which will prevent undue bending of the rail, straining of the joints or damaging rail fastening assemblies, and only after the cribs have been filled with ballast. No surfacing or aligning work shall be performed on track when the ambient rail temperature is greater than the temperature of the rail at the time it was anchored, nor less than 20 degrees Fahrenheit. Rail temperature shall be measured using a rail thermometer as specified in the current AREMA Manual, Chapter 5 by pacing the rail thermometer on the shaded side of the rail base and leaving it in place for a minimum of five minutes or until there is no change in its reading. When tamping ties, the ballast shall be firmly tamped for 16 inches on each side of all rails.
9. Final surfacing and aligning of the new track and turnouts shall be in accordance with the geometries shown on the Plans. Where tracks are being replaced (over new Atlantic Street Bridge, jump spans, temporary track removals), the final track geometries shall be the same as the existing. The final raise shall consist of a lift of no greater than two inches to bring the track surface to the final grade shown on the Plans. Where tracks constructed by this Contract connect to existing tracks, run out the surfacing into the adjoining tracks a distance as indicated by MNR's MW-4.
10. After the final surfacing and aligning of the track and turnouts, ballast shall be adjusted so that all cribs, excepting those beneath switch rods, are full. Leave the cribs open beneath the switch rods so that there is a minimum of five inches of clear space beneath them. Dress the ballast shoulder so that it extends beyond the ends of the ties of at least one foot horizontally in the plane of the top of tie at which point the shoulder may drop at a maximum rate of two horizontal to one vertical. Excess ballast shall not be left on top

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of the ties or timbers and shall not be allowed in flangeways or between stock rails and switch points. Final surfacing and alignment shall be within the tolerances listed in this specification.

11. Bumping post at the end of new Track 7, near Structure 369B North shall be installed by the Contractor prior to releasing the track for operations.
12. Turnouts shall be installed in the same general manner as listed above in accordance with the geometric criteria in the Contract Documents. Survey is required to layout the Point of Switch, PITO, and Point of Frog prior to the installation and to be confirmed after completion of turnout installation.
13. In order to determine the acceptability of the completed track and turnouts, the Engineer will schedule MNR to make a final inspection to establish that the track and turnout construction is within the tolerances specified herein. The Contractor shall correct track deviations, as disclosed by the inspection, which exceed tolerances specified herein at no additional cost. The Contractor shall notify the Engineer two weeks in advance of the anticipated date(s) when the track will be ready for MNR inspection.

Lift and Line Existing Track

1. Track to be lifted and lines shall be lifted vertically and lined horizontally to the line and grade shown on the Plans. The finished line and grades shall meet the Track Surface and Alignment Tolerances shown under the Track Criteria part of this specification.
2. The Contractor shall replace 30% of the existing ties with new ties as directed by the Engineer. Tie plates and anchors shall be reused and reinstalled using new spikes. The tie replacement shall be considered incidental to Lift and Line Existing Track and no additional payment shall be made.

To facilitate the construction of the temporary jump span on Track 3, the 53B switch and turnout will be removed and replaced. The 53B switch and turnout shall be installed and put back into service as part of the same outage as the installation of the temporary jump span. When the new jump span and Track 3 are placed back into service, the 53 cross-over shall also be placed into service at the same time.

After the construction of the new Atlantic Street Bridge, the entire 53 cross-over will be removed and fully replaced in kind.

Method of Measurement: RAILROAD TRACK WORK will be measured for payment by the actual number of linear feet of track, measured along the centerline, installed and accepted. One track consists of two rails, connecting ties, tie plates, spikes, anchors, elastic fasteners, lining, lifting and tamping, and any and all appurtenances required. Where rail ends are staggered, the average of the two rail ends shall be used as the point of measurement. Bumping posts, joint

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bars, compromise joint bars will not be measured for payment but shall be considered incidental to the Railroad Track Work.

TURNOUT INSTALLATION will be measured for payment by the actual number of turnouts installed and accepted. One turnout includes switch ties, frog, switch points and stock rails, closure rails, all throw rods and machines as provided by the Contractor. Each turnout unit shall be considered as beginning at the Number Zero tie ahead of the point of switch and extending to the Last Long Timber beyond the frog. Other track outside of this zone will be measured by the linear foot as indicated above. Furnishing and installation of switch machines, rods, connections, etc., where shown on the Plans, shall be incidental to the turnout installation. No separate payment shall be made for all temporary and final conditions but the cost thereof shall be included in the unit cost of TURNOUR INSTALLATION.

LIFT AND LINE EXISTING TRACK shall be paid by the actual number of linear feet of track raised and lined. One unit consists of raising the track from 0" to 6" vertically and 0" to 24" horizontally. Lifts greater than 6" vertically and 24" horizontally shall be divided by 6" and rounded up to the next whole number. For example, for a lift of 15 inches, the quantity would be 3 times the linear feet lifted ($15/6 = 2.5$; rounded up to 3). A turnout will be measured as two tracks starting at the point of switch and ending at the last long tie.

SUBBALLAST and STONE BALLAST will be measured for payment in accordance with specification Sections 0213902A and 0728020A.

There shall be no separate payment for final as-built surveys of new crossovers, new track and surfaced track areas, but the cost thereof shall be included in the unit price of RAILROAD TRACK WORK.

There shall be no separate payment for cutting or welding rail incidental to construction of the new Bridge, including temporary jump span activities, but the cost thereof shall be included in the appropriate unit prices.

