TOWN OF NORTH READING

INVITATION FOR BIDS

Contract No. 2024-03E: Park Street over Martins Brook - Superstructure Replacement

SUPERSTRUCTURE REPLACEMENT
PARK STREET OVER MARTINS BROOK (N-18-002) (7YC)

BIDS DUE:
AUGUST 29, 2024
11:00 AM

At the

Department of Public Works Office
North Reading Town Hall
235 North Street
North Reading, Massachusetts 01864

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DIVISION 0

BIDDING AND CONTRACT REQUIRMENTS

INVITATION FOR BIDS

The Town of North Reading through its Town Administrator is seeking sealed bids for the superstructure replacement of the bridge carrying Park Street over Martins Brook. The project includes demolition of the existing bridge superstructure (concrete tee beams) and railings, and selective demolition at the abutments. The new superstructure will include precast concrete deck beams, a concrete deck, concrete approach slabs, concrete abutment caps, concrete bridge rails and approach guardrail improvements. The project also includes the relocation of water and gas mains across the bridge via structural utility supports. Construction is expected to be completed by October 15, 2025 starting on or before April 15, 2025.

Clearly marked sealed bids will be received at the North Reading Town Hall in the Department of Public Works Office, 235 North Street, North Reading, MA 01864 on or before **Thursday August 29, 2024 at 11:00 AM, no exceptions,** at which time sealed bids will be read out loud at the North Reading Town Hall, Room 14, 235 North Street, North Reading, MA 01864. See bid documents described below for requirements of an acceptable bid.

The bidding for and award of the contract for this project are to be in accordance with the requirements of Massachusetts General Laws Chapter 30 § 39M. Bidders shall be pre-qualified by the Massachusetts Department of Transportation with a class of work as, **Bridge – Construction**, for the project with an estimated value of **$1,522,550.00**, in accordance with MGL Chapter 81, Section 8B. Bidders are on notice that this project is subject to the schedule of prevailing wage rates as determined by the Commissioner of the Massachusetts Department of Labor and Workforce Development, Division of Occupational Safety and applicable Federal Regulations.

The Proposal Guaranty shall be in the form of either cash, bid bond, certified check, bank treasurer's check, or bank cashier's check, made payable to the Town of North Reading in the amount of 5% of the value of the bid including add alternates.

Bid documents containing specification requirements and conditions will be available after 9:00 a.m. Thursday, July 25, 2024 on TEC, Inc's. website, www.theengineeringcorp.com/bids. For more information or questions regarding bid specifications, please contact Andrew Spurr at aspurr@theengineeringcorp.com. Questions will not be received after 12:00 p.m. on Thursday, August 15, 2024. Contract Award is subject to availability of Funding through the Town of North Reading.

A non-mandatory pre-bid meeting is scheduled for Tuesday, August 13, 2024 at 10:00 am at the North Reading Town Hall, Room 14, 235 North Street, North Reading, MA 01864.

Proposals that do not include a properly completed "Affidavit" pertaining to noncollusion, etc., will be declared non-responsive and not eligible for award consideration. No Bidder may withdraw their bid for a period of thirty days, excluding Saturdays, Sundays and legal holidays after the actual date of the opening of bids.

One original shall be submitted. NO faxed or emailed proposals will be accepted. Bids are to be submitted in a SEALED envelope.

If submitting a bid in a mailer, the enclosed bid shall be in a separate sealed envelope.

The Town of North Reading fully complies with federal, state, and local laws and directives governing equal opportunity, affirmative action and non-discrimination in all Town activities and actively solicits bids/proposals from MBE/WBE businesses in accordance with Town of North Reading policy.

The Town reserves the right to waive any informality and to reject any or all bids if it is in the public interest to do so.

Michael P. Gilleberto
North Reading Town Administrator

INFORMATION FOR BIDDERS

1.01 PROJECT IDENTIFICATION

A. Owner: Town of North Reading, Massachusetts

B. Awarding Authority: By its Town Administrator

C. Mailing Address: Department of Public Works Office
North Reading Town Hall
235 North Street
North Reading, Massachusetts 01864

D. Project Name: **SUPERSTRUCTURE REPLACEMENT AT PARK STREET OVER MARTINS BROOK (N-18-002) (7YC)**

E. Funding: **Local**

1.02 RECEIPT OF BIDS

A. General Bids for the project will be received by the Awarding Authority at the time and place stated in Section 00020, INVITATION TO BID, and then at said place publicly opened and read aloud.

B. Each bid must be submitted in a sealed envelope, addressed to the North Reading Town Hall, Department of Public Works Office, 235 North Street, North Reading, MA 01864. Each sealed envelope containing a bid must be plainly marked on the outside with **2024-03E: Park Street over Martins Brook - Superstructure Replacement** and the envelope should bear on the outside the name of the Bidder and his address. If forwarded by mail, the sealed envelope containing the bid must be enclosed in another envelope addressed to

the North Reading Department of Public Works at the above address. Each must be time stamped and signed by a Town Employee upon receipt.

C. All bids must be made on the bid form included in the specifications. All blank spaces for bid prices must be filled in, in ink or typewritten, and the bid form must be fully completed and executed when submitted. Only one (1) set of the bid documents is required.

D. List of required Documents for General Bid submission:

1. Section 00300, Bid Form
   a. 50 percent Payment Bond
   b. Certificate of Non-Collusion
   c. Conflict of Interest Statement

2. Section 00310, Bid Bond (see Article 1.08 below)

3. Section 00311, Bidder's Certification Regarding Payment of Prevailing Wages

4. Section 00375
   a. CERTIFICATE OF VOTE (to be filed if Contractor is a Corporation)
   b. MASS LLC CERTIFICATE OF INCUMBENCY AND AUTHORITY
   c. Certifications Required by Law for Public Construction Projects
      i. Tax Compliance
      ii. Non-Collusion
      iii. Public Contractor Debarment
      iv. OSHA Training

5. Section 00385, Bidders Qualification Form

E. Section 00375, STATEMENT OF TAX COMPLIANCE, must be submitted to the Owner before the award of the contract.

1.03 ABILITY AND EXPERIENCE OF BIDDER

A. No award will be made to any bidder who cannot satisfy the Owner that he has sufficient ability and experience in this class of work and sufficient capital and plant to enable him to prosecute and complete the Work successfully within the time named. The Owner's decision or judgment on these matters shall be final, conclusive and binding.

B. MassDOT prequalification with the class of work as **Bridge – Construction**, for the project with an estimated value of **$1,522,550.00** will be required of all bidders.

1.04 INFORMATION NOT GUARANTEED

A. All information given in the Contract Documents relating to the subsurface and other conditions, natural phenomena, existing pipes and other structures is from the best sources at present available to Owner. All such information is furnished only for the information and convenience of bidders and is not guaranteed.

B. It is agreed and understood that the Owner does not warrant or guarantee that the subsurface or other conditions, natural phenomena, existing pipes or other structures encountered during construction will be the same as those indicated in the contract documents.

C. It is agreed further and understood that no bidder or contractor shall use or be entitled to use any of the information made available to him or obtained in any examination made by him in any manner as a basis of or ground for any claim or demand against the Owner or the Engineer, arising from or by reason of any variance which may exist between the information made available and the actual subsurface or other conditions, natural phenomena, existing pipes or other structures actually encountered during the construction work, except as may otherwise be expressly provided for in the Contract Documents.

1.05 MODIFICATIONS AND WITHDRAWAL OF BIDS

A. The Owner may waive any informalities or minor defects or reject any and all bids. Any bid may be withdrawn prior to the above scheduled time for the opening of bids or authorized postponement thereof. Any bid received after the time and date specified shall not be considered. Should there be reasons why the Contract cannot be awarded within the specified period; the time may be extended by mutual agreement between Owner and the Bidder.

B. No Bidder may withdraw his bid within thirty (30) calendar days, excluding Saturdays, Sundays and legal holidays after the actual date of the bid opening.

C. Prior to Bid Opening, bids may be withdrawn upon written or telegraphic request of the Bidder provided confirmation of any telegraphic withdrawal, signed by the Bidder, is placed in the mail and postmarked prior to the time set for the Bid Opening. Bid documents and security of any Bidder withdrawing his bid in accordance with the foregoing conditions will be returned.

1.06 EXAMINATION OF CONTRACT DOCUMENTS AND SITE(S)

A. Each Bidder is responsible for inspecting the sites and for reading and being thoroughly familiar with the contract documents. The failure or omission of any Bidder to do any of the foregoing shall in no way relieve any Bidder from any obligation in respect to their bid.

B. Bidders must satisfy themselves of the accuracy of their bid by examination of the site(s) and a review of the Contract Documents. After bids have been submitted, the Bidder shall not assert that there was a misunderstanding concerning the quantities of work or of the nature of the work to be done.

C. The Contract Documents contain the provisions required for the construction of the project. Information obtained from an officer, agent, or employee of the Owner or any other person shall not affect the risks or obligations assumed by the Bidder or relieve him from fulfilling any of the conditions of the Contract.

1.07 ADDENDA AND INTERPRETATIONS

A. All questions by prospective Bidders as to the interpretation of the Contact Documents shall be submitted in writing to the Engineer and shall be in their possession by 12:00 PM on Thursday, August 15, 2024. The Engineer will then post interpretations of all questions to TEC, Inc's website and notify all registered plan holders of said posting by 12:00 on Tuesday, August 20, 2024.

B. Oral or telephone interpretations will not be generally made, and if made, shall be strictly informal and not legally valid or binding.

C. Written interpretations shall be made in the form of Addenda to the Bidding and Contract Documents. Bidders are urged to communicate all errors and discrepancies found in the Bidding and Contract Documents to the Engineer. Telephone calls pointing out any such errors or discrepancies will be taken by the Engineer, but only for the purpose of receiving the information in order that it may be properly processed, and not for interpretation or clarification.

D. Each Bidder shall be responsible for determining that they have received all addenda issued and shall acknowledge said receipt on Section 00300, BID FORM.

E. All potential bidders must register as a plan holder at https://theengineeringcorp.com/bids to be eligible to receive addenda.

1.08 BIDS, BONDS, AND AWARD OF CONTRACT

A. Each bid must be accompanied by a bid bond, certified check or a treasurer's or cashier's check issued by a responsible bank or trust company, payable to the Owner in the amount of five (5) percent of the value of the total bid (base bid plus bid alternate). As soon as bid prices have been compared, the Owner will return the bid deposits of all except the three (3) lowest responsible Bidders. When the Agreement is executed, the bid deposits of the two (2) remaining unsuccessful Bidders will be returned. The bid deposit of the successful Bidder will be retained until the payment bond has been executed and approved, after which it will be returned.

B. Each Bidder shall sign his name in the space provided for. If a partnership or corporation makes the bid, the name and address of the partnership or corporation shall be shown, together with the names of the partners or the officers. A bid made by a partnership shall be acknowledged by one of the partners; a bid made by a corporation shall be acknowledged by one of the authorized officers thereof, and the corporate seal attached.

C. A conditional or qualified bid will not be accepted.

D. Bids will be compared on the basis of the total price stated in the bid. In the event that there is a discrepancy in the bid between written words and figures, the prices written in words shall govern. The Owner agrees to examine and consider each bid submitted in consideration of the bidder’s agreements, as hereinabove set forth and as set forth in the bid. The contract will be awarded to “the lowest responsible and eligible bidder” pursuant to General Laws Chapter 30, Section 39M, as amended. Such a bidder shall possess the skill, ability and integrity necessary for the faithful performance of the work, shall be able to furnish labor that can work in harmony with all other elements of labor employed, or to be employed, in the work and shall otherwise comply with all applicable provisions of law. Contract award shall be subject to availability of an appropriation for funding.

E. The Owner may make such investigations as he deems necessary to determine the ability of the Bidder to perform the work and the Bidder shall furnish to the Owner all such information and data for this purpose as the Owner may request. The Owner reserves the right to reject any bid if the evidence submitted by, or investigation of, such Bidder fails to satisfy the Owner that such Bidder is properly qualified to carry out the obligations of the Contract and to complete the work contemplated therein. The Owner may also reject bids which in its sole judgment are either incomplete, conditional, obscure or not responsive or which contain additions not called for, erasures not properly initialed, alterations, or similar irregularities, or the Owner may waive such omissions, conditions or irregularities.

F. The low Bidder shall supply the names and addresses of major material Suppliers and Subcontractors when required to do so by the Owner.

G. A payment bond in the amount of fifty (50) percent of the contract price, with a corporate surety approved by the Owner, will be required of the General Contractor for the faithful performance of the contract, and may be required by the General Contractor of Sub-contractors. If bonds are required of sub-contractors, the General Contractor shall pay the premiums for these bonds.

H. Attorneys-in-fact who sign bid bonds or payment bonds must file with each bond a certified and effective dated copy of their power of attorney.

1.09 REDUCTION IN SCOPE OF WORK

A. The Owner reserves the right to decrease the scope of the work to be done under this contract and to omit any work in order to bring the cost within available funds. To this end, the Owner reserves the right to reduce the quantity of any items or omit all of any progress of work. The Owner further reserves the right, at any time during the progress of the work, to restore all or part of any items previously omitted or reduced. Exercise by the Owner of the above rights shall not constitute any ground or basis of claim for damages or for anticipated profits on the work omitted.

1.10 EXECUTION OF THE AGREEMENT

A. The party to whom the Contract is awarded will be required to execute the Section 00500, FORM OF AGREEMENT and obtain the payment bond, and certificates of insurance within ten (10) calendar days from the date when Section 00430, NOTICE OF AWARD is delivered to the Bidder. If any Bidder fails to execute the Section 00500, FORM OF AGREEMENT and furnish a payment bond as stated in his bid, his bid deposit shall become the property of the Owner as liquidated damages, provided that in case of death, disability or other unforeseen circumstances affecting the Bidder, his bid deposit may be returned to him, provided further that the amount of the bid deposit to be retained shall not exceed the difference between the low bid and the bid of the next lowest eligible Bidder.

1.11 INSURANCE CERTIFICATES

A. The Contractor will not be permitted to start any construction work until he has submitted certificates covering all insurances called for under Article 6 of the General Conditions.

1.12 NOTICE TO PROCEED

A. Section 00650, NOTICE TO PROCEED shall be issued within ten (10) days of the execution of the Section 00500, FORM OF AGREEMENT by the Owner. Should there be reasons why the Section 00650, NOTICE TO PROCEED cannot be issued within such period; the time may be extended by mutual agreement between the Owner and Contractor. If the Section 00650, NOTICE TO PROCEED has not been issued within the ten-day period or within the period mutually agreed upon, the Contractor may terminate the Section 00500, FORM OF AGREEMENT without further liability on the part of either party.

1.13 TIME SCHEDULE FOR COMPLETION OF WORK

A. The work in this contract shall be completed by October 15, 2025. Work performed beyond the agreed upon timeframe may be subject to liquidated damages in the amount specified herein.

B. It is the intent of this contract that the road closure/Contractor mobilization shall not occur prior to April 15, 2025, after the execution of this contract and be completed in accordance with the schedule outlined in the contract documents. Prospective bidders shall be aware of the time constraints related to the gas utility work described later in the project documents.

C. Submittals, material approvals, and material procurement, etc. are expected to occur immediately upon contract procurement to facilitate April 2025 contractor mobilization/road closure.

1.14 WAGE RATES

A. Minimum wage rates, as determined by the Department of Labor and Workforce Development, under the provision of the Massachusetts General Laws, Chapter 149, Sections 26 to 27H, as amended, apply to this Project. It is the responsibility of the Bidder, before Bid Opening, to request, if necessary, any additional information on Massachusetts Wage Rates for those trades' people who are not covered by the applicable Massachusetts Wage Decision, but who may be employed for the proposed work under this Contract.

B. In accordance with Chapter 149, Section 27B, it is the responsibility of the Contractor and any Subcontractors to submit payroll records to the Owner on a weekly basis.

1.15 LAWS AND REGULATIONS

A. Applicable provisions of Massachusetts General Laws and Regulations and/or the United States Code and Code of Federal Regulations govern this Contract and any provision violation of the foregoing shall be deemed null, void and of no effect.

B. All applicable laws, ordinances, and the rules and regulations of all authorities having jurisdiction over construction of the project shall apply to the Contract throughout.

C. This project is subject to all of the OSHA Safety and Health Regulations (see 29 CFR Part 1926/1910 and all subsequent amendments) as promulgated by the United States Department of Labor on June 24, 1974 and to the Massachusetts, "Construction Industry Rules and Regulations", 454 CMR 10.00, et seq. Contractors shall be familiar with the requirements of these regulations, and all other pertinent regulations and requirements.

D. Certain provisions of the Massachusetts General Laws are applicable to the construction contracts including, but not limited to, those contained in Chapter 30 and Chapter 149. All applicable provisions of the Massachusetts General Laws are incorporated into the Contract as if fully set forth herein and shall prevail over any conflicting provisions of the Contract Documents. Special attention is called to the Contract being bid on under the provisions of Massachusetts General Laws Chapter 30 Section 39M.

E. This Project is a local project being bid, awarded and administered by the Owner (Town of North Reading, Massachusetts) through its awarding authority (Town Administrator's

office). All bidders are on notice that the Contractor awarded this work shall be specifically required:

- To possess and/or obtain all licenses and permits necessary to complete performance under this Contract;
- To comply with M.G.L. Chapter 62C, Section 49A (compliance with Tax Laws);
- To comply with M.G.L. Chapter 151A, Section 19A (licenses to conduct business; contributions);
- To comply with M.G.L. Chapter 152 (Workers Compensation);
- To comply with all relevant Prevailing Wage Rates and Employment Laws;
- To comply with M.G.L. Chapter 156B and Chapter 181, Section 4, and has filed all required certificates and reports with the Secretary of State and the Attorney General's Office;
- To comply with Federal Anti-Lobbying requirements of 31 USC 1352;
- That it and any of its subcontractors are not currently disbarred or suspended by the Federal Government or the Commonwealth under any law, regulation or Executive Order;
- To comply with M.G.L. Chapter 268A (Conflict of Interest)

Federal and State laws and regulations prohibiting discrimination, including the American Disabilities Act, the Rehabilitation Act, the Federal Fair Housing Act, unlawful discrimination (M.G.L. Chapter 151B), business discrimination (M.G.L. Chapter 151E), the Public Accommodations Law (M.G.L. Chapter 272, Sections 92A, 98 and 98A), the Massachusetts Constitution, Article CXIV, M.G.L. Chapter 93, Section 103, the Telecommunications Act, and the Attorney General Office Protection of Elders, apply to this Contract.

1.16 INSPECTION OF THE WORK

A. The Contractor shall provide at all times proper facilities for access and inspection by representatives of the Owner, Federal, State or other agency having jurisdiction over the work of this project.

1.17 SALES TAX

A. This project is exempt from State Sales and Use or Excise Taxes to the extent allowed by law.

1.18 GUARANTEES

A. In addition to other guarantees due the Owner, the Contractor guarantees that the Work and services to be performed under the Contract, and all workmanship, materials and equipment performed, furnished, used or installed in the construction shall be free from defects and flaws, and shall be performed and furnished in strict accordance with the Contract Documents, that the strength of all parts of all manufactured equipment shall be adequate and as specified and that the performance test requirements of the Contract shall be fulfilled. This guarantee shall be for a period of one year from and after the date of completion and acceptance of the Work as stated in the final estimate. If part of the Work is accepted in accordance with that subsection of this Agreement titled Partial Acceptance, the guarantee for that part of the Work shall be for a period of one year from the date fixed for such acceptance. The Payment Bond shall remain in full force and effect through the Guarantee Period.

B. If at any time within the said period of guarantee any part of the Work requires repairing, correction or replacement, the Owner may notify the Contractor in writing to make the required repairs, correction, or replacements. If the Contractor neglects to commence making such repairs, corrections, or replacements to the satisfaction of the Owner within three days from the date of receipt of such notice, or having commenced fails to prosecute such Work with diligence, the Owner may employ other persons to make the same, and all direct and indirect costs of making said repairs, correction or replacements, including compensation for additional professional services, shall be paid by the Contractor.

1.19 RECORD KEEPING

A. The Contractor is reminded that the provisions of Chapter 30, Section 39R relative to record keeping apply to this Contract. A brief summary of the requirements is as follows:

1. The Contractor and all subcontractors shall maintain books, records, and accounts at least six (6) years after the final payment. They will be subject to inspection by the awarding authority, officers of the Inspector General, or the Deputy Commissioner of Capital Asset Management and Maintenance.

2. Any changes in Town record keeping or recording transactions that affect the awarding authority shall be explained along with a letter from the Contractor's independent certified public accountant approving or otherwise commenting on the changes.

3. The Contractor shall file with the awarding authority a statement of management as to whether the system of internal accounting controls has been established.

4. The Contractor shall file with the awarding authority a statement prepared and signed by an independent certified public accountant that an examination has been made of internal accounting controls.

1.20 ENGINEER

A. The Engineer for this project is The Engineering Corp. (TEC). Questions regarding the Contract Documents shall be directed to: TEC:
Andrew Spurr, aspurr@theengineeringcorp.com

END OF SECTION

BID FORM

To the Town of North Reading, Massachusetts, herein called the Owner, acting by and through its Town Administrator, for the **Superstructure Replacement at Park Street Bridge over Martins Brook (N-18-002) (7YC), Project No. 2024-03E.**

The Undersigned, as bidder, herein referred to as singular and masculine, declares as follows:

(1) The only parties interested in this BID as Principals are named herein;

(2) This BID is made without collusion with any other person, firm, or corporation;

(3) No officer, agent, or employee of the Owner is directly or indirectly interested in this BID;

(4) He has carefully examined the site of the proposed Work and fully informed and satisfied himself as to the conditions there existing, the character and requirements of the proposed Work, the difficulties attendant upon its execution and the accuracy of all estimated quantities stated in this BID, and he has carefully read and examined the Documents, the annexed proposed AGREEMENT and the Specifications and other Contract Documents therein referred to and knows and understands the terms and provisions thereof;

(5) He understands that information relative to subsurface and other conditions, natural phenomena, existing pipes and other structures (surface and/or subsurface) has been furnished only for his information and convenience without any warranty or guarantee, expressed or implied, that the subsurface and/or other conditions, natural phenomena, existing pipes and other structures (surface and/or subsurface) actually encountered will be the same as those shown on the Documents or in any of the other Contract Documents and he agrees that he shall not use or be entitled to use any such information made available to him through the Contract Documents or otherwise or obtained by him in his own examination of the site, as a basis of or ground for any claim against the Owner or the Engineer arising from or by reason of any variance which may exist between the aforesaid information made available to or acquired by him and the subsurface and/or other conditions, natural phenomena, existing pipes and other structures (surface and/or subsurface) actually encountered during the construction work, and he has made due allowance therefore in this BID;

(6) And he understands that the quantities of work tabulated in this BID or indicated on the Documents or in the Specifications or other Contract Documents are only approximate and are subject to increase or decrease as deemed necessary by the Engineer/Owner;

(7) He agrees that, if this BID is accepted he will contract with the Owner, as provided in the copy of the Contract Documents deposited in the office of the Engineer, this BID form being part of said Contract Documents, and that he will perform all the work and furnish all the materials and equipment, and provide all labor, services, plant, machinery, apparatus, appliances, tools, supplies and all other things required by the Contract Documents in the manner and within the time therein prescribed and according to the requirements of the Engineer as therein set forth, and that he will take in full payment therefore the lump sum for the Work as stated in the schedule below.

(Note: Bidders must bid on each item. All entries in the entire BID must be made clearly and in ink; prices bid must be written in both words and figures. In case of discrepancy, the amount shown in words will govern.)

(Bidders should insert extended item prices obtained from quantities and unit prices.)

TO: Department of Public Works Office
North Reading Town Hall
235 North Street
North Reading, MA 01864

PROJECT: **Superstructure Replacement at Park Street over Martins Brook (N-18-002) (7YC)**
Project No. 2024-03E

DATE: _____

SUBMITTED BY:

_____
(Full name)

_____
(Full address)

_____

Superstructure Replacement – Work Items

Note:
The unit price for each item must be written in words and figures. In case of discrepancy, the amount shown in words will govern.

ITEM NO.	QTY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE		TOTAL	
			DOLLARS	CENTS	DOLLARS	CENTS
101.	0.1	CLEARING AND GRUBBING AT _____ PER ACRE				
114.1	1	DEMOLITION OF SUPERSTRUCTURE OF BRIDGE NO. N-18-002 AT _____ PER LUMP SUM				
120.1	120	UNCLASSIFIED EXCAVATION AT _____ PER CUBIC YARD				
127.1	10	REINFORCED CONCRETE EXCAVATION AT _____ PER CUBIC YARD				
151.	25	GRAVEL BORROW AT _____ PER CUBIC YARD				
151.2	10	GRAVEL BORROW FOR BACKFILLING STRUCTURES AND PIPES AT _____ PER CUBIC YARD				
153.1	5	CONTROLLED DENSITY FILL - NON-EXCAVATABLE AT _____ PER CUBIC YARD				
415.3	305	PAVEMENT MICRO MILLING AT _____ PER SQUARE YARD				
443.	10	WATER FOR ROADWAY DUST CONTROL AT _____ PER THOUSAND GALLONS				
450.31	10	SUPERPAVE INTERMEDIATE COURSE - 12.5 (SIC -12.5) AT _____ PER TON				
450.32	15	SUPERPAVE INTERMEDIATE COURSE - 19.0 (SIC - 19.0) AT _____ PER TON				
450.60	40	SUPERPAVE BRIDGE SURFACE COURSE - 9.5 (SSC-B - 9.5) AT _____ PER TON				
450.70	5	SUPERPAVE BRIDGE PROTECTIVE COURSE - 9.5 (SPC-B - 9.5) AT _____ PER TON				

CARRIED FORWARD _____

BT-1

BROUGHT FORWARD _____

ITEM NO.	QTY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE		TOTAL	
			DOLLARS	CENTS	DOLLARS	CENTS
452.	295	ASPHALT EMULSION FOR TACK COAT AT _____ PER GALLON				
482.3	160	SAWCUTTING ASPHALT PAVEMENT AT _____ PER FOOT				
501.	50	GRANITE CURB TYPE VA1 - STRAIGHT AT _____ PER FOOT				
509.01	25	GRANITE TRANSITION CURB FOR BRIDGE CURB - TIP DOWN AT _____ PER FOOT				
627.1	2	TRAILING ANCHORAGE AT _____ PER EACH				
627.82	1	GUARDRAIL TANGENT END TREATMENT, TL-2 AT _____ PER EACH				
628.24	3	TRANSITION TO BRIDGE RAIL AT _____ PER EACH				
628.241	1	TRANSITION TO BRIDGE RAIL (MODIFIED) AT _____ PER EACH				
630.2	200	HIGHWAY GUARD REMOVED AND DISCARDED AT _____ PER FOOT				
634.1	5	THRIE BEAM GUARD PANEL AT _____ PER EACH				
634.11	1	THRIE BEAM TERMINAL END UNIT AT _____ PER EACH				
697.2	50	FLOATING SILT FENCE AT _____ PER FOOT				

CARRIED FORWARD _____

BT-2

BROUGHT FORWARD _____

ITEM NO.	QTY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE		TOTAL	
			DOLLARS	CENTS	DOLLARS	CENTS
698.3	5	GEOTEXTILE FABRIC FOR SEPARATION AT _____ PER SQUARE YARD				
748.	1	MOBILIZATION AT _____ PER LUMP SUM				
751.	10	LOAM FOR ROADSIDES AT _____ PER CUBIC YARD				
765.	75	SEEDING AT _____ PER SQUARE YARD				
767.121	200	SEDIMENT CONTROL BARRIER AT _____ PER FOOT				
769.	220	PAVEMENT MILLING MULCH UNDER GUARD RAIL AT _____ PER FOOT				
816.811	20	TEMPORARY MODIFICATIONS TO TRAFFIC SIGNALS AT _____ PER DAY				
852.	180	SAFETY SIGNING FOR TRAFFIC MANAGEMENT AT _____ PER SQUARE FOOT				
853.1	2	PORTABLE BREAKAWAY BARRICADE TYPE III AT _____ PER EACH				
853.2	50	TEMPORARY BARRIER (TL-2) AT _____ PER FOOT				
856.12	540	PORTABLE CHANGEABLE MESSAGE SIGN AT _____ PER DAY				
866.106	300	6 INCH REFLECTORIZED WHITE LINE (THERMOPLASTIC) AT _____ PER FOOT				

CARRIED FORWARD _____

BT-3

BROUGHT FORWARD _____

ITEM NO.	QTY	ITEM WITH UNIT BID PRICE WRITTEN IN WORDS	UNIT PRICE		TOTAL	
			DOLLARS	CENTS	DOLLARS	CENTS
867.106	300	6 INCH REFLECTORIZED YELLOW LINE (THERMOPLASTIC) AT _____ PER FOOT				
983.	5	DUMPED RIPRAP AT _____ PER TON				
992.321	1	TEMPORARY UTILITY SUPPORTS AT _____ PER LUMP SUM				
992.4	1	TEMP. & PERM. UTILITY RELOCATIONS (GAS & WATER) AT _____ PER LUMP SUM				
994.1	300	TEMPORARY PROTECTIVE SHIELDING BRIDGE NO. N-18-002 (7YC) AT _____ PER SQUARE FOOT				
995.	1	BRIDGE SUPERSTRUCTURE, BRIDGE NO. N-18-002 (7YC) AT _____ PER LUMP SUM				
999.1	1	POLICE ALLOWANCE AT _____ PER ALLOWANCE				

TOTAL _____

BT-4

BASIS OF AWARD: The bid combination listed above serving as the basis of award shall be contingent on available funding.

Having examined the Place of the Work and all matters referred to in the Instructions to Bidders and the Contract Documents prepared by TEC, Inc., the undersigned, hereby offer to enter into a Contract to perform the Work, **Superstructure Replacement at Park Street over Martins Brook (N-18-002) (7YC), Project No. 2024-03E,** for the Price of:

$_____dollars,

($_____) in lawful money of the United States of America and, We have included herewith, the unit price bid forms, and the required security deposit or Bid Bond as required by the Instruction to Bidders.

This project is exempt from all Massachusetts sales taxes.

The undersigned agrees that for extra work, if any, will be performed in accordance with Article 10 of the General Conditions of the Contract and will be paid for in accordance with Article 11 of the General Conditions of the Contract.

The bid security accompanying this BID shall be in the amount of 5 percent of the BID.

If this BID is accepted by the Owner, the undersigned agrees to complete the entire work provided to be done under the Contract within the agreed upon time frame between the Contractor and Town stipulated in the AGREEMENT. Liquidated damages for each calendar day of delay shall be $250 as stipulated in the AGREEMENT.

As provided in the INFORMATION FOR BIDDERS, the bidder hereby agrees that he will not withdraw this BID within thirty (30) calendar days, Saturdays, Sundays, and legal holidays excluded after the actual date of the opening of Bids and that, if the Owner shall accept this BID, the bidder will duly execute and acknowledge the AGREEMENT and furnish, duly executed and acknowledged, the required CONTRACT BONDS within ten (10) days after notification that the AGREEMENT and other Contract Documents are ready for signature.

Should the bidder fail to fulfill any of his agreements as hereinabove set forth, the Owner shall have the right to retain as liquidated damages the amount of the bid check or cash which shall become the Owner's property. If a bid bond was given, it is agreed that the amount thereof shall be paid as liquidated damages to the Owner by the Surety.

Bidder has examined copies of all the Contract Documents and the following addenda listed:

Addenda number(s) _____ or circle: N/A
(To be filled in by Bidder if Addenda are issued.)

The time period for holding bids where Federal approval is not required is 30 days, Saturdays, Sundays and legal holidays included, after the opening of bids and where Federal approval is required, the time period for holding bids is 30 days, Saturdays, Sundays and legal holidays excluded after Federal approval.

The undersigned must furnish a 50 percent Construction Payment Bond with a surety company acceptable to the Owner. The name and address of the surety company who will sign the payment bond is as follows:

_____

The bidder, by submittal of this BID, agrees with the Owner that the amount of the bid security deposited with this BID fairly and reasonably represents the amount of damages the Owner will suffer due to the failure of the bidder to fulfill his agreements as above provided.

The undersigned hereby certifies that he is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed on the work and that he will comply fully with all laws and regulations applicable to awards made subject to MGL Ch. 30, Section 39M. The bidding and award of the contract will be in full compliance with Section 39M inclusive of Chapter 30 of the General Laws of the Commonwealth of Massachusetts as last revised.

The undersigned further certifies under penalty of perjury that the said undersigned is not presently debarred from doing public construction work in the Commonwealth under the provisions of section twenty-nine F of chapter twenty-nine, or any other applicable debarment provisions of any other chapter of the General Laws or any rule or regulation promulgated there under.

Pursuant to M.G.L. Ch. 62C, sec. 49A, I certify under the penalties of perjury that I, to my best knowledge and belief, have filed all state tax returns and paid all state taxes required under law.

The undersigned certifies under penalties of perjury that this bid is in all respects bona fide, fair and made without collusion or fraud with any other person. As used in this paragraph the word "person" shall mean any natural person, joint venture, partnership, corporation or other business or legal entity. The attached CERTIFICATE OF NON-COLLUSION must be signed and submitted as part of the Bid Proposal.

(SEAL)_____L.S. By _____
(Name of Bidder) (Signature and title of authorized representative)

_____
(Business address)

_____
(City and State)

Date _____

The bidder is a corporation incorporated in the State (or Commonwealth) of _____ - a partnership - an individual. (Bidder must add and delete as necessary to make this sentence read correctly.)

(Note: If the bidder is a corporation, affix corporate seal and give below the names of its president, treasurer, and general manager if any; if a partnership, give full names and residential addresses of all partners; and if an individual, give residential address if different from business address.)

The required names and addresses of all persons interested in the foregoing Bid, as Principals, are as follows:

_____

_____

_____

_____

The bidder is requested to state below what work of a similar character to that included in the proposed Contract he has done and to give references that will enable the Owner to judge his experience, skill, and business standing.

_____

_____

_____

_____

(Add supplementary page if necessary.)

* * *

CERTIFICATE OF NON-COLLUSION

The undersigned certifies under penalties of perjury that this bid or proposal has been made and submitted in good faith and without collusion or fraud with any other person. As used in this certification, the work "person" shall mean any natural person, business, partnership, corporation, union, committee, club, or other organization, entity, or group of individuals.

_____
(Name of person signing bid or proposal)

_____
(Name of business)

CONFLICT OF INTEREST STATEMENT

The proposer hereby certifies, under the penalties of perjury, that:

1. The proposer has not given, offered, or agreed to give any person (as that term is defined below), or received, accepted, or agreed to accept from any person, any gift, contribution, offer of employment, or financial incentive of any kind as an inducement for, or in connection with, the award of the contract for services for which the proposer is applying.
2. No consultant to or subcontractor for the proposer has given, offered, or agreed to give any gift, contribution, offer of employment or financial incentive of any kind to the proposer of to any other person as an inducement for, or in connection with, the award to the consultant or subcontractor of a contract by the proposer.
3. No person, other than a bona fide full-time employee of the proposer has been retained or hired by the proposer to solicit for or in any way assist the proposer in obtaining the contract for services for which the proposer is applying, upon an agreement or understanding that such person be paid a fee or other consideration contingent upon the award of the contract to the proposer.
4. Throughout the duration of the contract, if awarded the contract, the proposer will not have any financial relationship in connection with the performance of the contract with any materials or system manufacturer, distributor or vendor.

As used in this certification, the word "person" shall mean any natural person, business, partnership, corporation, union, committee, club, or other organization, entity, or group of individuals. These provisions shall not apply to any stockholder of a corporation the stock of which is listed for sale to the general public with the Securities and Exchange Commission, if such stockholder holds less than ten percent of the outstanding stock entitled to vote at the annual meeting of such corporation

The proposer further hereby certifies, under the penalties for perjury, that all information provided in this proposal to provide services is true and correct.

_____
Firm Name

_____
Authorized Principal (Printed Name)

_____
Authorized Principal (Signature)

_____
Title

_____
Date

BID BOND

Know all men by these presents, that we, the undersigned, _____
_____ As Principal,
and _____ as Surety, are
hereby held and firmly bound unto _____ as
Owner in the penal sum of
_____ for the payment of
which, well and truly to be made, we hereby jointly and severally bind ourselves, successors and assigns.

Signed, this _____ day of _____, 20_____.

The Condition of the above obligation is such that whereas the Principal has submitted to
_____ a certain Bid, attached hereto
and hereby made a part hereof to enter into a contract in writing, for the
_____
_____
_____

Now, therefore,

(a) If said Bid shall be rejected, or
(b) If said Bid shall be accepted and the Principal shall execute and deliver a contract in the Form of Contract attached hereto (properly completed in accordance with said Bid) and shall furnish a Bond for his faithful performance of said contract, and for the payment of all persons performing labor or furnishing materials in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said bid, then this obligation, shall be void, otherwise the same shall remain in force and effect; it being expressly understood and agreed that the liability of the Surety for any and all claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.

The Surety, for value received, hereby stipulates and agrees that the obligations of said Surety and its Bond shall be in no way impaired or affected by any extension of the time within which the Owner may accept such Bid and said Surety does hereby waive notice of any such extension.

In witness whereof, the Principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set forth above.

_____ (L.S.)
Principal

_____
Surety

By: _____

Important - Surety companies executing Bonds must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the state where the project is located.

CERTIFICATION REGARDING
PAYMENT OF PREVAILING WAGES

The undersigned Bidder hereby certifies, under the pains and penalties of perjury, that the foregoing bid is based upon the payment to laborers to be employed on the project of wages in an amount no less than the applicable prevailing wage rates established for the project by the Massachusetts Department of Labor and Workforce Development, Division of Occupational Safety. The undersigned bidder aggress to indemnify the awarding authority for, from and against an loss, expanse, damages, actions or claims, including any expense incurred in connection with any delay or stoppage of the project work, arising out of or as a result of (1) the failure of the said bid to be based upon the payment of the said applicable prevailing wage rates or (2) the failure of the bidder, if selected as the Contractor, to pay laborers employed on the project the said applicable prevailing wage rates.