Basis of Payment: This work will be paid for at the contract unit price per linear foot for RAILROAD TRACK WORK, per each for TURNOUT INSTALLATION, and per linear foot for LIFT AND LINE EXISITING TRACK, complete in place, which price shall include all material, equipment, tools, labor and work as described noted above and incidental thereto.

Pay Item	Pay Unit
RAILROAD TRACK WORK	LF
TURNOUT INSTALLATION	EA
LIFT AND LINE EXISTING TRACK	LF

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ITEM # 0969000A - PROJECT COORDINATOR

Section 1.05.08 of the Standard Specifications is hereby deleted and replaced with the following:

Description: Under this item the Contractor shall furnish the services of an administrative employee, entitled the Project Coordinator, for this project to coordinate and expedite all phases of the work required for the project and to ensure that the construction schedule is maintained.

The minimum lump sum bid for this item shall be equal to 0.5% of the Contractor's total bid. Failure of the Contractor to bid at least the minimum amount will result in the Department adjusting the Contractor's bid to include the minimum bid amount for this item.

The Project Coordinator shall be submitted for approval by name, in writing, with a resume of his qualifications, within seven (7) calendar days of the award of the Contract, but not later than the Preconstruction Meeting, and shall not be changed without prior written notice to the Department.

This resume must demonstrate the Project Coordinator is experienced and versatile in the preparation, interpretation and modification of Critical Path Method (CPM) construction schedules. This must include successful completion of at least three (3) construction projects of similar complexity, where he served in a lead scheduling capacity. If the Contractor does not have a person in their company that has these skills, then the Contractor shall engage the services of a Consultant, subject to the approval of the Engineer, for the scheduling work required. If a Consultant is engaged, they shall be present at the first meeting, along with the Project Contractor, prepared to discuss, in detail, the methods and techniques he proposes to use. Thereafter, the Project Coordinator or the Consultant responsible for updating the CPM Schedule shall attend all meetings between the Contractor, its Subcontractors, and any other meetings, which will affect the CPM schedule. The Contractor shall prepare CPM Schedules utilizing the latest version of Primavera Project Planner software as described more fully hereinafter.

If the Contract includes Article 1.20 the following requirement shall also apply:

The Project Coordinator shall have, in addition to the above noted requirements, a minimum of eight (8) years' experience related to commercial/industrial building construction as a Project Coordinator performing duties similar to those required herein.

The Project Coordinator shall have knowledge of all trades involved in the construction, including civil/site work, environmental work, concrete work, masonry work, steel work, wood work, electrical work, and mechanical work.

Other combinations of experience and education totaling ten (10) years in commercial building construction will be considered subject to the approval of the Engineer.

Computer Software and Printer: The Contractor shall provide the following equipment with all the required maintenance and repairs (to include labor and parts) throughout the Contract life. The Engineer reserves the right to expand or relax the specification to adapt to the software and hardware limitations and availability.

The Contractor shall provide the Engineer with a licensed copy registered in the Department's name of the latest versions of the software listed and maintain customer support services offered by the software producer for the duration of the project. The Contractor shall deliver to the Engineer all supporting documentation for the software and hardware including any instructions or manuals.

A. **Software – Minimum Specification:** The Contractor shall provide the Engineer with a licensed copy of the latest version of the Primavera Contractor – Deluxe Version scheduling software, registered in the Department's name, and maintain the Primavera customer support service contract over the duration of the project.

B. **HP Officejet Pro K8600 Color Printer** – Minimum or equivalent (to be installed as a local printer on a computer provided under the Construction Field Office specification):

Paper – 11 in x 17 in, 8.5 in x 11 in and duplex/double-side print
Resolution – 1200x1200 DPI
Print Drivers – Must support HP PCL6.
RAM – 32 MB RAM
Print speed – 10 ppm – color, 13 ppm - black
Printer cable – 6 ft (1.8 m)

The Contractor is responsible for service and repairs to all computer hardware. All repairs must be performed within 24 hours. If the repairs require more than a 24 hours then a replacement must be provided.

Construction Methods: The Project Coordinator shall attend all meetings between the Contractor and the Department, the Contractor and its Subcontractors, and any other meetings that affect the progress of the job. The Project Coordinator shall be knowledgeable of the status of all parts of the work throughout the length of the Contract.

The Contractor shall prepare a CPM Schedule in accordance with the pertinent provisions of "Section 1.03 - Award and Execution of Contract," "Section 1.05 - Control of the Work," and "Section 1.08 - Prosecution of Progress" of the Standard Specifications. The schedule shall incorporate the Sequence of Construction as outlined on the Plans and in the Specifications. All other limiting factors that affect construction shall also be incorporated into the schedule. All milestones or constrained dates within the schedule shall be clearly indicated.

The CPM schedule shall contain a list of activities that represent the major elements of the project. At a minimum, this list should include a breakdown by individual structure or stage, including major components of each. The schedule shall contain sufficient detail to describe the progression of the work in a comprehensive manner. As a guide, 10 to 15 activities should be provided for each \$1 million of contract value.

The following list of items is provided as an example only and is not meant to be all-inclusive (or all-applicable):

General Items Applicable to all projects

Contractual Constraints including but not limited to

- Winter shutdowns
- Environmental permits/applications time of year restrictions
- Milestones
- Third Party approvals
- Long lead time items (procurement and fabrication of major elements)
- Adjacent Projects or work by others

Award

Notice to Proceed

Signing (Construction, temporary, permanent by location)

Mobilization

Permits as required

Field Office

Utility Relocations

Submittals/shop drawings/working drawings/product data

Construction of Waste Stockpile Area

Clearing and Grubbing

Earthwork (Borrow, earth excavation, rock excavation, etc.)