DATED: _____ NAME OF BIDDER: _____

By: _____

Name: _____

Title: _____

CERTIFICATE OF VOTE
(to be filed if Contractor is a Corporation)

I, _____, hereby certify that I am the duly qualified
(Secretary of the Corporation)

and acting Secretary of _____ and I further certify that a meeting of the
(Name of Corporation)

Directors of said Company, duly called and held on _____, at which
(Date of Meeting)

all Directors were present and voting, the following vote was unanimously passed:

VOTED: To authorize and empower

_____

_____

_____

_____

_____

Anyone acting singly, to execute Forms of General Bid, Contracts or Bonds on behalf of the Corporation.

I further certify that the above vote is still in effect and has not been changed or modified in any respect.

By:_____
(Secretary of Corporation)

A True Copy:

Attest:_____
(Notary Public)

My Commission Expires:_____
(Date)

_____, MASSACHUSETTS

LLC CERTIFICATE OF INCUMBENCY AND AUTHORITY

_____, LLC

I, _____, do hereby certify that:

1. I am the duly elected and acting _____ of _____ LLC, a limited liability company organized and existing in good standing under the laws of the State of _____ (the "Company").

2. Attached hereto as Exhibit A is a true and correct copy of resolutions which were duly adopted by the members of the Company on _____, 20___.

3. The attached resolutions have not been amended, rescinded or modified and are in full forces and effect on the date hereof in the form originally adopted, and are in conformity with the Articles of Organization and Operating Agreement of the Company.

4. Attached hereto as Exhibit B is a true and correct copy of the Articles of Organization dated _____, 20___ and the Operating Agreement dated _____, 20___.

5. The attached Articles of Organization and Operating Agreement have not been amended, rescinded, or modified and are in full forces and effect on the date hereof.

6. The following person are the Authorized Officers of the Company in the capacities indicated, and the signatures set forth after their names and titles are their true and genuine signatures.

Name	Office	Signature

Witness, my signature and the seal of the Company this ___day of _____, 20__.

_____
Name:
Title:

CERTIFICATIONS REQUIRED BY LAW FOR PUBLIC CONSTRUCTION CONTRACTS

You must COMPLETE and SIGN the following certifications. You must also print, at the bottom of this page, the name of the contractor for whom these certifications are submitted.

TAX COMPLIANCE

Pursuant to Chapter 62C of the Massachusetts General Laws, Section 49A(b), I, the undersigned, authorized signatory for the below named contractor, do hereby certify under the pains and penalties of perjury that said contractor has complied with all laws of the Commonwealth of Massachusetts relating to taxes, reporting of employees and contractors, and withholding and remitting child support.

NON-COLLUSION

The undersigned certifies under the penalties of perjury that this bid is in all respects bona fide, fair and made without collusion or fraud with any other person. As used in this subsection the word "person" shall mean any natural person, joint venture, partnership, corporation or other business or legal entity.

PUBLIC CONTRACTOR DEBARMENT

The undersigned certifies under penalty of perjury that the below named contractor is not presently debarred from doing public construction work in the commonwealth under the provisions of section twenty-nine F of chapter twenty-nine, or any other applicable debarment provisions of any other chapter of the General Laws or any rule or regulation promulgated thereunder.

OSHA TRAINING

Pursuant to G.L. c. 30, §39S, the Contractor hereby certifies under penalties of perjury as follows:

(1) Contractor is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed in the work;
(2) All employees to be employed at the worksite will have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration at the time the employee begins work and they shall furnish documentation of successful completion of said course with the first certified payroll report for each employee; and
(3) All employees to be employed in the work subject to this contract have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration.

COMPLETE AND SIGN BELOW:

_____ _____
Authorized Person's Signature Date

_____
Print Name & Title of Signatory

_____
Name of Contractor

BIDDERS QUALIFICATION FORM

The Bidder is requested to provide a general description and references for three projects he/she has completed within the past five years that are similar in character to that included in this contract. The Bidder shall provide: a general description of the projects; final construction cost for the projects; name, title, address and phone number of reference for whom the project was constructed. The Town will contact the references to judge the Bidders experience, skill, and qualifications.

1)

2)

3)

NOTICE OF AWARD

To:

Project Description:

The Town of North Reading hereinafter called "Owner" has considered the Bid submitted by you for the above described work in response to its DOCUMENT 00020, INVITATION TO BID dated _____2024, and DOCUMENT 00100, INFORMATION FOR BIDDERS. You are hereby notified that your Bid has been accepted in the amount of **$**

You are required by the DOCUMENT 00100, INFORMATION FOR BIDDERS to execute the DOCUMENT 00500, FORM FOR AGREEMENT and furnish the required Contractor's Payment Bond and Certificates of Insurance within ten (10) calendar days from the date of this Notice of Award. If you fail to execute said Agreement and to furnish said Bonds within ten (10) days from the date of this Notice of Award, said Owner will be entitled to consider all your rights arising out of the Owner's acceptance of your Bid as abandoned and as a forfeiture of your Bid Bond. The Owner will be entitled to such other rights as may be granted by law.

You are required to return an acknowledged copy of this Notice of Award to the Owner. Dated this ___ th day of_____, 20__.

Owner: **TOWN OF NORTH READING, MA.**

By its Town Administrator

_____
Michael P. Gilleberto

Acceptance of Notice:

Receipt of the above Notice of Award is hereby acknowledged

by _____, this

_____day of _____, 20___

By _____

Title_____

FORM OF AGREEMENT

THIS AGREEMENT made this _____ day of _____

in the year Two Thousand and ____, between _____, with a

usual place of business at _____, hereinafter

called the CONTRACTOR, and the Town of _____, acting by its _____, with a

usual place of business at _____ Street, _____, MA _____, hereinafter called the

OWNER.

The CONTRACTOR and the OWNER, for the consideration hereinafter named, agree as follows:

1. Scope of Work

The Contractor shall furnish all labor, materials, equipment and insurance to perform all work required for the project known as the _____ Project, in strict accordance with the Contract Documents and all related Drawings and Specifications. The said Documents, Specifications, Drawings and any GENERAL SUPPLEMENTARY CONDITIONS are incorporated herein by reference and are made a part of this Agreement.

2. Contract Price

The Owner shall pay the Contractor for the performance of this Agreement, subject to additions and deductions provided herein, in current funds, the sum of _____.

3. Commencement and Completion of Work and Liquidated Damages

It is agreed that time is of the essence of this Agreement. The Contractor shall commence and prosecute the work under this Agreement upon execution hereof and shall complete the work on or before _____.

A. Definition of Term: The Term "Substantial completion" shall mean the date certified by the Owner when construction is sufficiently complete, in accordance with the Contract Documents, so the Owner may occupy the project, or designated portion(s) thereof, for the use for which it is intended.

B. Time as Essential Condition: It is understood and agreed that the commencement of and substantial completion of the work are essential conditions of this Agreement. It is further agreed that time is of the essence for each and every portion of the Contract Documents wherein a definite and certain length of time is fixed for the performance of any act whatsoever; and where under the Contract Documents any additional time is allowed for the completion of any work, the new time fixed by such extension shall be of the essence of this Agreement. It is understood and agreed that the times for the completion of the work are reasonable, taking into consideration the average climatic range and usual industrial conditions prevailing in this locality.

C. Progress and Completion: Contractor shall commence work promptly upon execution of this Agreement and shall prosecute and complete the work regularly, diligently and uninterruptedly at such a rate of progress as will insure Substantial Completion within the stipulated number of calendar days.

D. Liquidated Damages: It is expressly agreed between the Contractor and the Owner that the Contractor will be responsible for all damages which may arise due to the Contractor's failure to substantially complete the work within the above specified time. If the Contractor shall neglect, fail or refuse to complete the work within the specified number of days, or any extension thereof authorized by the Owner, Contractor agrees, as a part of the consideration for the execution of this Contract by the Owner, to pay the Owner the amount specified herein, not as a penalty, but as liquidated damages for such breach of contract as hereinafter set forth, for each and every calendar day, excluding Saturdays, Sundays and legal Holidays, that the Contractor shall be in default of Substantial completion after the date specified in the Agreement. Due to the impracticability and extreme difficulty of fixing and ascertaining the actual damages the Owner would in such event sustain, said amount is agreed to be the amount of damages which the Owner would sustain, and said amount shall be retained from time to time by the Owner from current periodic estimates. The amount of liquidated damages shall be **$250** per day.

4. Performance of the Work

A. Direction of the Work: The Contractor shall supervise and direct the Work, using his best skills and attention which shall not be less than such state of skill and attention generally rendered by the contracting profession for projects similar to the Project in scope, difficulty and location. The Contractor shall maintain adequate supervisory personnel at the project site during the performance of the Work. He shall be solely responsible for all construction means, methods, techniques, sequences and procedures and for coordinating all portions of the Work under the Agreement.

B. Responsibility for the Work: (1) The Contractor shall be responsible to the Owner for the acts and omissions of his employees, Subcontractors and their agents and employees,

and other persons performing any of the Work under a contract with the Contractor. This obligation shall also extend to the presence on the Site of suppliers of materials or equipment, their employees, contractors, and agents engaged in the work.

(2) The Contractor shall not be relieved from his obligations to perform the Work in accordance with the Contract Documents either by the activities or duties of the Owner in its administration of the Agreement, or by inspections, tests or approvals required or performed by persons other than the Contractor.

C. Permits and Fees: Unless otherwise expressly provided, the Contractor shall secure and pay for all permits and fees, licenses and inspections necessary for the proper execution and completion of the Work which are customarily secured after execution of the Agreement and which are legally required at the time the bids are received, and the same shall at all times be the property of the Owner and shall be delivered to the Owner upon completion of the Project.

D. Notices, Compliance With Laws: (1) The Contractor shall give all notices and comply with all federal, state and local laws, ordinances, rules, regulations and lawful orders of any public authority bearing on the performance of the Work. The Contractor shall provide the Owner with reproductions of all permits, licenses and receipts for any fees paid. The Owner represents that it has disclosed to the Contractor all orders and requirements known to the Owner of any public authority particular to this Agreement.

(2) If the Contractor observes that any of the Contract Documents are at variance with applicable laws, statutes, codes and regulations in any respect, he shall promptly notify the Owner in writing, and any necessary changes shall be accomplished by appropriate modification.

(3) If the Contractor performs any Work which he knows or should know is contrary to such laws, ordinances, rules and regulations, and without such notice to the Owner, he shall assume full responsibility therefor and shall bear all costs attributable thereto.

(4) In the performance of the Work, the Contractor shall comply with all applicable federal, state and local laws and regulations including those relating to workplace and employee safety. The Contractor shall notify the Owner immediately of any conditions at the place of the work which violate said laws and regulations and shall take prompt action to correct and eliminate any such violations.

E. Project Superintendent: The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site at all times during the progress of the Work. The superintendent shall represent the Contractor and all communications given to the superintendent shall be as binding as if given to the

Contractor. Important communications shall be confirmed in writing. Other communications shall be so confirmed on written request in each case.

F. Progress Schedule: The Contractor, immediately after being awarded the Contract, shall prepare and submit for the Owner's information an estimated progress schedule for the Work. The progress schedule shall be related to the entire Project to the extent required by the Contract Documents, and shall provide for expeditious and practicable execution of the Work.

G. Drawings, Specifications and Submittals:

(1) The Contractor shall maintain at the site for the Owner one record copy of all Drawings, Specifications, Addenda, Change Orders and other Modifications, and "As-Built" Drawings and Specifications in good order and marked currently to record all changes made during construction, and approved Shop Drawings, Product Data and Samples. These shall be delivered to the Owner upon completion of the Work.

(2) By approving and submitting Shop Drawings, Product Data and Samples, the Contractor represents that he has determined and verified all materials, field measurements, and field construction criteria related thereto, or will do so, and that he has checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

(3) The Contractor shall not be relieved of responsibility for any deviation from the requirements of the Contract Documents by the Owner's approval of Shop Drawings, Product Data or Samples unless the Contractor has specifically informed the Owner in writing of such deviation at the time of submission and the Owner has given written approval to the specific deviation. The Contractor shall not be relieved from responsibility for errors or omissions in the Shop Drawings, Product Data or Samples by the Owner's approval thereof.

(4) The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data or Samples, to revisions other than those requested by the Owner on previous submittals.

(5) No portion of the Work requiring submission of a Shop Drawing, Product Data or Sample shall be commenced until the submittal has been approved by the Owner. All such portions of the Work shall be in accordance with approved submittals.

H. Protection of the Work and Owner's Property: The Contractor shall at all times safely guard the Owner's property from injury or loss in connection with this Agreement. He shall at all times safely guard and protect his own work, and that of adjacent property

from damage. The Contractor shall replace or make good any such damage, loss or injury. The Contractor shall clean the work area and restore it to its original condition upon completion of the work.

I. Quality of the Work: The Contractor shall perform the work in a good, workmanlike manner. The Contractor hereby guarantees that the entire work constructed by him under the Agreement will meet fully all requirements thereof as to quality of workmanship and materials. The Contractor hereby agrees to make at his own expense any repairs or replacements made necessary by defects in materials or workmanship supplied to him that become evident within one (1) year after the date of the final payment, and to restore to full compliance with the requirements set forth herein any part of the work constructed hereunder, which during said one (1) year period is found to be deficient with respect to any provisions of the Contract Documents. The Contractor also agrees to hold the Owner harmless from claims of any kind arising from damage due to said defects. The Contractor shall make all repairs and replacements promptly upon receipt of written orders for same from the Owner. If the Contractor fails to make the repairs and replacements promptly, the Owner may do the work and the Contractor shall be liable to the Owner for the cost thereof.

J. Warranty: The Contractor guarantees to Owner that all materials incorporated into the work will be new unless otherwise specified or agreed. Prior to final payment, the Contractor shall deliver to the Owner all manufacturers' warranties, together with such endorsements or assignments as are necessary to ensure to the Owner the full rights and benefits of such warranties.

5. Affirmative Action/Equal Employment Opportunity

The Contractor is directed to comply with all applicable State Laws, Ordinances, Bylaws, and rules and regulations regarding affirmative action/equal employment opportunity requirements. Failure of the Contractor to comply with any such law, rule or regulation shall constitute grounds for the Owner to terminate the Agreement.

6. Site Information Not Guaranteed; Contractor's Investigation

All information given in the Contract Documents relating to subsurface and other conditions, natural phenomena, existing pipes, and other structures is from the best sources at present available to the Owner. All such information is furnished only for the information and convenience of the Contractor and is not guaranteed.

It is agreed and understood that the Owner does not warrant or guarantee that the subsurface or other conditions, natural phenomena, existing pipes, or other structures encountered during construction will be the same as those indicated in the Contract Documents.

Contractor has familiarized himself with the nature and extent of the Contract Documents, work, locality, and with all local conditions and federal, state, and local laws, rules, ordinances, and regulations that in any manner may affect costs, progress, or performance of the work. Contractor has made, or has caused to be made, examinations, investigations, and tests and studies of such reports and related data in addition to those referred to in the paragraph above as he deems necessary for the performance of the work at the Contract Price, within the Contract Time, and in accordance with the other Terms and Conditions of the Contract Documents; and no additional examinations, tests, investigations, reports, and similar data are or will be required by the Contractor for such purposes.

Contractor has correlated the results of all such observations, examinations, investigations, tests, reports, and data with the Contract Documents. Contractor has given the Owner written notice of all conflicts, errors, or discrepancies that he has discovered in the Contract Documents, and the resolution thereof by the Owner is acceptable to the Contractor.

It is further agreed and understood that the Contractor shall not use or be entitled to use any of the information made available to him or obtained in any examination made by him in any manner as a basis of or ground for any claim or demand against the Owner, arising from or by reason of any variance which may exist between the information made available and the actual subsurface conditions or other conditions or structures actually encountered during the construction work, except as may otherwise be expressly provided for in the Contract Documents.

7. Project Architect or Engineer

There ___ is ___ is not a project architect-engineer for this project who is _____. Except as otherwise indicated in the Contract Documents, the Architect/Engineer shall be a representative of the Owner and the Contractor shall direct all communications, questions and comments on the work and the performance thereof to the Architect/Engineer. Except as otherwise provided, the Architect/Engineer shall have all the authority of the Owner set forth in the Contract Documents. In general, the Architect/Engineer shall have the authority to review the performance of the work, reject work which is defective or otherwise does not comply with the Contract Documents and to order the Contractor to remedy defective work and take such actions which are necessary to make the work conform to the Contract Documents.

8. Wage Rates

Prevailing Wage Rates as determined by the Commissioner of the Department of Labor and Workforce Development under the provisions of Massachusetts General Laws, Chapter 149, Section 26 to 27G, as amended, apply to this project. It is the responsibility of the Contractor to provide the Town with certified payrolls and to comply with all requirements of the above-cited statutes.

The schedules of prevailing wage rates are included in the Contract Documents.

9. Payments to the Contractor

Within fifteen (15) days after receipt from the Contractor of a proper and satisfactory periodic estimate requesting payment of the amount due for the preceding month, the Owner shall have fifteen (15) days to make payment for:

A. The work performed during the preceding month.

B. The materials not incorporated in the Work but delivered and suitably stored at the site (or at some location agreed upon in writing) to which the Contractor has title, or to which a Subcontractor has title and has authorized the Contractor to transfer title to the Owner.

C. Less the following retention items:

1. A retention based on an estimate of the fair value of the Owner's claims against the Contractor.

2. A retention for direct payments to Subcontractors, if any, based on demands for same in accordance with the provisions of Section 39F of Chapter 30 of the General Laws.

3. A retention not exceeding five percent (5%) of the approved amount of the periodic payment.

D. After the receipt of a periodic estimate requesting final payment and within sixty-five (65) days after the Contractor fully completes the Work, or substantially completes the Work so that the value of the Work remaining to be done is, on the estimate of the Owner, less than 1% of the original Contract Price, or substantially completes the Work and the Owner takes possession or occupancy, whichever occurs first, the Owner shall pay the Contractor the entire balance due on the Contract less:

1. A retention based on an estimate of the fair value of the Owner's claims against the Contractor and of the cost of completing the incomplete and unsatisfactory items of work.

2. A retention for direct payments to Subcontractors, if any, based on demands of same in accordance with the provisions of Section 39F of Chapter 30 of the General Laws, or based on the record of payments by the Contractor to the Subcontractors under this Contract if such record of payment indicates that the Contractor has not paid Subcontractors as provided in Section 39F of Chapter 30 of the General Laws.

If the Owner fails to make payment as herein provided, there shall be added to each such payment, daily interest at the rate of 3 percentage points above the rediscount rate than charged by the Federal Reserve Bank of Boston, commencing on the first day after said payment is due, and continuing until the payment is delivered or mailed to the Contractor; provided that no interest shall be due, in any event, on the amount of a periodic estimate for final payment until fifteen (15) days after receipt of such a periodic estimate by the Owner as provided in the first paragraph of this Article. The Contractor agrees to pay to each subcontractor a portion of any such interest paid in accordance with the amount due each subcontractor.

The Owner may make changes in any periodic estimate submitted by the Contractor and the payment due on said periodic estimate shall be computed in accordance with the changes so made, and such changes and any requirements for a corrected periodic estimate shall not affect the due date for the periodic payment or the date for the commencement of interest charges on the amount of the periodic payment computed in accordance with the changes made, as provided herein; provided further, that the Owner may, within seven (7) days after receipt, return to the Contractor for correction, any periodic estimate which is not in acceptable form or which contains computations not arithmetically correct, and in that event, the date of receipt of such periodic estimate shall be the date of receipt of the corrected periodic estimate in proper form and with arithmetically correct computations. The date of receipt of a periodic estimate received on a Saturday shall be the first working day thereafter.

E. Changes in the Work: No changes in the work covered by the approved Contract Documents shall be made without prior written approval of the Owner. Charges or credits for the work covered by the approved change shall be determined by one or more, or a combination of the following methods:

(a) Unit bid prices previously approved.

(b) An agreed lump sum.

(c) The actual cost of:

(1) Labor.

(2) Materials entering permanently into the work.

(3) The ownership or rental cost of construction equipment during the time of use on the extra work.

(4) Power and consumable supplies for the operation of power equipment.

(5) Wages to be paid.

To the cost under (c) there shall be added a fixed fee to be agreed upon but not to exceed fifteen percent (15%) of the actual cost of work. The fee shall be compensation to cover the cost of supervision, overhead, bond, profit and any other general expenses.

F. Claims for Additional Costs: If the Contractor wishes to make a claim for an increase in the Contract Sum, he shall give the Owner written notice thereof within twenty days after the occurrence of the event giving rise to such claim. This notice shall be given by the Contractor before proceeding to execute the Work, except in an emergency endangering life or property. No such claim shall be valid unless so made. Any change in the Contract Sum resulting from such claim shall be authorized by Change Order.

The Contractor hereby agrees that the Contractor shall have no claim for damages of any kind against the Town on account of any delay in the commencement or performance of the work and/or any hindrance, delay or suspension of any portion of the work including, but not limited to, any claims or damages on account of having to perform out of sequence work, claims for damages on account of loss of production or other interference with the work whether such delay is caused by the Town or otherwise, except as and to the extent expressly provided under G.L. c.30, §39O in the case of written orders by the Town. The Contractor acknowledges that the Contractor's sole remedy for any such claim will be an extension of time as provided herein.

10. Final Payment, Effect

The acceptance of final payment by the Contractor shall constitute a waiver of all claims by the Contractor arising under the Agreement.

11. Contract Documents

The Contract Documents consist of the following, together with this Agreement:

Invitation to Bid
Instructions to Bidders
This Contract Form
Bid Form
Payment Bond
Non-Collusion Certificate
Tax Compliance Certificate
Clerk's Certificate of Corporate Vote
Certificate of Insurance
General Conditions
Supplementary General Conditions
General Requirements
Specifications and Addenda
Contract Drawings
Schedule of Prevailing Wages

12. Terms Required By Law

This Agreement shall be considered to include all terms required to be included in it by the Massachusetts General Laws, and all other laws, as though such terms were set forth in full herein.

13. Indemnification

The Contractor shall indemnify and hold harmless the Owner from and against any and all claims, damages, losses, and expenses, including attorney's fees, arising out of the performance of this Agreement when such claims, damages, losses, and expenses are caused, in whole or in part, by the acts, errors, or omissions of the Contractor or his employees, agents, subcontractors or representatives.

14. Insurance

The Contractor shall purchase and maintain such insurance as will protect both the Owner and the Contractor from claims which may arise under the Agreement, including operations performed for the named insured by independent contractors and general inspection thereof by the named insured. In addition, the Contractor shall require its subcontractors to maintain such insurance. Coverage shall be provided for:

.1 claims under workers' or workmen's compensation, disability benefit and other applicable employee benefit acts;

.2 claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees;

.3 claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees;

.4 claims for damages insured by usual personal injury liability coverage which are sustained (1) by any person as a result of an offense directly or indirectly related to the employment of such person by the Contractor, or (2) by any other person;

.5 claims for damages, including damages to the Work itself, because of injury to or destruction of tangible property, including loss of use resulting therefrom; and

.6 claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.

.7 claims involving contractual liability applicable to the Contractor's obligations under Article 13.

The limits of liability for coverage required under the preceding paragraph are specified at the end of this section.

Except for Workmen's Compensation, all liability coverage shall name the Town as an additional insured and shall provide for 30 days prior written notice to the Town of any modification or termination of coverage provided thereby. The Contractor shall provide the Owner with appropriate certificate(s) of insurance evidencing compliance with this provision prior to the commencement of any work under this Agreement.

15. Notice

All notices required to be given hereunder shall be in writing and delivered to, or mailed first class to, the parties' respective addresses stated above. In the event that immediate notice is required, it may be given by telephone or facsimile, but shall, to the extent possible, be followed by notice in writing in the manner set forth above.

16. Termination

A. Each party shall have the right to terminate this Agreement in the event of a failure of the other party to comply with the terms of the Agreement. Such termination shall be effective upon seven days' notice to the party in default and the failure within that time of said party to cure its default.

B. The Owner shall have the right to terminate the Agreement without cause, upon ten (10) days' written notice to the Contractor. In the event that the Agreement is terminated pursuant to this subparagraph, the Contractor shall be reimbursed in accordance with the Contract Documents for all Work performed up to the termination date, and for all materials or equipment not incorporated in the Work, but delivered and suitably stored at the site. Payment for material or equipment stored at the site shall be conditioned upon submission by the Contractor of bills of sale or such other evidence as is satisfactory to Owner to establish the Owner's title to such material or equipment or otherwise protect the Owner's interests.

17. Miscellaneous

A. Royalties and Patents: The Contractor shall pay all royalties and license fees. He shall defend all suits or claims for infringement of any patent rights and shall save the Owner harmless from loss on account thereof, except that the Owner shall be responsible for all such loss when a particular design, process or the product of a particular manufacturer or manufacturers is specified; but if the Contractor believes or has reason to believe that the design, process or product specified is an infringement of a patent, he shall be responsible

for such loss unless he promptly gives such information to the Owner, and thereafter the Owner insists on the use of the design, process or products specified.

B. Assignment: The Contractor shall not assign or transfer any of its rights, duties or obligations under this Agreement without the written approval of the Owner.

C. Governing Law: This Agreement shall be governed by and construed in accordance with the law of the Commonwealth of Massachusetts.

D. By its signature hereon, the Contractor certifies, under the pains and penalties of perjury, that it has complied with all laws of the Commonwealth of Massachusetts relating to taxes, reporting of employees and contractors, and withholding and remitting child support.

[Remainder of page intentionally blank.]

AGREED:

TOWN OF _____, MASSACHUSETTS
(Owner)

By its _____

_____

CONTRACTOR: _____

By_____

_____
(Name)

_____
(Title)

_____
(Address)

_____
(City and State)

Approved as to Form:

By_____
(Owner's Counsel)

In accordance with G.L. c.44, Section 31C, this is to certify that an appropriation in the amount of this contract is available therefor and that the _____ has been authorized to execute the contract and approve all requisitions and change orders.

By_____
(Owner's Accountant)

_____
(Name)

INSURANCE REQUIREMENTS

A. **Comprehensive General Liability, Completed Operations Coverage and Umbrella Liability Insurance**
Coverage for Bodily Injury and Property Damage as follows:

Limits of General Liability & Completed Operations Coverage	*Limits of Umbrella Liability Coverage*
$1 Million each occurrence	*$2 Million each occurrence*
$3 Million annual aggregate	*$2 Million aggregate*

The Comprehensive General Liability and Completed Operations Coverage Policy (3 years) shall provide insurance for the Contractor for Bodily Injury and Property Damage to third parties arising out of:

1. Work performed by the Contractor himself with his own employees; "premises-operations" line.
2. Work performed by his Subcontractors; Contractor's Protective Liability; ("sublet work" or "Independent Contractors") line. Use of subcontractor(s) may be subject to the prior approval of the Town as described more fully in applicable contract terms and conditions. All subcontractors must also provide Certificates of Workers' Compensation, General Liability, Completed Operations and Umbrella Liability Coverage.
3. The Contractor's liability assumed under the Contract Terms; "hold harmless" or "indemnity agreement" line also known as Contractual Liability Insurance. This coverage must be explicitly stated on the Contractor's Insurance Certificate to indemnify and hold harmless the Town.

B. **Comprehensive Automobile Liability Insurance**

All minimum coverage as required under Massachusetts General Laws for operation and registration of motor vehicles, and excess Bodily Injury and Property Damage coverage as follows:

Limits of Liability
Bodily Injury and Property Damage combined single limit of $1 Million

The insurance is to include all owned or hired vehicles of the contractor and non-ownership protection for all employees of the Contractor engaged in the performance of the Contract.

C. **Worker's Compensation and Employer's Liability Insurance**

Coverage as required by the Worker's Compensation laws of the Commonwealth of Massachusetts, MGL Ch149 §34A, including both statutory lines and Coverage B with a 100,000/500,000/100,000 limit of liability.

D. **Owner's Protective Liability Insurance**

The Contractor shall furnish to the Town Certificates of Insurance naming the Town of North Reading as an additional insured as their interest may appear and maintain said during the life of this Contract complete General Liability Insurance in amounts set forth above for Bodily Injury and Property Damage Liability.

E. **Architects and Engineers Professional Liability**

$1 Million each occurrence / *$3 Million* aggregate

F. **General Requirements for All Lines of Insurance Furnished**

Contractor will furnish a Certificate of Insurance form incorporated into and made a part of this Agreement naming the Town of North Reading as an "Additional Insured" on the appropriate insurance policies. Properly executed certificates must be on file with the Municipality prior to commencement of this Agreement, including a copy of the endorsement to their insurance policy naming the Town as an Additional Insured.

All insurance policies must state to indemnify and save harmless the TOWN and all of its officers, agents and employees for any suits, causes of action, claims, judgments or other liability that may arise as a result of the Contractor's action or failure to act. Mutual indemnification will not be accepted. No waivers of subrogation are implied or will be accepted. When higher limits are required, such provisions will be listed in the project specs.

The cost of such insurance, including required endorsements or amendments, certificates and renewals, shall be the sole responsibility of the Contractor. All policies shall be written so that the Town of North Reading shall be notified of cancellation or the addition of "restrictive amendments" by Registered Mail or by FAX not later than twenty (20) days prior to the effective date of such cancellation or amendment.

The Contractor shall, when subcontractors are permitted by the agreement, require that each subcontractor procure and maintain, until the completion of that subcontractor's work, insurance of the types and to the limits set forth in the above sections. All such coverage by

subcontractors shall be in favor of the Contractor and the Town shall be indemnified and held harmless from liability in all such policies and named as an additional insured.

North Reading, Massachusetts 01864
INSURANCE REQUIREMENTS

Attachment A-1

A. Contractor's Certification

A contractor will not be eligible for award of a contract unless such contractor has submitted the following certification, which is deemed a part of the resulting contract:

Contractor's Certification

_____
Name of the General Contractor

Certifies that:

1. It intends to use the following listed construction trades in the work under contract:

_____

_____

_____

_____

2. Will comply with the minority workforce ratio and specific affirmative action steps contained herein: and

3. Will obtain from each of its subcontractors and submit to the contracting or administering agency prior to the award of any subcontract under this contract the subcontractor's certification required by these bid conditions.

_____
Signature of Authorized Representative or Contractor

SECTION 00600
PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS: That we _____

_____ a_____ _____
(Name of Contractor) (Corporation, Partnership, Joint Venture or Individual)

hereinafter called "Principal" and _____ of _____,
(Surety)

State of _____ hereinafter called the "Surety" and licensed by the State
(City and State)

Division of Insurance to do business under the laws of the Commonwealth of Massachusetts, are held and firmly bound to the City/Town of _____, Massachusetts, hereinafter called "Owner", in the penal sum of _____ Dollars ($_____) in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that Whereas, the Principal entered into a certain contract with the Owner, dated the _____ day of _____, 20___, for the construction described as follows:

NOW, THEREFORE, if the Principal shall promptly make payment to all persons, firms, subcontractors, and corporations furnishing materials for or performing labor in the prosecution of the work provided for in such contract, and any authorized extension or modification thereof, including all amounts due for materials, lubricants, oil, gasoline, coal and coke, repairs on machinery, equipment and tools, consumed or used in connection with the construction of such work, and all insurance premiums on said work, and for all labor, performed in such work whether by subcontractor or otherwise, then this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED, FURTHER, that the said Surety, for value received hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract or to the work to be performed thereunder or the specifications accompanying the same shall in any way affect its obligation on this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of this contract or to the work or to the specifications.

PROVIDED, FURTHER, that no final settlement between the Owner and the Contractor shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, this instrument is executed in ____ ( ) counterparts, each one of which shall be deemed an original, this the _____ day of _____, 20__.

ATTEST:

_____
Principal

_____ By _____
(Principal Secretary)

_____

_____

_____
(Address-Zip Code)

_____ (SEAL)
Witness as to Principal

_____

_____
(Address-Zip Code)

ATTEST:

_____
Surety

_____ By _____
(Attorney-in-Fact)

_____

_____
(Address-Zip Code)

_____ (SEAL)
Witness as to Surety

_____

_____
(Address-Zip Code)

NOTE: Date of Bond must not be prior to date of Contract. If Contractor is a Partnership, all partners should execute Bond.

NOTICE TO PROCEED

To: Date:

Project:

You are hereby notified to commence Work in accordance with the Agreement dated _____, on or before _____, and you are to complete the Work within the agreed upon timeframe set up between the Town and Contractor using no more than 5 on-site working days thereafter. The date of completion of all Work is therefore _____.

By its Town Administrator

_____
Michael P. Gilleberto

Acceptance of Notice to Proceed:

Receipt of the above Notice to Proceed is hereby

acknowledged by _____,

this _____day of _____, 20___

By _____

Title _____

CHANGE ORDER FORM

Date: _____

Change Order Number: _____

Contract Number: _____

Project: _____

Engineer: _____

Owner: **Town of North Reading, Massachusetts**

Contractor: _____

Contract Date: _____

To: _____
(Contractor)

You are hereby authorized and directed to make the changes noted below in the subject Contract.

Approved By: _____
(Owner)

_____

_____

_____

_____

_____
(Date)

Description and Reason for Change:
These changes result in the following adjustment of Contract Price and Contract Time:

Original Contract Price: $ _____

Contract Price prior to this Change Order: $ _____

The Contract Price due to this Change Order will be
(Increased) (Decreased) by: $ _____

The New Contract Price including this Change Order: $ _____

This Change Order (Increases) (Decreases) the Contract Time by:
_____ Calendar Days and/or _____ Working Days

The revised Contract Completion Date is: _____

Other Contracts affected (if any): _____

Reviewed By:

_____
(Signature)

_____
(Date)

Accepted By: _____
(Contractor)

_____
(Signature)

_____
(Date)

Certification of Appropriation under M.G.L. c.44, s.31c: Adequate funding in an amount sufficient to cover the total cost of this change order is available.

By: _____ _____
Certification Officer Date

CERTIFICATE OF SUBSTANTIAL COMPLETION

Owner's Project No. _____ Engineer's Project No._____

Project: **_____, North Reading Massachusetts**

Contractor _____

Contract for _____ Contract Date _____

This Certificate of Substantial Completion applies to all Work under the Contract Documents or to the following specified parts thereof:

To _____
Owner

And To _____
Contractor

The Work to which this Certificate applies has been inspected by authorized representatives of Owner, Contractor, and Engineer, and that Work is hereby declared to be substantially complete in accordance with the Contract Documents on

_____
Date of Substantial Completion

A tentative list of items to be completed or corrected is attached hereto. This list may not be all-inclusive, and the failure to include an item in it does not alter the responsibility of Contractor to complete all the Work in accordance with the Contract Documents. The items in the tentative list shall be completed or corrected by Contractor within _____ days of the above date of Substantial Completion.

The responsibilities between Owner and Contractor for security, operation, safety, maintenance, heat, utilities, insurance and warranties shall be as follows:

Responsibilities:

Owner: _____

_____

_____

Contractor: _____

_____

_____

The following documents are attached to and made a part of this Certificate:

This certificate does not constitute an acceptance of Work not in accordance with the Contract Documents nor is it a release of Contractor's obligation to complete the Work in accordance with the Contract Documents.

Executed by Engineer on _____, 20____

_____
Engineer

By _____

Contractor accepts this Certificate of Substantial Completion on _____, 20___

_____
Contractor

By _____

Owner accepts this Certificate of Substantial Completion on _____, 20___

_____ _____
Owner

_____

_____ By _____

WAIVER OF LIENS

Contract No.: _____ **Agreement Date: _____**

Owner: **Town of North Reading, Massachusetts**

Project Name: _____

Completion Date per Agreement and Change Orders: _____

The undersigned contractor hereby swears under penalty of perjury that (1) all previous progress payments received from the Owner on account of work performed under the Contract referred to above have been applied by the undersigned to discharge, in full, all obligations of the undersigned incurred in connection with work covered by prior Estimates for Partial Payment under said contract, being Estimates Number 1 through _____ inclusive; and (2) all labor, materials and equipment incorporated in said Project or otherwise listed in or covered by these Estimates for Partial Payment are free and clear of all liens claims, security interests and encumbrances, except those listed below by obligee, nature and amount of obligation and covered by appropriate bond or bonds, as listed beside each obligation and attached to and made a part of this certification.

Obligation	Bond

_____ _____
Date Contractor

_____
Signed by Officer of Corporation

_____
Title

COUNTY OF _____

STATE OF _____

Before me on this _____ day of _____, 20 ___ personally appeared _____ known to me, who being duly sworn, did depose and save that he is the _____ (Officer) of the Contractor above mentioned; that he executed the above statement on behalf of said Contractor and that all of the statements contained therein are true, correct and complete.

_____
NOTARY PUBLIC

CERTIFICATE OF FINAL PAYMENT AND COMPLETION OF WORK

Contract No.: _____ Agreement Date: _____

Owner: **Town of North Reading, Massachusetts**

Project Name**:** _____

Completion Date per Agreement and Change Orders: _____

FINAL CERTIFICATION OF CONTRACTOR

Name: _____

Address: _____

_____

agrees to accept $ _____as full and final payment for all work completed under this Contract dated _____ with the Town of North Reading, Massachusetts (Owner) for

_____ **(Project)**

I certify that all construction has been carried out in substantial compliance with the Contract Documents, and that all labor, equipment, materials and Subcontractors have been or will be paid in accordance with the requirements of the General Laws of the Commonwealth of Massachusetts.

_____ _____
Date Contractor

_____
Signed by Officer of Corporation

_____
Title

DIVISION 1

GENERAL REQUIREMENTS

SECTION 01010

SUMMARY OF WORK

PART 1 - GENERAL

1.01 PURPOSE

The purpose of this bid is to provide all labor, materials, equipment, and to perform all the work for the superstructure replacement at Park Street over Martins Brook in North Reading, MA in conformance with the Contract Documents prepared by TEC, Inc.