Traffic control items (including illumination and signalization)

Pavement markings

Drainage (Breakdown into components)

Culverts

Final Plantings (including turf establishment)

Final Cleanup

The following additional guidelines supplement the general guidelines listed above for the specific project types indicated:

A. For platforms, stair towers, walls and other structures, include major components such as:

Temporary Earth Retention Systems

Structure Excavation

Piles/test piles

Temporary Structures

Bearing Pads

Structural Steel (Breakdown by fabrication, delivery, installation, painting etc.)

- B. Multiple location projects shall be broken down first by location and then by operation.
- C. Facility Projects shall reflect the same breakdown of the project as the schedule of values:

- CSI Division 3 – Concrete
- CSI Division 4 – Masonry
- CSI Division 5 – Metals
- CSI Division 6 – Wood, Plastic, and Composites
- CSI Division 7 – Thermal and Moisture Protection
- CSI Division 8 – Openings
- CSI Division 9 – Finishes
- CSI Division 10 – Specialties
- CSI Division 12 – Furnishings
- CSI Division 14 – Conveying Equipment
- CSI Division 22 – Plumbing
- CSI Division 23 – Heating, Ventilating, and Air Conditioning
- CSI Division 26 – Electrical
- CSI Division 27 – Communications
- CSI Division 28 – Electronic Safety and Security

The CPM schedule will be compiled using this list of major activities. It will be the responsibility of the contractor to detail all milestones, environmental permit “window” periods; winter shutdowns etc. and include them on their schedule under the corresponding dates.

Proper relationship between all major activities shall be indicated. Node numbers shall be coded such that the major activities shown on the Critical Path Schedule shall be easily referenced to the Detailed Project Schedule when it is developed. Break down the work covered under each Special Provision, or Division and Section of Article 1.20 of the Standard Specifications, into individual activities required and logically group related activities together within the CPM.

If the Engineer determines that additional detail is necessary, the Contractor shall provide it.

All documents, which require approval by the Department, shall be clearly identified within the schedule. The Department and any outside agency shall be allocated a minimum number of calendar days in accordance with Article 1.20-1.05.02. If Article 1.20 does not apply, then the Department shall be allocated a minimum of thirty (30) calendar days (exclusive of weekends and holidays) for review and approval of each submittal. Any submittals requiring approval by an outside Agency (ConnDEEP, Coast Guard, Army Corps of Engineers, etc.) shall be allocated a minimum of sixty (60) calendar days. The Department shall not be held responsible for any delay associated with the approval or rejection of any substitution or other revisions proposed by the Contractor.

The schedule shall indicate the logic of the work for the major elements and components of work under the Contract, such as the planned mobilization of plant and equipment, sequences of operations, procurement of materials and equipment, duration of activities, type of relationship, lag time (if any), and such other information as it is necessary to present a clear statement of the intended activities.

The Contractor is responsible to inform its subcontractor(s) and supplier(s) of the project schedule and any relevant updates.

The schedules shall consist of a network technique of planning, scheduling and control, shall be a clear statement of the logical sequence of work to be done, and shall be prepared in such a manner that the Contractor's work sequence shall be optimized between early start and late start restraints. The Contractor shall use the same criteria in a consistent manner throughout the term of the project. If, at any time, the Contractor alters logic, original durations, and descriptions, adds activities or activity codes or in any way modifies the Baseline Schedule, they must notify the Engineer of the change, in writing, presenting in detail the reasons for the change. The Engineer reserves the right to approve or reject any such change.

The critical path of the project must be identified on the CPM schedule. The critical path is the longest-duration path through the network. The significance of the critical path is that the activities that lie on it cannot be delayed without delaying the project. Because of its impact on the entire project, critical path analysis is an important aspect of project planning.

The critical path can be identified by determining the following four parameters for each activity:

- ES - earliest start time: the earliest time at which the activity can start given that its precedent activities must be completed first.
- EF - earliest finish time, equal to the earliest start time for the activity plus the time required to complete the activity.
- LF - latest finish time: the latest time at which the activity can be completed without delaying the project.
- LS - latest start time, equal to the latest finish time minus the time required to complete the activity.

The *float time* for an activity is the time between its earliest and latest start time, or between its earliest and latest finish time. Float is the amount of time that an activity can be delayed past its earliest start or earliest finish without delaying the project. Delays to activities on the critical path through the project network in which no float exists, that is, where $ES=LS$ and $EF=LF$ will delay the project.

Float available in the schedule, at any time shall not be considered for the exclusive use of either the State or the Contractor. During the course of contract execution, any float generated due to the efficiencies of either party is not for the sole use of the party generating the float; rather it is a shared commodity to be reasonably used by either party. Project float will be a resource

available to both the State and the Contractor.

Each CPM Schedule submittal shall be in the form of an activity on node diagram (precedence diagramming method) and shall include at a minimum; an Early Start computer sort, a Total Float computer sort, an Activity Number computer sort, a Schedule Diagram in the Time Scaled Logic format and a backup data CD-ROM which includes all Primavera project files. The diagrams shall be on 2' x 3' sheets. Additional, more detailed diagrams for important aspects or phases of the work will be required on large or complex projects.