1.02 SCOPE

The Scope of work under this contract shall include but is not limited to the following items and all incidental work as shown on the attached Contract Documents.

A. **Any provisions presented in the General Conditions, Supplementary Conditions, or Special Conditions shall supersede the conditions presented in the Standard Specifications.**

B. The Contractor is responsible for identifying and locating all underground utilities and above ground utilities and service lines prior to any below or above ground site alterations. The Contractor is responsible for notifying concerned utilities, at least 72 hours prior to excavation in the proximity of telephone, gas and electric utilities, by calling Dig Safe at 1-888-344-7233.

C. The Contractor is responsible for all earthwork including clearing and grubbing, excavation, grading, and backfilling as indicated on the Contract Documents, and specified herein. Earthwork activities shall only occur within the Limit of Work provided in the Contract Documents.

D. The Contractor is responsible for the off-site disposal of all material generated during clearing and grubbing activities, excavations and other construction activities. To the extent possible, all trees and brush shall be disposed on site, typically chipped and spread in place. When not feasible, Contractor shall identify proposed location for disposal and provide written notification to the Engineer for approval. Disposal shall be in North Reading, or at a minimum, within Middlesex County.

E. Any ledge encountered during excavation that will interfere with the placement of specified devices or obtaining finished grades as specified on the Documents will be brought to the attention of the Engineer.

F. The Contractor is responsible for furnishing and installing temporary site barriers and traffic controls (as shown on the plans and approved permits); restoring all grass and landscape areas disturbed through the project; and all other tasks and costs incidental thereto unless otherwise specified.

G. The Contractor is responsible for returning the construction area and surrounding area to its pre-construction condition.

H. The Contractor shall provide as-built documents of the construction site, prepared and stamped by a Professional Engineer registered in the Commonwealth of Massachusetts.

I. The Contractor is to perform the work of this contract in accordance with applicable State and Federal laws and regulations. In the event the Owner is required to pay any fines, administrative penalties or damages to anyone, including governmental agencies, due to the Contractor's failure to perform in accordance with this contract and/or regulations, the Contractor will indemnify and hold harmless the Owner and reimburse Owner for all such payments plus reasonable legal fees and expenses incurred.

J. All labor, materials, tools, equipment, and incidentals required to complete the work shall be provided by the Contractor.

K. The detour shall only be implemented with prior approval from the Engineer, Town of North Reading, and North Reading Police Department. A one-week advance notice shall be provided to the Engineer, Town and Town Police Department prior to any approved detours.

The Contractor shall implement and maintain throughout the construction period all temporary traffic control signs, devices, and setups in accordance with the latest edition of MassDOT Traffic Management Plans and Detail Drawings, the design plans, and as required by the Engineer. The Contractor shall be responsible for any signal timing adjustments associated with the proposed detour, in accordance with the relevant Items.

L. Contractor shall refer to the Special Provisions for additional project requirements related to this Contract.

1.03 SITE VISIT

A. Before submitting a Bid, the Contractor shall visit the site, examine existing conditions and become thoroughly acquainted with the effort required to perform the Work.

B. The Contractor shall study the Contract Documents and compare the same with the information gathered during examination of the site, as no extra compensation will be authorized for extra Work caused by unfamiliarity with the site and/or Contract Documents or the conditions peculiar to this Project.

1.04 PROJECT SCHEDULE

The work of this project may start April 15, 2025. Submittals, material approvals, and material procurement, etc. are expected to occur immediately upon contract procurement to facilitate April 2025 contractor mobilization/road closure.

Substantial Completion on or before September 30, 2025 (Substantial completion shall mean all work with the exception of permanent pavement markings within the public roadways, loam and seed, punch list items, and final clean-up has been completed and as described within these contract documents)

Final completion on or before October 15, 2025. Final completion shall mean all remaining work and punch list items have been satisfactorily completed and accepted by the Town and as described within these contract documents.

Contractor shall be aware of the time constraints related to the gas utility work at this location:

- Permanent utility supports shall be installed no later than October 1st to facilitate National Grid's work to install the permanent gas line.
- Permanent gas line shall be relocated and active for the beginning of heating season (November 15th), as required by National Grid Gas.
- Refer to Item 992.321 for additional contingency measures that the Contractor shall be aware of during bidding.
- Contractor shall be responsible for all coordination with National Grid Gas.

The Town of North Reading may authorize work to continue during these specified time periods if it is determined that the work will not negatively impact the traveling public.

The awarded Contractor shall be aware of the date restrictions specified in the Detour Permit Provided by MassDOT. Contractor responsible for any and all coordination with MassDOT as needed.

Work may be performed at the site on Mondays through Fridays between 7:00 am and 5:00 pm unless otherwise directed by the Owner/Engineer. Construction equipment shall be operated in accordance with local ordinances.

Work may be permitted on weekends and legal holidays if the Contractor obtains written approval from the Engineer. The request shall be made 72 hours in advance of the work. The Contractor and any subcontractors shall only work overtime as approved by the Engineer. The Contractor shall coordinate with the Engineer and the North Reading Police Department to obtain a waiver if work on Saturday, Sundays or Holidays is required.

Below are the holiday work restrictions.

<u>New Years Day (Federal Holiday)</u>
No work on major arterial roadways from 5:00 AM on the day before until the normal start of business on the next subsequent business day. No work on local roadways on the holiday without permission by the Town and the local police chief.

Martin Luther King's Birthday (Federal Holiday)
No work restrictions due to traffic concerns, however work on local roadways requires permission by the Town and local police chief.

President's Day (Federal Holiday)
No work restrictions due to traffic concerns, however work on local roadways requires permission by the Town and local police chief.

Patriot's Day (State Holiday)
Work restrictions will be in place for Districts 3, and 6 along the entire Boston Marathon route so as to not impact the marathon. All other districts work restrictions will be as per Town.

Mother's Day
No work restrictions due to traffic concerns however work on local roadways requires permission by the Town and local police chief.

Memorial Day (Federal Holiday)
No work on major arterial roadways from 5:00 AM on the Friday before until the normal start of business on the following day.

Juneteenth
No work restrictions due to traffic concerns, however work on local roadways requires permission by the DHD and local police chief.

Independence Day (Federal Holiday)
No work on major arterial roadways from 5:00 AM on the day before until the normal start of business on the next subsequent business day. No work on local roadways on the holiday without permission by the Town and local police chief.

Labor Day (Federal Holiday)
No work on major arterial roadways from 5:00 AM on the Friday before until the normal start of business on the following day.

Columbus Day (Federal Holiday)
No work on major arterials from 5:00 AM on the Friday before until the normal start of business on the following day. The Town may allow work in those areas on a case by case basis and where work is behind barrier and will not impact traffic.

Veterans' Day (Federal Holiday)
No work restrictions due to traffic concerns.

Thanksgiving Day (Federal Holiday)
No work on major arterials from 5:00 AM two days before until the start of business on the following Monday.

Christmas Day (Federal Holiday)
No work on major arterial roadways from 5:00 AM on the day before until the normal start of business on the next subsequent business day.

1.05 Price Adjustments

The contractor shall be aware that this project is subject to price adjustments for Diesel Fuel, and Gasoline in accordance with MassDOT Standard Operating Procedure. See Document 01812 contained within the project manual.

PART 2 – PRODUCTS

Not Used

PART 3 – EXECUTION

Not Used

END OF SECTION

SECTION 01020

CONTROL OF WORK AND MATERIALS

PART 1 – GENERAL

1.01 SCOPE OF WORK

Work under this Section includes control of work and materials during the Project.

1.02 HAULING, HANDLING AND STORAGE OF MATERIALS

The Contractor shall, at their own expense, handle and haul all materials furnished by them or generated by the removal of existing materials. The Contractor shall provide suitable and adequate storage for equipment and materials furnished by them that are liable to injury and shall be responsible for any loss of or damage to any equipment or materials by theft, breakage, or otherwise. The Contractor shall be responsible for all damages to the work under construction during its progress and until final completion and acceptance even though partial payments have been made under the Contract.

1.04 OPEN EXCAVATIONS

A. All open excavations shall be adequately safeguarded by providing temporary barricades, caution signs, lights and other means to prevent accidents to persons, and damage to property. The Contractor shall, at his own expense, provide suitable and safe means for completely covering all open excavations and for accommodating travel when work is not in progress. The length of open trench will be controlled by the particular surrounding conditions but shall always be confined to the limits prescribed by the Engineer.

B. Where prescribed by the Engineer, excavations shall be completely closed at the end of each workday. Backfilling or use of steel plates of adequate strength to carry traffic shall be used.

C. If the excavation becomes a hazard, or if it excessively restricts traffic at any point, then special construction procedures shall be taken, such as prohibiting stockpiling excavated material in the roadway.

1.05 REJECTED MATERIALS AND DEFECTIVE WORK

A. Materials furnished by the Contractor and rejected by the Engineer as unsuitable or not in conformity with the specifications shall forthwith be removed from the work by the Contractor, and shall not be made use of elsewhere in the work.

B. Any errors, defects or omissions in the execution of the work or in the materials furnished by the Contractor, even though they may have been passed or overlooked or have appeared after the completion of the work, discovered at any time before the final payment is made hereunder, shall be forthwith rectified and made good by and at the expense of the Contractor and in a manner satisfactory to the Engineer.

C. The Contractor shall reimburse the Owner for any expense, losses or damages incurred in consequence of any defect, error, omission or act of the Contractor or his employees, as determined by the Engineer, occurring previous to the final payment.

1.06 SANITARY REGULATIONS

Sanitary conveniences for the use of all persons employed on the work, properly screened from public observation, shall be provided in sufficient numbers, in such manner, and at such locations as may be approved. The contents shall be removed and disposed of in a satisfactory manner as the occasion requires. The Contractor shall rigorously prohibit the committance of nuisances within, on or about the work. Any employees found violating these provisions shall be discharged and not again employed on the work without the written consent of the Engineer. The sanitary conveniences specified above shall be the obligation and responsibility of the Contractor.

1.07 SAFETY AND HEALTH REGULATIONS

This project is subject to the Safety and Health regulations of the U.S. Department of Labor set forth in 29 CFR, Part 1926, and to the Massachusetts Department of Labor and Industries, Division of Industrial Safety "Rules and Regulations for the Prevention of Accidents in Construction Operations (Industrial Bulletin No. 12)." Contractors shall be familiar with the requirements of these regulations.

1.08 MAINTENANCE OF DRAINAGE FACILITIES

All existing drainage facilities including, but not limited to; brooks, streams, canals, channels, ditches, culverts, catch basins and drainage piping shall be adequately safeguarded so as not to impede drainage or to cause siltation of downstream areas in any manner whatsoever. If the Contractor damages or impairs through circumstances beyond his control, any of the aforesaid drainage facilities, he shall repair the same within the same day.

1.09 SITE INVESTIGATION

The Contractor acknowledges that he has satisfied himself as to the conditions existing at the site of the work, the type of equipment required to perform this work, the quality and quantity of the materials furnished insofar as this information is reasonably ascertainable from an inspection of the site, as well as from information presented by the Documents and specifications made a part of this contract. Any failure of the Contractor to acquaint himself with available information will not relieve him from the responsibility for estimating properly the difficulty or cost of successfully performing the work. The Owner assumes no responsibility for any conclusion or interpretation made by the Contractor on the basis of the information made available by the Owner.

1.10 CUTTING, FITTING AND PATCHING

A. The Contractor shall do all cutting, fitting, or patching of his work that may be required to make its several parts come together properly and fit it to receive or be received by work of other Contractors, as shown upon or reasonably implied by

the Documents and the specifications for the completed structure, including all existing work.

B. The Contractor shall not endanger any work by cutting, digging, or otherwise, and shall not cut or alter the work of any other Contractor, save with the consent of the Engineer.

C. All holes or openings required to be made in new or existing work, particularly at pipe, conduit, or other penetrations not covered by escutcheons or plates, shall be neatly patched. All such holes shall be made completely watertight as approved by the Engineer.

D. Workmanship and materials of patching and repair work shall match the adjacent similar work, and shall conform to the applicable sections of the specification. Patches and joints with existing work shall provide, as applicable in each case, visual, structural, and waterproofing continuity.

1.11 WEATHER PROTECTION

In conformance with Section 44C of Chapter 149 of the General Laws of Massachusetts, the General Contractor shall install weather protection and shall furnish adequate heat in the area so protected during the months of November through March.

1.12 ELECTRICAL SERVICES

A. The Contractor shall make all necessary applications and arrangements and pay for all fees and charges for electrical energy for power and light necessary for the proper completion of this contract during its entire progress. The Contractor shall provide and pay for all temporary wiring, switches, connections, and meters.

B. There shall be sufficient electric lighting so that all work may be done in a workmanlike manner where there is not sufficient daylight.

1.13 ACCEPTANCE OF THE WORK

Until the final acceptance of the Work, it shall be under the care and charge of the Contractor and every precaution shall be taken necessary against injury or damage to the Work by the action of the elements or any other causes. The Contractor shall rebuild, repair, restore and make good, at their own expense, all injuries or damages to any portion of the Work before its completion and acceptance.

1.14 REGULATORY COMPLIANCE

A. The Contractor shall give all notices and comply with all laws, ordinances, rules, and regulations bearing on the Work as drawn and specified. If the contractor performs any Work contrary to such laws, ordinances, rules and regulations, the Contractor shall bear all cost arising therefrom.

B. The Contractor shall secure and pay for all other necessary permits for this Work.

1.15 PERMANENT FEATURES PROTECTION

A. The Contractor shall maintain and protect existing pipes, poles, wires, fences, curbing, property-line markers, and other structures which, in the opinion of the Engineer, must be preserved in place without being temporarily or permanently relocated. In case of damage, the Contractor shall notify the Engineer so that the proper steps may be taken to repair any and all damage done. When the Engineer does not wish to make the repairs itself, all damage shall be repaired by the Contractor; or, if not promptly done by him, the Engineer may have the repairs made at the expense of the Contractor.

B. During execution of any and all items of the Work, extreme care shall be exercised by the Contractor to preclude any interferences/disturbances of existing structures, roadways, above-grade and below-grade utilities, or other features not associated with the Work. These interferences/disturbances shall include but not be limited to damage, movement, or collapse of the structures, roadways, and utilities. The Contractor shall assume the liability for any and all said damage, movement, settlement or collapse and promptly repair same at no cost to the Owner.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

END OF SECTION

SECTION 01025

MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.01 PAYMENT

A. All Work shall be completed in compliance with the Contract Documents and shall be in accordance with the prices bid.

B. Unless otherwise noted, all excavation, removal of excavated material, and furnishing and placement of fill materials shall be included under any item requiring excavation. Unless otherwise noted, each item shall be furnished and installed in accordance with the technical section whether a specific application payment item exists or not.

C. As to all measurement and payment items described herein, the Contractor is responsible for verifying the types and quality of equipment, fixtures, steel, hardware, pipe, excavate, and any other items required to complete the work under this contract.

1.02 LUMP SUM ITEMS

A. Lump sum payment shall be full compensation for: providing all submissions required prior to the start of work; insurance, permits, licenses, and approvals required for the performance of the work; contract close out procedures including the submission of required documentation, including any transport/disposal fees and taxes; and all other tasks and costs incidental to the project unless otherwise specified.

B. Payment shall also fully compensate the Contractor for any other work that is not specified or shown, but that is necessary to complete the Work.

C. Payment for Work performed shall be in accordance with the breakdown of the lump sum price shown in the Bid Schedule.

D. Should any equipment or material be eliminated under a lump sum item then a Change Order shall be issued.

1.03 UNIT PRICE ITEMS

A. Payments for Work performed shall be in accordance with the unit prices bid on the Bid Form and shall be full compensation for all labor, materials, equipment, taxes and fees, testing, onsite handling, and transport of materials covered under the unit price bid item.

B. Both the unit price categories and quantities contained in the Bid Form represent estimates. The Owner maintains the option of including: none, a portion, all or exceeding the estimated quantities listed under this contract. Should the Owner elect not to include any of the unit price categories and/or quantities as a part of

this contract, the Contractor is not entitled to any compensations for loss of revenue or profit. Work shall be performed in accordance with the specifications.

C. Should any unit price items contained in the proposal form be found unnecessary for the proper completion of work contracted, the Owner may eliminate such unit price items from the Contract, and such action shall in no way invalidate the Agreement, and no allowance will be made for items so eliminated in making final payment to the Contractor.

1.04 DESCRIPTION

A. The following subsections describe the measurement of one payment for the work to be done under the items listed in the Bid Proposal.

B. Each price stated in the Bid Proposal constitutes full compensation as herein specified for each item of work completed in accordance with the specifications.

C. The Contractor shall be responsible for any damage incurred due to this work on abutting or adjacent properties, private or public.

PART 2 - MATERIALS

Not Used

PART 3 – BID ITEMS

Not Used

END OF SECTION

SECTION 01110

ENVIRONMENTAL PROTECTION PROCEDURES

PART 1 – GENERAL

1.01 SCOPE OF WORK:

A. The work covered under this Section consists of furnishing all labor, materials, and equipment and performing all work required for the prevention of environmental pollution in conformance with applicable laws and regulations, during and as the result of construction operations under this Contract. For the purpose of this Specification, environmental pollution is defined as the presence of chemical, physical, or biological elements or agents which adversely affect human health or welfare; unfavorably alter ecological balances of importance to human life; affect other species of importance to man; or degrade the utility of the environment for aesthetic and/or recreational purposes.

B. The control of environmental pollution requires consideration of air, water, and land, and involves management of noise and solid waste, as well as other pollutants.

C. Schedule and conduct all work in a manner that will minimize the erosion of soils in the area of the work. Provide erosion control measures such as diversion channels, sedimentation or filtration systems, berms, staked hay bales, seeding, mulching, or other special surface treatments as are required to prevent silting and muddying of streams, rivers, impoundments, lakes, etc. All control measures shall be in place in an area prior to any construction activity in that area.

D. These Specifications are intended to ensure that construction is achieved with a minimum of disturbance to the existing ecological balance between a water resource and its surroundings. These are general guidelines. It is the Contractor's responsibility to determine the specific construction techniques to meet these guidelines.

E. All phases of sedimentation and erosion control shall comply with and be subject to the approval of the Massachusetts Department of Environmental Protection and local Conservation Commission.

F. Schedule and conduct all work in a manner that will minimize the level of noise escaping the site, especially at night and on weekends.

1.02 APPLICABLE REGULATIONS:

A. Comply with all applicable Federal, State, and local laws and regulations concerning environmental pollution control and abatement.

1.03 NOTIFICATIONS:

A. The Engineer will notify the Contractor in writing of any non-compliance with the foregoing provisions or of any environmentally objectionable acts and corrective action to be taken. State or local agencies responsible for verification of certain aspects of the environmental protection requirements shall notify the Contractor in writing, through the Engineer, of any non-compliance with State or local requirements. The Contractor shall, after receipt of such notice from the Engineer or from the regulatory agency through the Engineer, immediately take corrective action. Such notice, when delivered to the Contractor or its authorized representative at the site of the work, shall be deemed sufficient for the purpose. If the Contractor fails or refuses to comply promptly, the Owner may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No

part of the time lost due to any such stop orders shall be made the subject of a claim for extension of time or for excess costs or damages by the Contractor unless it is later determined that the Contractor was in compliance.

1.04 IMPLEMENTATION:

A. Prior to commencement of the work, meet with the Engineer to develop mutual understandings relative to compliance with this provision and administration of the environmental pollution control program.

B. Remove temporary environmental control features, when approved by the Engineer, and incorporate permanent control features into the project at the earliest practicable time.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.01 EROSION CONTROL:

A. Provide positive means of erosion control such as shallow ditches around construction to carry off surface water. Control measures such as siltation basins, hay check dams, mulching, jute netting, and other equivalent techniques shall be used as appropriate. Offsite surface water shall be diverted around the site to a downstream channel ahead of siltation barriers. Flow of surface water into excavated areas shall be prevented. Ditches around construction areas shall also be used to carry away water resulting from dewatering of excavated areas. At the completion of work, ditches shall be backfilled and the ground surface restored to original condition.

3.02 PROTECTION OF STREAMS, WETLANDS, AND SURFACE WATER:

A. Care shall be taken to prevent or reduce to a minimum any damage to any stream, drainage ditch or storm drain from pollution by debris, sediment, or other material, or from the manipulation of equipment and/or materials in or near such streams. Water that has been used for washing or processing, or that contains oils or sediments that will reduce the quality of the water in the stream, shall not be directly returned to the stream. Such water will be diverted through a settling basin or filter before being directed into the streams.

B. The Contractor shall not discharge water from dewatering operations directly into any perennial or intermittent stream, channel, wetlands, surface water, or any storm sewer. Water from dewatering operations shall be treated by filtration, settling basins, or other approved method to reduce the amount of sediment contained in the water to allowable levels.

C. All preventative measures shall be taken to avoid spillage of petroleum products and other pollutants. In the event of any spillage, prompt remedial action shall be taken in accordance with a contingency action drawing or plan approved by the Massachusetts Department of Environmental Protection. Contractor shall submit copies of approved contingency drawings or plans to the Engineer.

D. Water being flushed from structures or pipelines after disinfection, with a chlorine residual of 0.2 mg/l or greater, shall be treated with a dechlorination solution, in a method approved by the Engineer, prior to discharge.

3.03 PROTECTION OF LAND RESOURCES:

A. Land resources within the project boundaries and outside the limits of permanent work shall be restored to a condition, after completion of construction, that will appear to be natural and not detract from the appearance of the project. Confine all construction activities to areas shown on the Drawings.

B. Outside of areas requiring earthwork for the construction of the new facilities, the Contractor shall not deface, injure, or destroy trees or shrubs, nor remove or cut them without prior approval. No ropes, cables, or guys shall be fastened to or attached to any existing nearby trees for anchorage unless specifically authorized by the Engineer. Where such special emergency use is permitted, first wrap the trunk with a sufficient thickness of burlap or rags over which softwood cleats shall be tied before any rope, cable, or wire is placed. The Contractor shall in any event be responsible for any damage resulting from such use.

C. Where trees may possibly be defaced, bruised, injured, or otherwise damaged by the Contractor's equipment, dumping or other operations, protect such trees by placing boards, planks, or poles around them. Monuments and markers shall be protected similarly before beginning operations near them.

D. Any trees or other landscape feature scarred or damaged by the Contractor's equipment or operations shall be restored as nearly as possible to its original condition. The Engineer will decide what method of restoration shall be used and whether damaged trees shall be treated and healed or removed and disposed of.

E. The locations of the Contractor's storage, and other construction building, required temporarily in the performance of the work, shall be cleared portions of the job site or areas to be cleared and shall require written approval of the Engineer and shall not be within wetlands or floodplains. The preservation of the landscape shall be an imperative consideration in the selection of all sites and in the construction of buildings. Drawings showing storage facilities shall be submitted for approval of the Engineer.

F. Remove all signs of temporary construction facilities such as haul roads, work areas, structures, foundations of temporary structures, stockpiles of excess of waste materials, or any other vestiges of construction as directed by the Engineer. It is anticipated that excavation, filling, and plowing of roadways will be required to restore the area to near natural conditions which will permit the growth of vegetation thereon. The disturbed areas shall be prepared and seeded as approved by the Engineer.

G. All debris and excess material will be disposed of outside wetland or floodplain areas in an environmentally sound manner.

3.04 PROTECTION OF AIR QUALITY:

A. The use of burning at the project site for the disposal of refuse and debris will not be permitted.

B. The Contractor will be required to maintain all excavations, embankments, stockpiles, access roads, plant sites, waste areas, borrow areas, and all other work areas within or without the project boundaries free from dust which could cause the standards for air pollution to be exceeded, and which would cause a hazard or nuisance to others.

C. An approved method of stabilization consisting of sprinkling of water or other similar methods will be permitted to control dust. The use of chlorides may be permitted with approval from the Engineer.

D. Sprinkling, to be approved, must be repeated at such intervals as to keep all parts of the disturbed area at least damp at all times, and the Contractor must have sufficient competent equipment on the job to accomplish this if sprinkling is used. Dust control shall be performed as the work proceeds and whenever a dust nuisance or hazard occurs, as determined by the Engineer.

3.05 NOISE CONTROL:

A. The Contractor shall make every effort to minimize noises caused by its operations. Equipment shall be equipped with silencers or mufflers designed to operate with the least possible noise in compliance with State and Federal (OSHA) regulations.

END OF SECTION

SECTION 01300

SUBMITTALS

PART 1 – GENERAL

1.01 DESCRIPTION:

A. This Section specifies the general methods and requirements of submissions applicable to the following work-related submittals.

1. Shop Drawings.
2. Product Data.
3. Samples.
4. Mock Ups.
5. Construction Photographs.
6. Construction or Submittal Schedules.

B. Additional general submission requirements are contained in the General Conditions.

C. Detailed submittal requirements will be specified in the special provisions section.

1.02 SHOP DRAWINGS, PRODUCT DATA, SAMPLES:

A. Shop Drawings:

1. Shop drawings, as defined in the General Conditions, and as specified in individual work Sections include, but are not necessarily limited to: custom-prepared data such as fabrication and erection/installation (working) drawings of concrete reinforcement, structural details and piping layout, scheduled information, setting diagrams, actual shop work manufacturing instructions, custom templates, special wiring diagrams, coordination drawings, individual system or equipment inspection and test reports including performance curves and certifications as applicable to the work.

2. All shop and working drawings shall be prepared on standard size, 24-in. by 36-in. sheets, except those which are made by changing existing standard shop or working drawings.

3. All shop drawings shall be submitted using the transmittal form furnished by the Engineer.

4. All shop drawings submitted by subcontractors for approval shall be sent directly to the Contractor for checking. The Contractor shall be responsible for their submission at the proper time so as to prevent delays in delivery of materials.

5. The Contractor shall check all subcontractor's shop drawings regarding measurements, size of members, material, and details to satisfy himself that they conform to the intent of the Drawings and Specifications. Shop drawings

found to be inaccurate or otherwise in error shall be returned to the subcontractors for correction before submission thereof.

6. All details on shop drawings submitted for approval shall show clearly the relation of the various parts of the main members and lines of the structure, and where correct fabrication of the work depends upon field measurements; such measurements shall be made and noted on the drawings before being submitted for approval.

B. Product Data:

1. Product data as specified in individual Sections, include, but are not necessarily limited to, standard prepared data for manufactured products (sometimes referred to as catalog data), such as the manufacturer's product specification and printed installation instructions, availability of colors and patterns, manufacturer's printed statements of compliances including certificates of compliance and applicability, roughing-in diagrams and templates, catalog cuts, product photographs, standard wiring diagrams, printed performance curves and operational-range diagrams, production or quality control inspection and test reports and certifications and recommended spare-parts listing, and printed product warranties, as applicable to the Work.

C. Samples:

1. Samples specified in individual Sections, include, but are not necessarily limited to, physical examples of the work such as sections of manufactured or fabricated work, small cuts or containers of materials, complete units of repetitively-used products, color/texture/pattern swatches and range sets, specimens for coordination of visual effect, graphic symbols, and units of work to be used by the Engineer or Owner for independent inspection and testing, as applicable to the Work.

1.03 CONTRACTOR'S RESPONSIBILITIES:

A. The Contractor shall review shop drawings, product data and samples, including those by subcontractors, prior to submission to determine and verify the following:

1. Field measurements.

2. Field construction criteria.

3. Catalog numbers and similar data.

4. Conformance with the Specifications.

B. Each shop drawing, sample, and product data submitted by the Contractor shall have affixed to it the following Certification Statement including the Contractor's Company name and signed by the Contractor: "Certification Statement: by this submittal, I hereby represent that I have determined and verified all field measurements, field construction criteria, materials, dimensions, catalog numbers and similar data, and I have checked and coordinated each item with other applicable approved shop drawings and all Contract requirements." Shop drawings and product data sheets 11-in. X 17-in. and smaller shall be bound together in an orderly fashion and bear the above Certification Statement on the cover sheet. The cover sheet shall fully describe the packaged data and include a listing of

all items within the package. Provide to the Engineer a copy of each submittal transmittal form for shop drawings, product data and samples at the time of submittal of said drawings, product data and samples to the Engineer.

C. If a shop drawing shows any deviation from the requirements of the Contract Documents, the Contractor shall make specific mention of the deviations in the Transmittal Form furnished by the Engineer and provide a description of the deviations in a letter attached to the submittal.

D. The review and approval of shop drawings, samples or product data by the Engineer shall not relieve the Contractor from his responsibility with regard to the fulfillment of the terms of the Contract. All risks of error and omission are assumed by the Contractor and the Engineer will not have responsibility therefor.

E. No portion of the work requiring a shop drawing, sample, or product data shall be started nor shall any materials be fabricated or installed prior to the approval or qualified approval of such item. Fabrication performed, materials purchased or on-site construction accomplished which does not conform to approved shop drawings and data shall be at the Contractor's risk. The Owner will not be liable for any expense or delay due to corrections or remedies required to accomplish conformity.

F. Project work, materials, fabrication, and installation shall conform with approved shop drawings, applicable samples, and product data.

1. Manufacturer's printed installation instructions, a part of product data submitted to the Engineer will not be reviewed and are for informational purposes only.

1.04 SUBMISSION REQUIREMENTS:

A. Make submittals promptly in accordance with approved schedule, and in such sequence as to cause no delay in the Work or in the work of any other contractor.

B. All submittals shall be submitted sufficiently in advance of construction requirements to provide no less than ten days, including Saturdays, Sundays and legal holidays for review from the time received at the Engineer's reviewing office. For submittals of major equipment, that require more than ten days to review, due to its sheer complexity and amount of detail and also requiring review by more than one engineering discipline, a letter will be sent by the Project Manager or his/her designee to the Contractor informing him/her of the circumstances and the date it is expected the submittal will be returned to the Contractor.

C. Number of submittals required:

1. Shop Drawings: Contractor shall submit shop drawings electronically to the Town and the Town’s representatives for their review. If the Town requires, the Contractor shall submit hard copies, the number of copies will be determined by the Town, if deemed necessary.

2. Product Data: Contractor shall submit product data electronically to the Town and the Town’s representatives for their review. If the Town requires, the Contractor shall submit hard copies, the number of copies will be determined by the Town, if deemed necessary.

3. Samples: Submit the number stated in the respective Specification Sections.

D. Submittals shall contain:

1. The date of submission and the dates of any previous submissions.

2. The Project title and number.

3. Contractor identification.

4. The names of:

a. Contractor

b. Supplier

c. Manufacturer

5. Identification of the product, with the specification section number, page and paragraph(s).

6. Field dimensions, clearly identified as such.

7. Relation to adjacent or critical features of the Work or materials.

8. Applicable standards, such as ASTM or Federal Specification numbers.

9. Identification of deviations from Contract Documents.

10. Identification of revisions on resubmittals.

11. An 8-in. X 3-in. blank space for Contractor and Engineer stamps.

E. Each shipment of drawings shall be accompanied by a transmittal form furnished by the Engineer giving a list of the drawing numbers and the names mentioned above.

1.05 REVIEW OF SHOP DRAWINGS, PRODUCT DATA, WORKING DRAWINGS AND SAMPLES:

A. The Engineer's review is for general conformance with the design concept and contract drawings. Markings or comments shall not be construed as relieving the Contractor from compliance with the contract plans and specifications or from departures therefrom. The Contractor remains responsible for details and accuracy, for coordinating the work with all other associated work and trades, for selecting fabrication processes, for techniques of assembly, and for performing work in a safe manner.

B. The review of shop drawings, data, and samples will be general. They shall not be construed:

1. As permitting any departure from the Contract requirements;

2. As relieving the Contractor of responsibility for any errors, including details, dimensions, and materials;

3. As approving departures from details furnished by the Engineer, except as otherwise provided herein.

C. If the shop drawings, data or samples as submitted describe variations and show a departure from the Contract requirements which the Engineer finds to be in the interest of the Owner and to be so minor as not to involve a change in Contract Price or time for performance, the Engineer may return the reviewed drawings without noting an exception.

D. Submittals will be returned to the Contractor under one of the action codes indicated and defined on the transmittal form furnished by the Engineer.

E. Resubmittals will be handled in the same manner as first submittals. On resubmittals the Contractor shall direct specific attention, in writing, on the letter of transmittal and on resubmitted shop drawings by use of revision triangles or other similar methods, to revisions other than the corrections requested by the Engineer, on previous submissions. Any such revisions which are not clearly identified shall be made at the risk of the Contractor. The Contractor shall make corrections to any work done because of this type revision that is not in accordance to the Contract Documents as may be required by the Engineer.

F. Partial submittals may not be reviewed. The Engineer will be the only judge as to the completeness of a submittal. Submittals not complete will be returned to the Contractor, and will be considered "Rejected" until resubmitted. The Engineer may at his option provide a list or mark the submittal directing the Contractor to the areas that are incomplete.

G. If the Contractor considers any correction indicated on the shop drawings to constitute a change to the Contract Documents, the Contractor shall give written notice thereof to the Engineer at least seven working days prior to release for manufacture.

H. When the shop drawings have been completed to the satisfaction of the Engineer, the Contractor shall carry out the construction in accordance therewith and shall make no further changes therein except upon written instructions from the Engineer.

1.06 DISTRIBUTION:

A. Electronically distribute reproductions of approved shop drawings and copies of approved product data and samples, where required, to the job site file and elsewhere as directed by the Engineer. .

1.07 GENERAL PROCEDURES FOR SUBMITTALS:

A. Coordination of Submittal Times: Prepare and transmit each submittal sufficiently in advance of performing the related work or other applicable activities, or within the time specified in the individual work sections, of the Specifications, so that the installation will not be delayed by processing times including disapproval resubmittal (if required), coordination with other submittals, inspection, testing (off-site and on-site), purchasing, fabrication, delivery and similar sequenced activities. No extension of time will be authorized because of the Contractor's failure to transmit submittals sufficiently in advance of the Work.

1.08 CERTIFICATION FORMS:

A. If specifically specified in other Sections of these Specifications, the Contractor shall submit the applicable certification form for each item required, and in the form attached to this Section, completely filled in and stamped.

1.09 CERTIFICATES OF COMPLIANCE:

A. Certificates of Compliance specified in the specifications shall include and mean certificates, manufacturer's certificates, certifications, certified copies, letters of certification and certificate of materials.

B. The Contractor shall be responsible for providing Certificates of Compliance requested and specified in the technical specifications. Certificates are required for demonstrating proof of compliance with specification requirements and shall be executed in 6 copies unless otherwise specified. Each certificate shall be signed by an official authorized to certify on behalf of the manufacturing company and shall contain the name and address of the Supplier, the project name and location, and the quantity and date or dates of shipment or delivery to which the certificates apply. Copies of laboratory test reports submitted with certificates shall contain the name and address of the testing laboratory and the date or dates of the tests to which the report applies. Certification shall not be construed as relieving the Supplier from furnishing satisfactory material, if after tests are performed on selected samples, the material is found not to meet the specific requirements.

END OF SECTION

SECTION 01300

CERTIFICATE OF DESIGN

The undersigned hereby certifies that he/she is a Professional Engineer registered in the state of _____ and that he/she has been employed by (Name of Contractor) _____ to design _____ in accordance with Specifications Section for_____ in North Reading, Massachusetts. The undersigned further certifies that he/she has performed similar designs previously and has performed the design of the _____; that said design is in conformance with all applicable local, state, and federal codes, rules, and regulations and professional practice standards; that his/her signature and Professional Engineer (P.E.) Stamp have been affixed to all calculations and drawings used in, and resulting from, the design; and that the use of that stamp signifies the responsibility of the undersigned for that design.

The undersigned hereby certifies that he/she has Professional Liability Insurance with limits of $1,000,000.00 and a Certificate of Insurance is attached.

The undersigned hereby agrees to make all original design drawings and calculations available to the Town of North Reading or Owner's representative within seven (7) days following written request therefore by the Owner.

_____	_____
P.E. Name	Contractor's Name
_____	_____
Signature	Signature
_____	_____
Title	Title
_____	_____
Address	Address

SECTION 01700

CONTRACT CLOSEOUT

PART 1 - GENERAL

1.01 SCOPE OF WORK:

A. This Section specifies administrative and procedural requirements for project closeout, including but not limited to:

1. Closeout procedures.

2. Final cleaning.

3. Adjusting.

1.02 RELATED WORK:

A. Warranties and Bonds are included in Section.

1.03 CLOSEOUT PROCEDURES:

A. Submit written certification that the Contract Documents have been reviewed, the work has been inspected, and that the work is complete in accordance with the Contract Documents and ready for the Engineer's inspection.

B. Provide submittals to the Engineer that are required by governing or other authorities.

C. Submit final Application for Payment identifying total adjusted Contract Sum, previous payment, and sum remaining due.

1.04 FINAL CLEANING:

A. Complete the following cleaning operations before requesting inspection for Certification of Substantial Completion.

1. Clean the site, including landscape development areas, of rubbish, litter and other foreign substances. Sweep paved areas broom clean; remove stains, spills and other foreign deposits. Rake grounds that are neither paved nor planted, to a smooth even-textured surface.

END OF SECTION

SECTION 01710

CLEANING UP

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK:

A. During its progress, the work and the adjacent areas affected thereby shall be cleaned up and all rubbish, surplus materials, and unneeded construction equipment shall be removed and all damage repaired so that the public and property owners will be inconvenienced as little as possible.

B. Where material or debris has washed or flowed into or been placed in existing watercourses, ditches, gutters, drains, pipes structures, work done under this contract, or elsewhere during the course of the Contractor's operations, such material or debris shall be entirely removed and satisfactorily disposed of during the progress of the work, and the ditches, channels, drains, pipes, structures, and work, etc., shall, upon completion of the work, be left in a clean and neat condition.