Activity I.D. numbers shall be keyed to the item numbers assigned on the detailed estimate sheet. The first three digits (four digits for highway illumination, signing, traffic signals and utility work) of the activity I.D. number shall be identical to the first three digits of the item number in the contract. The remaining digits may be used to provide unique, orderly and sequential I.D. numbers for each activity.

Activity codes shall be added to the schedule dictionary at the direction of the Engineer. At a minimum, activity codes for responsibility (prime, subcontractor by name), location of work (bridge #, span #, sta. #, site, building, type of work, etc.) and stage or phase number should be included.

The Project Coordinator shall be required to prepare and submit the following documents:

1. Baseline Submittal Requirements: The Contractor shall be guided by the following requirements when submitting the CPM Schedules for review and approval.
 - a. Within ten (10) calendar days after award, the Contractor and their scheduler will attend a meeting to discuss the submittal requirements. Within twenty (20) calendar days after contract award, the Contractor shall prepare and submit for review and approval a detailed CPM Schedule for all work. The review and approval process may take up to 21 calendar days and is more fully described in paragraph (b) of this section.

The work shall be broken out into sufficient detail such that no activity has a duration greater than twenty (20) days, unless approved by the Engineer. As a guide, 25 to 35 activities should be provided per \$1 million of contract work. The Engineer shall be the sole judge as to whether the schedule is sufficiently detailed.

All work shall be shown in sufficient detail such that the Critical Path may be identified and the schedule shall incorporate all contract milestones. Upon approval, this schedule shall be designated the "Baseline".

Failure to submit and gain approval for the "Baseline" may result in the Contractor being found in violation of Article 1.02.02 of the Standard Specifications. All elapsed contract time prior to the approval of the "Baseline", will be considered to be accurately represented by the actual as-built schedule of that time period. No claims for delays during that period will be allowed.

The approval of a Baseline Schedule shall in no way waive the requirements of the contract nor shall it excuse the Contractor from any obligations under the contract.

In no instance will the Contractor be permitted to commence work on any significant portion of the work for which a Baseline Schedule has not been approved without prior written approval from the Department.

- b. The Contractor, represented by the Project Coordinator and/or the Consultant, shall participate with the Engineer in the review and evaluation of each schedule submitted. Any and all revisions made necessary as a result of this review shall be made by the Contractor and a revised schedule submitted within ten (10) calendar days. Any further revisions required thereafter shall also be submitted for approval within (10) calendar days.
2. Monthly Updates: Each month, as of a calendar date mutually acceptable to the Contractor and to the Engineer, the Contractor shall deliver to the Engineer three (3) prints of all required schedule diagrams and tabulations. In addition, the Contractor shall deliver one (1) copy of the project backup data CD-ROM(s), which includes all Primavera project files. The schedule shall be updated to show the work actually accomplished during the preceding months, the actual time consumed for each activity, and the estimated time remaining for any activity which has been started but not completed.

The monthly update shall also include revisions to the CPM schedule necessitated by revisions to the project, which have been directed by the Engineer (including, but not limited to extra work) during the month preceding the update. Similarly, any changes to the schedule due to Contractor influences shall also be included within the schedule.

Any changes or revisions made to the approved Baseline shall be identified in narrative form in a cover letter accompanying the monthly update. The Engineer reserves the right to approve or reject any such changes. The narrative shall also describe in general terms the progress of the work since the last schedule update and shall identify any items of special interest. If the schedule revisions extend the Contract completion date, due to extra or added work or delays beyond the control of the Contractor, the Contractor must submit a request in writing for an extension of time in accordance with Article 1.08.08. This request should be supported by the schedules submitted previously.

The Contractor shall be responsible to develop mitigation measures for all delays, regardless of responsibility, and to identify all time and cost impacts to the work associated with those mitigation measures.

Except as otherwise authorized by the Engineer, monthly submissions received after the due date are considered late.

The reports required for each monthly update shall include all reports generated for approval of the CPM Schedule for that particular portion of the work. On larger or complex projects, the Engineer may require the schedule data sorted by an activity code to better reflect the progression of the work. Summary barcharts may also be required.

3. Biweekly Schedules: Each week, the Contractor shall be required to produce and submit to the Engineer a biweekly schedule showing all activities planned for the following two week period. This short term schedule may be handwritten; however a two week "look ahead" filter from the CPM Schedule is preferred. The biweekly schedule shall clearly indicate all work planned on a crew basis for the two week period.
4. Recovery Schedules: If, in the opinion of the Engineer, the updated schedule indicates that the Project has fallen behind schedule, or that a revision in sequence of operations may be necessary for any other reason, absent a justifiable time extension, the Contractor shall immediately institute all necessary steps to improve the Project's progress and shall submit such revised network diagrams, tabulations and operational plans, as may be deemed necessary by the Engineer, to demonstrate the manner in which an acceptable rate of progress will be regained.

Should the Contractor not demonstrate an ability to regain an acceptable rate of progress, the Engineer shall require the schedule to be resource loaded with the next monthly update. No additional compensation will be allowed for resource loading the schedule.

5. As-Built Schedules: Within thirty (30) days of completion of the project, including all corrective work, the Contractor shall submit an "As-Built Schedule" showing the actual progress of work. The Contractor shall submit three prints of this final CPM Schedule and one project backup data CD-ROM which include all Primavera project files for the Engineer's exclusive use.