C. On or before the completion of the work, the Contractor shall, unless otherwise especially directed or permitted in writing, tear down and remove all temporary buildings and structures built by it; shall remove all temporary works, tools, and machinery or other construction equipment furnished by it; shall remove, acceptably disinfect, and cover all organic matter and material containing organic matter in, under, and around privies, houses, and other buildings used by it; shall remove all rubbish from any grounds which it has occupied; and shall leave the roads and all parts of the premises and adjacent property affected by its operations in a neat and satisfactory condition.

D. The Contractor shall restore or replace, when and as directed, any public or private property damaged by its work, equipment, or employees, to a condition at least equal to that existing immediately prior to the beginning of operations. To this end, the Contractor shall do as required all necessary highway or driveway, walk, and landscaping work. Suitable materials, equipment, and methods shall be used for such restoration. The restoration of existing property or structures shall be done as promptly as practicable as work progresses and shall not be left until the end of the contract period.

END OF SECTION

DOCUMENT 00812
SPECIAL PROVISIONS
MONTHLY PRICE ADJUSTMENT FOR DIESEL FUEL AND GASOLINE
ENGLISH UNITS
Revised: 02/01/2021

This monthly fuel price adjustment is inserted in this contract because the national and worldwide energy situation has made the future cost of fuel unpredictable. This adjustment will provide for either additional compensation to the Contractor or repayment to the Commonwealth, depending on an increase or decrease in the average price of diesel fuel or gasoline.

This adjustment will be based on fuel usage factors for various items of work developed by the Highway Research Board in Circular 158, dated July 1974. These factors will be multiplied by the quantities of work done in each item during each monthly period and further multiplied by the variance in price from the Base Price to the Period Price.

The Base Price of Diesel Fuel and Gasoline will be the price as indicated in MassDOT's web site https://www.mass.gov/service-details/massdot-current-contract-price-adjustments for the month in which the contract was bid, which includes State Tax.

The Period Price will be the average of prices charged to the State, including State Tax for the bulk purchases made during each month.

This adjustment will be effected only if the variance from the Base Price is 5% or more for a monthly period. The complete adjustment will be paid in all cases with no deduction of the 5% from either upward or downward adjustments.

No adjustment will be paid for work done beyond the extended completion date of any contract.

Any adjustment (increase or decrease) to estimated quantities made to each item at the time of final payment will have the fuel price adjustment figured at the average period price for the entire term of the project for the difference of quantity.

The fuel price adjustment will apply only to the following items of work at the fuel factors shown:

ITEMS COVERED	FUEL FACTORS	
	Diesel	Gasoline
Excavation: and Borrow Work: Items 120.1, 127.1, 151 and 151.2 (Both Factors used)	0.29 Gallons / CY.	0.15 Gallons / CY
Surfacing Work: All Items containing Hot Mix Asphalt	3.097 Gallons / Ton	Does Not Apply

******** END OF DOCUMENT ********

DIVISION 2

SPECIFICATIONS

SECTION 02010

SPECIAL PROVISIONS

SCOPE OF WORK

All work under this Contract shall be done in conformance with the *2024 MassDOT Highway Division Standard Specifications for Highways and Bridges*, the *English Supplemental Specifications dated September 30, 2023, the 2017 MassDOT Highway Division Construction Standard Details; the MassDOT LRFD Bridge Manual – 2020 Edition; the 1990 Standard Drawings for Signs and Supports;* the *1990 Standard Drawings for Signs and Supports*; the *2009 Manual on Uniform Traffic Control Devices (MUTCD)* with *Massachusetts Amendments* and the *Standard Municipal Traffic Code*; the *1968 Standard Drawings for Traffic Signals and Highway Lighting*; the latest edition of *American Standard for Nursery Stock*; the Plans and these Special Provisions.

The existing bridge superstructure carrying Park Street over Martins Brook in North Reading will be demolished and replaced with precast concrete deck beams, concrete deck, and CT-TL2 concrete barrier. The approach roadways will be repaved within the limits of work. Existing utilities carried by the bridge will be relocated during construction. The road will be closed during construction and the contractor shall be responsible for providing all necessary signage and barricades required by the temporary traffic control Plans. The work to be done under this contract includes all design, equipment, materials, labor, and incidentals required to complete all work shown on the Plans.

ARCHITECTURAL ACCESS BOARD TOLERANCES

The Contractor is hereby notified that they are ultimately responsible for constructing all project elements in strict compliance with the current AAB/ADA rules, regulations and standards. All construction elements in this project associated with sidewalks, walkways, wheelchair ramps and curb cuts are controlled by 521CMR - Rules and Regulations of the Architectural Access Board (AAB). The AAB Rules and Regulations specify maximum slopes and minimum dimensions required for construction acceptance. There is no tolerance allowed for slopes greater than the maximum slope nor for dimensions less than the minimum dimensions. Contractors shall establish grade elevations at all wheelchair ramp locations, and shall set transition lengths according to the appropriate table in the Construction Standards (or to the details shown on the plans). All wheelchair ramp joints and transition sections which define grade changes shall be formed, staked and checked prior to placing cement concrete. All grade changes are to be made at joints.

MATERIAL TESTING

The Contractor shall obtain the services of a qualified material testing company to provide in-situ compaction and other material testing (including cast-in-place concrete) as ordered by the Resident Engineer. No separate payment will be made, and all costs associated with material testing shall be considered incidental to various contract items. All material testing shall be performed in accordance with the relevant MassDOT Specifications.

SECTION 02010

MOBILIZATION

The unit bid price for Mobilization (Item 748.) shall not exceed 3% of the contract bid total, exclusive of this item. Failure to observe this requirement could result in rejection of the bid.

EQUIVALENT POLICY

Any reference as to a specific type or manufacturer in these specifications is for identification purposes only. Equivalent products will be considered. In the event demonstrations or specifications on equivalent products are required, it will be at the vendor's expense. The Town of North Reading will have the sole discretion on whether or not a product is considered an equivalent.

WORK SCHEDULE

This contract contains the following work restrictions (refer to section 01010 for additional information and restrictions):

Refer to MassDOT Access Permit for additional requirements that must be adhered to for the proposed detour on Route 28.

When ready to demolish the existing superstructure, the Contractor shall close Park Street and implement the project detour shown within these Contract Documents. The Contractor shall alert the Town of this closure at least 21 calendar days prior to the closure. Incidental site preparation work may be performed prior to the road closure using single lane closure and police details. The cost of providing traffic control shall be considered incidental to the overall contract cost.

PROPERTY BOUNDS

The Contractor shall exercise due care when working around all property bounds, which are to remain. Should any damage to a bound result from the actions of the Contractor, the bound shall be replaced and/or realigned by the Contractor as directed by the Engineer. No further compensation will be due to the Contractor for the materials and labor required to re-establish the bound in its proper position.

DESIGNER/PROJECT MANAGER

DESIGNER
TEC, Inc.
Andrew Spurr, P.E.
978-794-1792

SECTION 02010

PROTECTION OF UNDERGROUND FACILITIES

The Contractor's attention is directed to the necessity of making his own investigation in order to assure that no damage to existing structures, drainage lines, traffic signal conduits, etcetera, will occur.

The Contractor shall notify Massachusetts DIG SAFE and procure a Dig Safe Number for each location prior to disturbing existing ground in any way. The telephone number of the Dig Safe Call Center is 811 or 1-888-344-7233.

All existing utility poles and overhead wires shall be left in place during construction. Contractor is responsible for selecting construction methods that facilitate working beneath the overhead wires.

This project includes the temporary and permanent relocations of water and gas services, owned by the Town of North Reading Water Department and National Grid Gas, respectively. The contractor is responsible for coordinating all temporary and permanent relocations with the respective utility owners. Refer to Items 992.321 & 992.4 for additional information related to this work, including a delineation of Contractor responsibilities and utility owner responsibilities.

TRAFFIC CONTROL

Refer to MassDOT Access Permit for additional requirements that must be adhered to for the proposed detour on Route 28.

PUBLIC SAFETY AND CONVENIENCE

(Supplementing Subsection 7.09)
The Contractor shall without additional compensation be required to provide safe and convenient access to all abutters during the prosecution of the work, except for such periods at such locations as may be authorized in writing by the Engineer.

NOTICE TO OWNERS OF UTILITIES

(Supplementing Subsection 7.13)
Written notice shall be given by the Contractor to all public service corporations or municipal and State officials owning or having charge of publicly or privately owned utilities of his intention to commence operations affecting such utilities at least one week in advance of the commencement of such operations. The Contractor shall, at the same time, file a copy of such notice with the Resident Engineer.

A list of public and private utilities can be found on the MassDOT Highway Division website at:

https://hwy.massdot.state.ma.us/webapps/utilities/select.asp → District 4 → (NORTH READING), and then locate the utility.

SECTION 02010

CONTRACTOR FIELD VERIFICATIONS

All existing bridge dimensions shown throughout the Contract Documents are based on existing bridge plans or survey of visible elements. The Contractor shall confirm existing bridge dimensions and details in the field prior to ordering materials. The Contractor shall notify the Engineer immediately if any existing bridge dimensions vary from what is shown on the bridge plans. All costs associated with field verification of existing dimensions shall be considered incidental to the Contract.

SECTION 02010

ITEM 127.1 REINFORCED CONCRETE EXCAVATION CUBIC YARD

GENERAL

The work under this Item shall conform to the applicable provisions of Sections 120 and 140 of the Standard Specifications and the following:

Work under this Item shall include removal and satisfactory disposal of select concrete at the abutments as shown on the Contract Drawings, as specified herein and as directed by the Engineer.

All surface preparation shall be in accordance with the details shown on the Plans.

The Contractor shall exercise due care when working around any existing reinforcing scheduled to remain. Should any damage to reinforcing result from the actions by the Contractor, the reinforcing shall be replaced as required by the Engineer. No further compensation will be due to the Contractor for the materials and labor required to replace the reinforcement.

No additional compensation will be made to the Contractor for excavation beyond the limits described under this item and approved by the Engineer.

Prior to excavation, the Contractor shall erect temporary shielding, paid for under Item 994.1 – Temporary Protective Shielding, and protect all utilities as necessary. No debris, tools or incidental equipment of any kind will be permitted to fall into the waterway. Any material that accidentally falls into such areas shall be removed immediately at the expense of the contractor.

The Town of North Reading does not guarantee or represent that the existing bridge materials will actually coincide with any descriptions contained herein or represented on plans. The Contractor must satisfy himself/herself by his/her own investigation and research regarding all conditions and materials affecting the work to be done.

METHODS

Removal of Concrete:

All concrete designated for removal under this item shall be removed within the limits shown on the Plans.

Before removing concrete, the Contractor shall take adequate precautions to prevent any materials from dropping to any areas below the structure. All debris shall be promptly swept up and removed from the site. All materials shall be satisfactorily disposed of by the Contractor.

Surface Preparation:

Prior to placing any new concrete, excavated areas must be clean, sound, and free of

ITEM 127.1 (Continued)

contaminants. All loose and deteriorated concrete shall be removed by mechanical means. Mechanically prepare the concrete substrate to obtain a surface profile of ±0.06 inch with a new exposed aggregate surface.

After concrete removal, remove bond-inhibiting materials (dirt, grease, loosely bonded aggregate). Check the concrete surfaces after cleaning to ensure that surface is free from additional loose aggregate or additional delaminations.

All equipment, labor, and materials required to achieve the specified surface preparation shall be considered incidental to this item.

METHOD OF MEASUREMENT

Item 127.1 will be measured for payment by the CUBIC YARD of reinforced concrete excavated. Only the actual quantities of materials ordered removed by the Engineer will be measured for payment.

BASIS OF PAYMENT

Item 127.1 will be paid for at the contract unit price per CUBIC YARD, which shall include all labor, tools, materials, and equipment and incidental costs required to complete the work.

SECTION 02010

ITEM 153.1 **CONTROLLED DENSITY FILL NON-EXCAVATABLE** **CUBIC YARD**

GENERAL

The work under this Item shall conform to the relevant provisions of Section 150 of the Standard Specifications and the following:

Controlled Density Fill (CDF) shall be used to backfill the cast-in-place guardrail transitions, where normal backfill compaction cannot be achieved, and/or as required by the Engineer.

MATERIALS

CDF shall conform to the MassDOT Standard Specifications and be listed on the MassDOT QCML. CDF shall be Type 2 - Flowable (Non- Excavatable).

Contractor shall submit proposed CDF mix design to the Engineer for review and approval.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Item 153.1 will be measured and paid at the contract unit price per CUBIC YARD of material placed within the specified limits as directed by the Engineer, which price shall include all labor, materials, equipment, and incidental costs required to complete the work.

SECTION 02010

ITEM 634.11 THRIE BEAM TERMINAL END UNIT EACH

GENERAL

The work under this item shall conform to the relevant provisions of Section 600 of the Standard Specifications and the following:

The work shall include furnishing and installing a thrie beam terminal end unit at the location shown on the plans and as directed by the Engineer.

MATERIALS

The thrie beam terminal end unit shall be handled and installed per the manufacturer's recommendations. Manufacturer shall be from the MassDOT Qualified Construction Materials List.

SUBMITTALS

The Contractor shall submit shop drawings of the thrie beam terminal end unit to the Engineer for review prior to furnishing the unit. Shop drawings shall detail all equipment and instructions that are necessary for complete installation, per the manufacturer's specifications and recommendations.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Item 634.11 will be measured and paid for at the Contract unit price per EACH thrie beam terminal end unit installed, complete in place, which price shall include all labor, materials, equipment and incidental costs required to complete the work.

SECTION 02010

ITEM 697.2 **FLOATING SILT FENCE** **FOOT**

GENERAL

The work under this item shall conform to the relevant provisions of Section 670 of the Standard Specifications and the following:

This work under this item shall include installation, maintenance and removal of a temporary floating silt fence to prevent any sediment disturbed during construction from reaching adjacent waterways and further dispersing.

MATERIALS

Floating silt fence shall be made of a woven polypropylene with a minimum 200 lb. tensile strength. The Contractor shall submit to the Engineer, for review and approval, product specifications and technical data provided by the manufacturer, prior to installation. The fence shall be continuously weighted at the bottom to maintain a vertical submerged position. Anchors shall be placed at both ends of the curtain and at intermediate locations, as necessary, to hold the fence securely in place. The fence shall be installed to withstand the forces of the flow of the waterway.

METHODS

Floating silt fence shall be installed before construction begins and earth is disturbed. Silt fences shall be inspected and approved by the Town of North Reading after installation and prior to commencement of further construction activities.

The Contractor shall inspect the silt fence at least weekly to ensure continuous effectiveness. Fence shall be maintained for effective performance at all times. If any fence becomes damaged or dislodged, construction activities shall be halted until all deficiencies are corrected by the Contractor with no additional compensation. The floating silt fence shall be removed after all construction activities are completed and in such a way that no collected sediment is dispersed into waterways.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Item 697.2 will be measured and paid at the contract unit price per FOOT of fence installed, completed in place, within the specified limits as directed by the Engineer, which price shall include all labor, materials, equipment, and incidental costs required to complete the work.

No separate payment will be made for any adjustments or repairs that may be required to provide a floating silt fence that is continuously effective for the duration of construction.

No separate payment will be made for the removal of the floating silt fence.

SECTION 02010

ITEM 767.121 SEDIMENT CONTROL BARRER FOOT

GENERAL

The work under this item shall conform to the relevant provisions of Subsections 670, 751 and 767 of the Standard Specifications and shall include the furnishing and placement of a sediment control barrier. Sediment control barrier shall be installed prior to disturbing upslope soil.

The purpose of the sediment control barrier is to slow runoff velocity and filter suspended sediments from storm water flow. Sediment barrier may be used to contain stockpile sediments, to break slope length, and to slow or prevent upgradient water or water off road surfaces from flowing into a work zone. Contractor shall be responsible for ensuring that barriers fulfill the intent of adequately controlling siltation and runoff.

Twelve-inch diameter (after installation) compost filter tubes with biodegradable natural fabric (i.e., cotton, jute, burlap) are intended to be the primary sedimentation control barrier. Photo-biodegradable fabric shall not be used.

For small areas of disturbance with minimal slope and slope length, the Engineer may approve the following sediment control methods:

- 9-inch compost filter tubes
- Straw bales which shall be trenched

No straw wattles may be used. Additional compost filter tubes (adding depth or height) shall be used at specific locations of concentrated flow such as at gully points, steep slopes, or identified failure points in the sediment capture line.

When required by permits, additional sediment barrier shall be stored on-site for emergency use and replacement for the duration of the contract.

Sediment control barriers shall be installed in the approximate location as shown on the plans and as required so that no excavated or disturbed soil can enter mitigation areas or adjacent wetlands or waterways. If necessary to accommodate field conditions and to maximize effectiveness, barrier locations may be shifted with approval from the Engineer. Barriers shall be in place prior to excavation work. No work shall take place outside the barriers.

MATERIALS AND CONSTRUCTION

Prior to initial placement of barriers, the Contractor and the Engineer shall review locations specified on the plans and adjust placement to ensure that the placement will provide maximum effectiveness.

Barriers shall be staked, trenched, and/or wedged as specified herein and according to the Manufacturer’s instructions. Barriers shall be securely in contact with existing soil such that there is no flow beneath the barrier.

ITEM 767.121 (Continued)

Compost Filter Tube

Compost material inside the filter tube shall meet M1.06.0, except for the following: no peat, manure or biosolids shall be used; no kiln-dried wood or construction debris shall be allowed; material shall pass through a 2-inch sieve; and the C:N ratio shall be disregarded.

Outer tube fabric shall be made of 100% biodegradable materials (i.e., cotton, hemp or jute) and shall have a knitted mesh with openings that allow for sufficient water flow and effective sediment capture.

Tubes shall be tamped, but not trenched, to ensure good contact with soil. When reinforcement is necessary, tubes shall be stacked as shown on the detail plans.

Straw Bales

Straw bales shall be used if shown on the plans or when specified by Orders of Condition or other permit requirements.

Bales should be placed in a single row, lengthwise on the contour, with ends of adjacent bales tightly abutting one another. All bales should be either wire-bound or string-tied. Straw bales should be installed so that bindings are oriented around the sides (rather than along the tops and bottoms) of the bales in order to prevent deterioration of the bindings.

The barrier should be entrenched and backfilled. A trench should be excavated the width of a bale and the length of the proposed barrier to a minimum depth of 4 inches. The trench must be deep enough to remove all grass and other material which might allow underflow. After the bales are staked and chinked (filled by wedging), the excavated soil should be backfilled against the barrier. Backfill soil should conform to the ground level on the downhill side and should be built up to 4 inches against the uphill side of the barrier.

Each bale should be securely anchored by at least 2 stakes or re-bars driven through the bale. The first stake in each bale should be driven toward the previously laid bale to force the bales together. Stakes or re-bars should be driven deep enough into the ground to securely anchor the bales. For safety reasons, stakes should not extend above the bales but should be driven in flush with the top of the bale.

The gaps between the bales should be chinked (filled by wedging) with straw to prevent water from escaping between the bales. Loose straw scattered over the area immediately uphill from a straw bale barrier tends to increase barrier efficiency. Wedging must be done carefully in order not to separate the bales.

When used in a swale, the barrier should be extended to such a length that the bottoms of the end bales are higher in elevation than the top of the lowest middle bale to assure that sediment-laden runoff will flow either through or over the barrier but not around it.