If the contract includes Article 1.20 the following shall also apply:

6. Daily Construction Reports: The Project Coordinator shall assist the Engineer in the preparation of a daily construction report by ensuring that each of the Contractor's employees and subcontractors working on the Project Site on a given day signs the Engineer's sign-in sheet for that day; and by keeping and providing to the Engineer its own daily list of employees and subcontractors who worked on the Project Site on that day.

Method of Measurement: Within ten (10) calendar days of the award of the Contract, the Contractor shall submit to the Engineer for approval a breakdown of its lump sum bid price for this item detailing:

1. The development cost to prepare the Baseline Schedule in accordance with these specifications. Development costs shall not exceed 25% of the total cost of the item and shall include costs to furnish and install all specified hardware.

2. The cost to provide the services of the Project Coordinator, including costs to prepare and submit the Monthly Updates; furnish and submit any Recovery Schedules; furnish and submit Two Week Look Ahead Schedules and maintenance of and supplies for the specified hardware noted above. A per month cost will be derived by taking this cost divided by the number of Contract months remaining from the date of acceptance of the Baseline Schedule.
3. The cost of submission and certification of the As-Built Schedule in accordance with these specifications. The submission and certification costs shall be no less than 2% of the total cost of the item.
4. Substantiation showing that the costs submitted are reasonable based on the Contractor's lump sum bid.

Upon approval of the payment schedule by the Engineer, payments for work performed will be made as follows:

1. Upon approval of the "Baseline" Schedule by the Engineer, the lump sum development cost will be certified for payment.
2. Upon receipt of each monthly update of the "Baseline" Schedule, the per month cost for the services of the Project Coordinator will be certified for payment.
3. Upon approval of the As-Built Schedule by the Engineer, the lump sum submission and certification cost will be certified for payment.

Basis of Payment: This service will be paid for at the contract lump sum price for "Project Coordinator" complete, which price shall include the preparation and submission of all schedules, updates, reports and submittals. The lump sum price shall also include the cost of providing a complete, licensed copy of the Primavera software which will remain the property of the Engineer, and all materials, equipment, labor and work incidental of this service.

The lump sum price will be certified for payment as described in "Method of Measurement" subject to the following conditions:

1. Any month where the monthly update of the "Baseline" CPM schedule is submitted late, without authorization from the Engineer, will result in the following actions:
 - a. The monthly payment for the Project Coordinator item shall be deferred to the next monthly payment estimate. If any monthly submittal is more than thirty (30) calendar days late, there will be no monthly payment for the services of the Project Coordinator.
 - b. The greater of 5% of the monthly payment estimate or \$25,000 shall be retained from the monthly payment estimate until such time as the Contractor submits all required reports.

- c. If in the opinion of the Engineer, the contractor is not in compliance with this specification, the Engineer may withhold all project payments.
- 2. In the event the project extends beyond the original completion date by more than thirty (30) calendar days, and a time extension is granted to the Contractor, the Department may require additional CPM updates which will be paid at the per month cost for the services of the Project Coordinator.
- 3. If, in the opinion of the Engineer, the contractor is not in compliance with this specification or has failed to submit a "Baseline", monthly update or Recovery Schedule for any portion of the work in accordance with this specification, it shall result in the withholding of all contract payments until the schedule is submitted to, and approved by, the Engineer.

Pay Item

Project Coordinator

Pay Unit

L.S.

ITEM #0969050A – DOCUMENT CONTROL SPECIALIST

Description: Under this item the Contractor shall furnish the services of an administrative employees, entitled Document Control Specialist who will ensure that the Contractor and all other parties as designated by the Engineer will prepare, status, electronically file and send all project correspondence and drawings utilizing a document control system as established and maintained by the Department. The primary function of the document control system is to ensure timely processing of all contract documentation in coordination with the project schedule. This document control system will also provide uniform project information and reporting. The Document Control Specialist shall be designated by name, in writing with a resume of their qualifications, within five (5) calendar days of the award of the Contract and shall not be changed without prior written notice to the Department.

The Document Control Specialist shall be knowledgeable of the status of all contract documentation aspects of the work throughout the length of the Contract. The Contractor shall prepare and maintain the contract documentation utilizing the SharePoint document control system. The document control system will be physically located in a secure location designated by the Department. The Contractor will directly access the document control system via the internet. The Department will provide the Contractor access to the SharePoint Document Control System. All references to the use of SharePoint shall refer to the Engineer's shared document control system as described above. All information that resides on the shared document control system shall become the sole property of the Engineer.

The minimum lump sum bid for this item shall be \$50,000. Failure of the Contractor to bid at least the minimum amount will result in the Department adjusting the Contractor's bid to include the minimum bid amount for this item.

Documentation Requirements: All correspondence for the project shall be produced and controlled using SharePoint, including, but not limited to: transmittals, meeting minutes, requests for information (RFI's), requests for change (RFC's), submittals, field memos, notices, letters, and punch lists. All common correspondence files (submittals, requests, answers, changes, reports, minutes, agendas, letters, etc) shall be generated from, and stored within the common file server, including any and all file attachments. Submittals, including shop drawings, working drawings, catalog cuts, material certifications, and all documentation required by contract, shall be submitted electronically via SharePoint. Original hardcopy documents may still be required as determined by the Engineer. The Contractor is responsible to coordinate the overall creation and submission of all project documentation to meet the requirements of the project schedule and Technical Specifications. The Contractor is encouraged to supply the Engineer with corporate logos and letter templates to facilitate the creation and utilization of custom forms and reports.

The named Document Control Specialist shall be designated as the Submittal Coordinator and will be responsible for maintaining information related to the responsibility, status, elapsed time since submission, held time, start/finish times, and a history of all submittal revisions. A

submittal log must be maintained to indicate the latest construction submittals sent and received and the distribution of these drawings to the Department. Each submittal (shop drawing, working drawing, product data, samples, etc) must be individually entered, tracked, and the status maintained, including all revisions. The Contractor is responsible to utilize the latest drawings marked "Conforms" or "Conforms as Noted" as identified in the control system. All revisions are to be logged into the control system, describing each change.

All meeting minutes shall be logged into the control system. The Contractor is responsible to utilize meeting minutes and respond (electronically) to meeting minute items assigned to the Contractor.

Documents (letters, logs, shop or working drawings, sketches, payrolls, etc) to be transmitted to the Department by the Contractor, for which the Contractor does not have an electronic version, shall be scanned, converted into an Adobe Acrobat PDF format, and attached accordingly in SharePoint.

The document control system shall be available for Contractor use at all times unless system maintenance (i.e. backups, upgrades, etc) is being performed. System maintenance will generally be limited to 10 PM – 6AM, Monday - Friday and at various times on weekends. In the event a Contractor's authorized user cannot access the control system, the Contractor shall notify the Department's control system representative. In the event the control system becomes unavailable during normal business hours for an extended period of time, the Contractor may issue correspondence requiring immediate attention by the Department in hard copy format. The hard copy correspondence must be entered into the control system immediately upon becoming available again. Inability by the Contractor to gain access to the document control system for any reason shall not be grounds for claim. The use of the database is not required for proprietary cost and contract information.

The Department shall be allocated a minimum of ten (10) calendar days (using a 7-day calendar, exclusive of holidays) for review and response to each RFI submitted. RFI's requiring information from outside agencies shall be allocated twenty-one (21) days (using a 7-day calendar, exclusive of holidays).

The Department shall be allocated a minimum of thirty (30) calendar days (using a 7-day calendar, exclusive of holidays) for review and response to each RFC submitted. RFC's requiring information from outside agencies shall be allocated sixty (60) days (using a 7-day calendar, exclusive of holidays).

The Department reserves the right to reject any RFC submitted in the form of an RFI for the purpose of reducing the Department's review and response time. Such documents will not be considered for review by the Department and will be returned to the Contractor for resubmission. Review and response time for such document will commence upon resubmission in the correct format.

The Department shall be allocated a minimum of twenty-one (21) calendar days (using a 7-day calendar, exclusive of holidays) for review and approval of each submittal, unless specified

otherwise within the contract documents. Any submittals requiring approval by an outside Agency (ConnDEEP, Metro-North Railroad, etc.) shall be allocated a minimum of sixty (60) calendar days (using a 7-day calendar, exclusive of holidays). A schedule of submittals shall be submitted to The Department for review prior to the start of construction. These durations are a MINIMUM, and will likely increase with the number of outstanding submittals in The Department's possession. Therefore, whenever multiple Contractor submittals are under review by the Department, the Contractor shall prioritize the submittals and notify the Department thereof. The submittal schedule must be submitted early for review as a subset of the baseline schedule. The Department shall not be held responsible for any delay associated with the approval or rejection of any substitution or other revisions proposed by the Contractor.

Submittal and review activities are required in the Project Schedule per Item No. 0969000A, Project Coordinator. Submittal activities must be coordinated between the Project Coordinator and Document Control Specialist such that submittal information common to both the project schedule and the document control system (required and actual dates, sequence of submission, resubmissions if required) correspond with one another. All resubmissions shall be numbered with the original submittal number but designated a new revision number. All resubmissions shall be logged into the control system to properly calculate the entire duration required for the submittal process from the original submission date to final approval to indicate total days to process the submittal through all review cycles. Coordination of submittals is required for same work and interfacing work so that one submittal will not delay another.

Refer to the following Notices to Contractor for additional submittal requirements:

- Submittals
- Early Submittals
- FM Global Submittals
- Closeout Documents

The submittal log will be developed according to the following format:

Submittal Package

The Package name shall be the seven digit Item Number. The Package Title shall be the corresponding Item Name. Instances where contract items require an extensive number of submittals (i.e. rebar, structural steel, etc), packages shall be further separated by structure components or location. For example:

<u>Package</u>	<u>Title</u>
0602006-01	Deformed Steel Bars – Epoxy Coated / Abutment 2
0602006-02	Deformed Steel Bars – Epoxy Coated / PN-13
0602006-03	Deformed Steel Bars – Epoxy Coated / PN-14

Instances where a submittal requires review by more than one department or agency (i.e. requiring both ConnDOT and Metro-North Railroad reviews), the multiple reviewer option must

be checked so that the individual reviewers can be designated, with each receiving a copy of the submittal for review.

The Package status shall initially be “Unsubmitted”. Upon submission of any submittal within the package, the status should be changed to “Open”. Upon receipt of all final review comments for all package submittals, the status should be changed to “Closed”. Submittals that do not require review and approval (i.e. certified payrolls, backup information, etc) shall have a status of “SAC” (submitted and closed).

Submittal Item

All submittal items, as required by contract, must be individually entered, including shop & working drawings, product data, samples, etc. All submittals shall be associated with and generated within a specific package. The submittal number shall be the package name followed by a three digit incremental number (i.e. 1205201-01-001, 0602006-03-001). The Title shall be a clear description of the submittal item. In the case of a drawing submittal, the title shall be the exact name of the drawing and the drawing number shall be entered in the Details section. The appropriate Category and Type shall then be selected.

The Contractor shall examine and check each submittal for accuracy, completeness, coordination with related submittals and compliance with the Contract before it is transmitted to the Designer for review. The Contractor shall sign and submit the Submittal Register Form (sample attached to this section) with each submittal which includes the following statement: “Having reviewed this submittal, I certify that it is complete, accurate, coordinated in all aspects of the item being submitted and conforms to the requirements of the Contract in all respects, including all Federal requirements such as “Buy America”, except as otherwise noted.” By reviewing and certifying each submittal, the Contractor represents that he has determined and verified materials, field measurements and field construction criteria related thereto, and has checked and coordinated information contained within such submittals with requirements of the Work and the Contract. Shop drawings submitted without this signed statement will be rejected immediately and returned to the Contractor.

Shop drawings shall be submitted in Adobe Acrobat PDF Package format. Each drawing will be included as a separate file within the package and named in kind with the drawing number. The PDF package shall be listed and attached in SHAREPOINT to the first submittal. The drawings shall be listed individually thereafter.

Working drawings shall be submitted in Adobe Acrobat PDF format. The PDF package shall be listed and attached in SharePoint to a single submittal. The drawings shall be listed individually thereafter.

Electronic submittal attachments shall be named in kind with the submittal to which they are attached and include the revision number (i.e. Submittal 0602006-03-001 would have a PDF attachment named 0602006-03-001-1.pdf).

Submittal of samples for review and approval by the Designer shall be submitted using a SharePoint-generated transmittal. The Contractor shall ship the quantity of physical samples required by the contract to the Designer with the hard copy of the transmittal. The Designer shall generate the return transmittal in SharePoint (indicating the sample's review status as to Conforms, Conforms as Noted, Revise and Resubmit, Rejected, or No Action Required) and transmit it to the Contractor. The Designer shall retain one set of samples marked "Conforms" or "Conforms as Noted", transmit one set of same to the Engineer, and transmit the remaining sets of same to the Contractor.

Submittals requiring a signature by a licensed engineer or other party shall be digitally signed utilizing a digital ID obtained from an Adobe partner Certified Document Service (CDS) provider (see adobe.com for the list of CDS providers).

Required Start & Expected Finish shall represent the date range for the review process. Required Start shall be the date the submittal is issued by the Contractor for review. Expected Finish shall be the completion date for the review cycle (either 21 or 60 days later, as appropriate).

Workflow must be completed for each submittal. Received From shall be the party from which the submittal originated (prime contractor, subcontractor, fabricator, vendor, etc). Sent To and Returned By shall be the primary reviewer as designated by the contract documents. Forwarded To shall be the Contractor's designated submittal coordinator.

Review cycles will be numbered 001, 002, 003, etc. according to the number of resubmissions. Distributions (submittal recipients) must be listed on the transmittal.

Hard copies of all submittals marked "Conforms" or "Conforms as Noted" shall be transmitted within 5 working days. The Contractor shall submit hard copies of all letters signed in ink with any attachments to the addressee (original) and the ConnDOT District Office (copies) for their records. Scans of signed letters and their attachments shall be stored in SharePoint by the Contractor. The Contractor shall submit wet stamped hard copies of all conformed shop drawings requiring the signature of a professional engineer (e.g., steel bar joists, etc.) to the Department for their records. Scanned copies of these conformed shop submittals or other electronic copies will be stored by the Contractor in SharePoint. The Contractor shall submit hard copies and electronic copies of Maintenance Manuals and Warranties.

Submittal Forecast

In order to facilitate the Department's review of the large number of submittals anticipated for this project, the Contractor is to provide a submittal schedule in accordance with the Standard Specifications (Form 817) Section 1.20-1.05.02 Subsection 3, and as described herein. The submittal schedule will be created and maintained in SharePoint as follows:

A submittal package must be created for each contract item requiring a submittal (note that large submittal items must be broken out as prescribed above). Within each package, a single submittal, numbered 001, will be generated from the submittal package which will be utilized to approximate when submittals for that package will be submitted for review. At a minimum, the

submittal Number, Title, Status, Required Start, and Required Finish must be entered, where the Status is “Unsubmitted” and the Required Start and Required Finish represents the review period for all submittals within this package. The Required Start and Required Finish dates must be coordinated with the project CPM schedule.

Additionally, the Contractor shall prepare and distribute a 60 day “Look Ahead Submittal Schedule”, to be updated weekly and presented and discussed at the project coordination meeting as part of the standing meeting agenda. The Look Ahead Submittal Schedule will be based on the CPM schedule (without limitation on early submittals), and will provide the following in matrix/spreadsheet format:

- Contract Item No. (Note - for the MLSI, provide CSI Division No. & Specification Section No.)
- Contractor’s best estimate to identify the actual submittals to be made for those Contract Items or specification sections with multiple submittals
- Contractor’s best estimate of a target date the identified submittals will be made
- Identification of planned “Hot Submittals” needed to support near-term construction activities
- Identification of planned “Major Submittals” which are anticipated to require significant review effort (e.g., coordination drawings)

Documentation Control System Access Requirements: Within five (5) days of Contract Award, the Contractor shall designate, in writing, up to five (5) named Contractor personnel, to be approved and authorized by the Engineer to access the document control system. The Contractor shall designate one of the five authorized personnel to be the Document Control Specialist and act as the document control system contact person for the Contractor. That person shall be experienced and trained in the use of SHAREPOINT. All Contractor personnel requesting access authorization must complete the minimum training requirements described below and submit a certificate of completion to the Department. Upon receipt of the request (with training certificate(s)) and approval thereof, the Department will issue a username and password to each of the authorized Contractor personnel. The Contractor will ensure that only authorized Contractor personnel access and utilize the control system in a responsible, non-destructive manner. The Contractor shall make every reasonable effort to prevent the disclosure of access information for unauthorized use of the control system. The Department, at its discretion, may revoke access authorization from any user if it is determined that the user: a) has used the control system for any other reason than is intended by this specification; b) is no longer in the Contractor’s employ or associated with the project or c) has disclosed their access authorization for use by another person or party for any reason. The Contractor is responsible to ensure their authorized users have access to the public internet from a computer system running any currently supported Microsoft Windows Operating System and Microsoft Internet Explorer Web Browser with a minimum Cipher Strength of 128 bit, version 8.0. Minimum modem speed shall be 768K (business DSL). The Contractor is responsible to ensure that anti-virus software is installed and maintained on any computer accessing the Department’s document control system. Additionally, it is the Contractor’s sole responsibility to maintain a compatible software system. Compatibility is defined as the ability to send and receive documents in a format viewable by the

Department. The Contractor must provide valid individual email addresses for each authorized user to the Department based upon a MAPI compliant email system, such as Microsoft Outlook or Exchange.

Training Requirements: Contractor personnel accessing the document control system must fulfill minimum training requirements. Personnel must attend a two (2) day project specific SharePoint training class provided by the Department. Training requests are to be made through the Engineer. The Department will provide the training facility and will supply all hardware, software, etc. required for the class. The costs of all Contractor personnel's training time are the responsibility of the Contractor.

Any additional training required, as a result of adding additional or replacing existing Contractor staff, shall be included in the total cost of this item.

Submittals: Within thirty (30) calendar days after award, the Submittal Coordinator shall prepare, in accordance with all requirements of this specification, and submit for review and acceptance, a Submittal Forecast and shall have the following requirements attached:

- Submittal Summary Report
- Submittal Bar Chart Report

Method of Measurement: Within ten (10) calendar days of the award of the Contract, the Contractor shall submit to the Engineer for approval a cost breakdown of his lump sum bid price. The submission must include substantiation showing that the costs breakdown submitted are reasonable based on the Contractor's lump sum bid. The cost breakdown shall be in accordance with the following payment schedule:

- 1) The cost to successfully complete all training to utilize the document control system, in accordance with these specifications, shall not exceed 5% of the total cost of the item.
- 2) The development cost to prepare the Submittal Forecast in accordance with these specifications shall not exceed 5% of the total cost of the item. Payment for this work will be made upon acceptance of the Submittal Forecast by the Engineer.
- 3) The cost to provide services of the Document Control Specialist, including costs to maintain the Submittal Forecast; coordinating the Document Control System submittal information with the CPM Schedule submissions; preparing, submitting, utilizing, maintaining, coordinating and updating document control system items as required by all Contractor personnel with access rights to the system, shall be paid as a per month cost. This cost shall be derived by taking the remaining item cost and dividing it by the number of contract months.

Basis of Payment: This service shall be paid for at the contract lump sum price for "Document Control Specialist" complete, which price shall include the Contractor personnel's training time, preparation, statusing, electronically scanning, filing, and sending all project correspondence, and the furnishing, maintenance, and supply costs for all services as noted above in the

ITEM #0969050A

utilization of the document control system as established and maintained by the Department. The lump sum price will be certified for payment as described in "Method of Measurement" subject to the following conditions:

- 1) Failure by the Contractor to utilize and regularly update the specified SharePoint database in a manner acceptable to the Department or failure to utilize the common file server for the storage of all project related files may result in the withholding of all contract payments until such time as all specification requirements have been satisfied. Failure by the designated Document Control Specialist to update submittal statuses on a regular basis shall result in the replacement of the Document Control Specialist at the Engineer's request. Additionally, the Contractor may be found in violation of Article 1.02.02 of the Standard Specifications "for having failed to prosecute work continuously, diligently and cooperatively in an orderly sequence".
- 2) In the event the project extends beyond the original completion date by more than thirty (30) calendar days, and a time extension is granted to the Contractor, the Department may require the continued utilization of the Document Control System which shall be paid at the per month cost for the services of the Document Control Specialist.

<u>Pay Item</u>	<u>Pay Unit</u>
Document Control Specialist	L.S.

SUBMITTAL REGISTER FORM

The use of this Submittal Register Form is required for all submittals

Project Name: REPLACEMENT OF THE MNR
BRIDGE OVER ATLANTIC STREET
State Project Nos. 135-301 AND 301-163
Connecticut Department of Transportation

Design Engineer: AECOM (URS Corporation AES, Inc.)

Contractor: _____

Address: _____

Telephone No.: _____

Subcontractor: _____

Address: _____

Telephone No.: _____

Submittal Number: _____

Submittal Title: _____

Specification Section and Paragraph Number: _____

Contract Drawing and Detail Reference: _____

Date of Initial Submittal: _____

Date of this Submittal: _____

CPM Activity Number: _____

This Submittal Prepared By: _____

Having reviewed this submittal, I certify that it is complete, accurate, coordinated in all aspects of the item being submitted and conforms to the requirements of the Contract in all respects, including all Federal requirements such as "Buy America" except as otherwise noted.

By: _____
Signature

Printed or Typed Name

Title

Date