ITEM 767.121 (Continued)

Sedimentation Fence

Materials and Installation shall be per Section 670.40 and 670.60 of the Standard Specifications and the following:

Sedimentation fence shall only be used if shown on the plans or when specified by Orders of Condition or other permit requirements.

When used with compost filter tubes, the tube shall be placed on a minimum of 8 inches of folded fabric on the upslope side of the fence. Fabric does not need to be trenched.

When used with straw bales, an 8-inch deep and 4-inch-wide trench or V-trench shall be dug on the upslope side of the fence line. One foot of fabric shall be placed in the bottom of the trench followed by backfilling with compacted earth or gravel. Stakes shall be on the down slope side of the trench and shall be spaced such that the fence remains vertical and effective.

Width of fabric shall be sufficient to provide a 36-inch-high barrier after fabric is folded or trenched. Sagging fabric will require additional staking or other anchoring.

Stakes

Stakes for anchoring compost filter tubes and straw bales shall be as shown on the plans and shall be a minimum of 1x1 inch diameter x 4 feet hardwood stakes.

When used with silt fence, stakes for compost filter tubes shall be driven 12 inches into the ground. Stakes for straw bales shall be driven 16 inches into the ground.

Stakes of other material of equivalent strength may be used if approved by the Engineer.

MAINTENANCE

Maintenance of the sediment control barrier shall be per Section 670.60 of the Standard Specifications or per the Order of Conditions, whichever is more restrictive.

The contractor shall inspect the sediment barrier in accordance with relevant permits. At a minimum, barriers shall be inspected at least once every 7 calendar days and after a rain event resulting in 0.25 inches or more of rainfall. Contractor shall be responsible for ensuring that an effective barrier is in place and working effectively for all phases of the Contract.

Barriers that decompose such that they no longer provide the function required shall be repaired or replaced as directed. If the resulting berm of compost within the fabric tube is sufficiently intact (despite fabric decay) and continues to provide effective water and sediment control, barrier does not necessarily require replacement.

ITEM 767.121 (Continued)

DISMANTLING & REMOVING

Barriers shall be dismantled and/or removed, as required, when construction work is complete and upslope areas have been permanently stabilized and after receiving permission to do so from the Engineer.

Regardless of site context, nonbiodegradable material and components of the sediment barriers, including photo-biodegradable fabric, plastic netting, nylon twine, and sedimentation fence, shall be removed and disposed off-site by the Contractor.

For naturalized areas, biodegradable, natural fabric and material may be left in place to decompose onsite. In urban, residential, or other locations where aesthetics is a concern, the following shall apply:

- Compost filter tube fabric shall be cut and removed, and compost shall be raked to blend evenly (as would be done with a soil amendment or mulch). No more than a 2-inch depth shall be left on soil substrate.
- Straw bales shall be removed and disposed off-site by the Contractor. Areas of trenching shall be raked smooth and disturbed soils stabilized with a seed mix matching adjacent seeding or existing grasses (i.e., lawn or native grass mix).
- Sedimentation fence, stakes, and other debris shall be removed and disposed off-site. Site shall be restored to a neat and clean condition.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Item 767.121 will be measured and paid at the contract unit price per FOOT of sediment control barrier placed within the specified limits directed by the Engineer, which price shall include all labor, materials, equipment, maintenance, dismantling, removal, restoration of soil, and all incidental costs required to complete the work.

Additional barrier, such as double or triple stacking of compost filter tubes, shall be incidental to this item.

Silt fence, when used in conjunction with compost filter or straw bales, shall be incidental to this item.

Barriers that have been driven over or otherwise damage by construction activities shall be repaired or replaced as directed by the Engineer at the Contractors expense.

SECTION 02010

ITEM 816.811 TEMPORARY MODIFICATIONS TO TRAFFIC SIGNALS DAY

Work under this Item shall conform to the relevant provisions of Section 815 of the *2024 Standard Specifications for Highway and Bridges* (Standard Specifications), the *2009 Manual on Uniform Traffic Control Devices for Streets and Highways* (MUTCD), and the following:

The work shall include the temporary modifications of traffic signal timing at various traffic signal location(s) to accommodate the roadway closure of Park Street at the bridge over Martin's Brook as part of temporary traffic control sets up shown on the plans. The work shall also include restoration traffic signal timing at the various traffic signal location(s) following completion of work or staged work. Programming modifications may be completed various times during the temporary traffic control period for each location to support the changing of traffic patterns. The following locations are identified as locations for modifications to programming:

- Location 1: Main Street (Route 28) / Park Street
- Location 2: Main Street (Route 28) / Winter Street (Route 62) / Reading Lumber Driveway
- Location 3: Winter Street (Route 62) / Park Street (Route 62) / Freedom Drive
- Location 4: Main Street (Route 28) / North Reading Plaza Driveway
- Location 5: Main Street (Route 28) / Ocean State Job Lot Driveway

Traffic Signal Programming – Fine Tuning

Prior to, during, and following completion of work at each of the intersections noted above, the Contractor, under the direction of the Engineer and with District Traffic approval or Town approved depending on ownership, will make necessary adjustments and tests to ensure safe and efficient operation during periods where the detour is in place. Cabinet hardware modifications are not expected as well as modifications to coordination timings as each intersection, although coordinated had historically been present, is currently running as isolated intersections. For the purposes of this bid, the Contractor shall provide a bid price that includes the following assumed programming work with the various contracted or subcontracted traffic signal personnel:

- Programming of traffic signal prior to the detour set-up. [Locations 1,2, and 3]
- Programming of traffic signal on the second week of detour set-up to fine-tune. [All locations]
- Programming of traffic signal on at least one day during detour set-up. [All locations if necessary]
- Programming of traffic signal on the day following the end of detour set-up to return traffic signal timings to their original settings. [All locations as necessary; however, will be required for Locations 1, 2, and 3]

METHOD OF MEASUREMENT

Item 816.811 Temporary Modifications to Traffic Signals will be measured by the Day. Each period of 24 hours during which required modifications to the traffic signals are made as described above will be measured as 1 day regardless of the number of times modifications are made.

ITEM 816.811 (Continued)

BASIS OF PAYMENT

Item 816.811 shall be paid for at the respective Contract unit price per Day, which price shall include all labor, material, equipment, and incidental costs required to complete the work.

No separate payment will be made for adjusting or readjusting other signal equipment at each location, such as vehicle detection zones, modifications to detection zones, modification to preemption equipment direction, etc., but all costs in connection therewith shall be incidental to Item 816.811.

SECTION 02010

ITEM 992.321 TEMPORARY UTILITY SUPPORTS LUMP SUM

GENERAL

Temporary Supports for Water Main

The work under this Item shall consist of all labor and materials required to design, furnish, install, maintain, and remove temporary utility supports (including foundations) for a temporary 10" water line across Martins Brook, as shown on the Plans.

The temporary supports must be designed in accordance with the applicable provisions of the latest editions of the *AASHTO Construction Handbook for Bridge Temporary Works*. Prior to procuring any materials, the Contractor shall submit the temporary utility support design to the Engineer for review and approval. Submittal shall include (at a minimum) plans, details, and calculations of the proposed temporary support system. All calculations shall be prepared by a Professional Engineer registered in the Commonwealth of Massachusetts.

The temporary supports shall be coordinated with the *Town of North Reading Water Construction Standards* to ensure any Town requirements are incorporated into the design of the temporary supports. The Town of North Reading Water Department shall have final approval of the temporary supports. The installation and removal of the temporary utility support structure must comply with all Environmental permits.

Once the temporary support is installed, the Contractor is fully responsible for maintaining condition, stability, integrity, and full functionality. All adjustments or modifications that may be required to the temporary support shall be considered incidental to this Item. The Contractor shall always allow the Town uninterrupted access to their infrastructure.

The removal of temporary support (including associated elements such as foundations, dowels, grout pads, etc.) shall be considered incidental to this Item. Restoration of any disturbed earth required for the installation or removal of the temporary support shall be incidental to this Item. All areas shall be restored to their pre-construction condition, at the discretion of the Engineer.

Contingency Measures for Temporarily Supporting Gas Main

As described in the Construction Drawings, there is no temporary relocation planned for the gas main along Park Street. The existing gas main is scheduled to be cut-and-capped during construction, and permanently relocated onto the proposed bridge.

This sub-section seeks to establish contingency measures for supporting a temporary 4" gas main in the unlikely event of project delays or unforeseen circumstances.

National Grid Gas has indicated that gas service in this area must be active for the heating season (November 15th – April 1st). As such, previous sections of the Contract Documents have outlined a project schedule that must be achieved by the Contractor to facilitate the permanent relocation of the gas line. It is the Engineer and Town's expectation that these dates will be achieved. If the

ITEM 992.321 (Continued)

anticipated schedule is not met due to delays or unforeseen circumstances, temporary utility supports for a temporary gas bypass shall be installed by the Contractor prior to October 31st.

The Contractor shall be responsible for the design, procurement, installation, maintenance, and removal of any temporary utility supports for the temporary gas bypass. All costs associated with a temporary support for the gas bypass shall be the full responsibility of the Contractor. No additional payment shall be made by the Town or National Grid Gas for any of this work.

At any point during construction, if the Engineer determines that project delays are imminent, or are actively impacting the prosecution of work to the point that National Grid's time constraints are in jeopardy, the Engineer reserves to right to direct the Contractor to immediately prepare the design of the temporary gas supports. The Engineer shall provide the required design criteria for the temporary supports upon directing the Contractor to begin the design.

Generally, no payment will be made for any work related to the temporary gas supports (if required) as the work is not anticipated to occur. This section is intended to make the Contractor aware of the Engineer's and National Grid's expectations and timelines in the event of unforeseen delays.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Item 992.321 will be paid at the contract LUMP SUM bid price, which shall include all labor, materials, equipment, and incidental costs required to design, fabricate, install, and remove the temporary utility supports for the temporary 10" water line.

The Contractor may request 75% partial payment for the temporary support structure upon successful installation as described above, at the Engineer's discretion. The remaining 25% shall be paid upon successful removal of the support and restoration of surrounding areas.

This Item shall strictly be for the temporary water support structures. All work related to furnishing and installing the temporary water main shall be included in Item 992.4.

SECTION 02010

ITEM 992.4 TEMP. & PERM. UTILITY RELOCATIONS (GAS AND WATER) LUMP SUM

GENERAL

The work to be done under this item includes all work required to relocate the water main (temporary and permanent relocations) and gas main (permanent relocation), as shown on the Plans.

Water Main
Temporary and permanent relocations shall be in accordance relevant provisions of Section 300 and all other relevant provisions within the *Town of North Reading Water Construction Standards*, which has been attached to the end of these special provisions for reference. The Town of North Reading Water Department shall have final approval on all materials and procedures proposed by the Contractor.

The Contractor shall closely coordinate with the Town of North Reading Water Department prior to ordering materials or scheduling any work. All materials (i.e. permanent mains, temporary mains, gate valves, connections, joints, etc.) and procedures (i.e. installation procedures, testing, inspection submittal approval, etc.) shall be in accordance with the *Town of North Reading Water Construction Standards*. The Contractor shall furnish and install all materials required for the relocations.

All work related to the temporary and permanent relocations of the water main shall be included under this Item (including all earthwork). The temporary utility support shall be paid separately under Item 992.321.

The Contractor shall closely coordinate with the Town of North Reading Water Department to schedule the work.

Gas Main
The Contractor is responsible for coordinating with National Grid to schedule the relocation work.

For the permanent relocation of the gas main (owned by National Grid Gas), the Contractor shall note the following:

- The gas relocation is not considered “betterment” and will be performed by National Grid. Contractor shall carry no cost for the relocation of the gas line, unless otherwise described herein.
- National Grid conservatively estimates that the gas line relocation will take approximately 20 working days. The awarded Contractor should not expect to work within the vicinity of the gas line while National Grid is onsite performing their work.

ITEM 992.4 (Continued)

- Per National Grid time constraints for the heating season, no work on the gas line will be permitted between November and April. As such, Contractor shall have permanent utility supports installed by October 1st , at the latest. Contractor will be responsible for scheduling work accordingly, and shall notify National Grid a minimum of 4-weeks prior to relocating the gas line.
- The Contractor is responsible for providing safe access to the entire utility bridge after it is constructed to allow for National Grid to install the relocated gas line.
- National Grid will furnish and install new gas line, connections, and the rollers for the gas line supports.
- Contractor is responsible for providing (and pre-drilling) all steel utility supports, as requested by National Grid and as described on the Plans. These steel supports are paid under Item 995
- National Grid will patch trenches required to complete their work; however, they are not responsible for any final paving.
- Once the new main is installed by National Grid, the existing (inactive) main will be abandoned in place. Contractor is responsible for removing the line, as needed, to complete other elements of the project.
- The Contractor shall field mark the new location of the buried line prior to installing new guardrail. Contractor shall schedule a confirmatory field visit with National Grid and the Engineer after guardrail posts are laid out, and all new pipe is marked.
- Refer to the Contract Plans for additional information regarding the work.

Refer to Item 992.321 for information related to the contingency measures that will be expected of the Contractor shall the project experience any unforeseen delays. In the event of unforeseen delays, the Contractor shall coordinately closely with National Grid to facilitate a temporary relocation by October 31st. If a temporary relocation is ultimately required, all costs associated shall become the sole responsibility of the Contractor.

METHOD OF MEASUREMENT AND BASIS OF PAYMENT

Item 992.4 shall be paid at the Contract Lump Sum price, which shall include all labor, materials, equipment, engineering, and incidental costs required to complete the work for all the utility relocations of the existing water main and gas main.

Contractor shall carry no cost for the permanent relocation of the gas line in their lump sum bid price

All adjustments and repositioning of the existing water main and gas main shall be considered as included under this Item.

SECTION 02010

ITEM 994.1 TEMPORARY PROTECTIVE SHIELDING LUMP SUM
BRIDGE NO. N-18-002 (7YC)

GENERAL

The work under this item shall include designing, furnishing, installing, maintaining, removing and disposing of the protective shielding system underneath the bridge. The shielding shall protect the waterway below from debris during superstructure demolition. The shielding system shall be installed prior to any demolition of the bridge.

Shielding shall be in place prior to the start of the superstructure demolition and shall be inspected and approved by the Engineer after prior to commencement of additional construction activities.

The Contractor may be required to change or modify the protective system if it is not performing adequately as determined by the Engineer. No additional compensation will be made for changing or modifying the protective system. The Engineer's approval of the proposed protective system does not relieve the Contractor of changing or modifying the protective system.

If the Contractor's operations damage any existing portions of the bridge that have been designated to be retained in the proposed construction, such damage shall be repaired at the Contractor's expense.

All materials used in the shielding system shall become the property of the Contractor and shall be removed from the site at the completion of the project.

SUBMITTALS

Prior to the commencement of any work under this item, the Contractor shall submit to the Engineer for review and approval a temporary shielding plan stamped by a Professional Engineer registered in the Commonwealth of Massachusetts. The temporary shielding plan shall include calculations and detail drawings of the proposed shielding and shall conform to the following:

1. Shielding shall be designed to safely withstand all loads to which it will be subjected. The design shall be in accordance with the latest editions of the *AASHTO LRFD Bridge Design Specifications* and the *AASHTO Guide Design Specification for Bridge Temporary Works*. The design shall also include a complete description of the equipment and construction methods proposed for the superstructure removal, and the maximum size of concrete being excavated. The shielding shall also be designed to withstand the maximum size of excavated area should it fall during excavation or removal.

ITEM 994.1 (Continued)

METHOD OF MEASUREMNENT AND BASIS OF PAYMENT

Item 994.1will be paid for at the contract LUMP SUM bid price, complete in place and shall be full compensation for furnishing materials, equipment, labor, and incidental costs required to complete the work.

Partial payments will be made at the following percentages:

Approval of the Temporary Protective Shielding system	10%
Accepted installation of the Temporary Protective Shielding system	60%
Satisfactory removal and disposal of Temporary Protective Shielding system	30%

SECTION 02010

ITEM 995. **BRIDGE SUPERSTRUCTURE** **LUMP SUM**
BRIDGE NO. N-18-002 (7YC)

The work under this Item shall conform to the applicable provisions of Section 995 of the Standard Specifications and the specific requirements stipulated below for component parts of this Item. For those component parts where no specific requirement is stipulated, the 2023 MassDOT Standard Specifications shall apply, except for payment.

Work under this Item shall include all materials, equipment and labor needed to construct the following:

- Reinforced concrete bridge deck
- Reinforced concrete approach slabs
- Reinforced concrete approach slab shelves
- Reinforced concrete abutment caps
- CT-TL2 bridge rail
- Steel utility supports
- Membrane waterproofing for bridge decks – spray applied
- Sawing and sealing joints in asphalt pavement
- Drilling and grouting dowels
- Prestressed concrete deck beams (S36-12)

The work does not include any items listed separately in the proposal. Payment for materials shown on the Plans as being part of the bridge structure or which may be incidental to its construction and are not specifically included for payment under another Item shall be considered incidental to the work performed under this Item and shall be included in the unit price of the component of which they are a part.

ITEM 995. (Continued)

5000 PSI, 3/8 IN, 710 HP CEMENT CONCRETE
4000 PSI, 3/4 IN, 585 HP CEMENT CONCRETE

The work to be done under these headings shall conform to the relevant provisions of Subsection 901 of the Standard Specifications and the following:

4000 PSI, 3/4 IN, 585 HP cement concrete shall be used to construct the cast-in-place concrete bridge deck, approach slabs, and approach slab shelf.

5000 PSI, 3/8 IN, 710 HP cement concrete shall be used to construct the CT-TL2 bridge rail and transitions.

The following items shall be considered as included in the price per cubic yard of concrete, as stated by the Contractor and approved by the Engineer in the "Basis of Partial payments": all preformed and pre-molded filler, joint sealer, bonded closed cell foam joint systems, backer rods, neoprene strips, formwork, paraffin and all other materials (complete in place) at construction joints, deck joints, and all other work considered as incidental to the work involved in furnishing and placing concrete for which payment is not provided elsewhere in the contract, shall be considered as included in the lump sum contract price for this item.

STEEL REINFORCEMENT FOR STRUCTURES – EPOXY COATED

The work under this header shall conform to the relevant provisions of Sections 900 of the Standard Specifications and the following:

Special procedures shall be used during handling, storage, and installation to prevent damaging epoxy coating, as outlined in the Concrete Reinforcing Steel Institute (CRSI) report titled "Guidelines for Inspection and Acceptance of Epoxy Coated Reinforcing Steel at the Jobsite".

Any damage to the epoxy coating shall be repaired following this report. A copy of this report must be available at the jobsite for reference.

All reinforcing steel shall be epoxy coated Grade 60 unless otherwise noted on the plans. All accessories to support rebar shall be epoxy coated.

Accessories supporting epoxy coated bars or welded wire fabric shall be epoxy coated. Individual and continuous slab bolsters and chairs shall be of a type to suit various conditions encountered and must be capable of supporting a 300 lb. load without damage or permanent distortion.

ITEM 995. (Continued)

MEMBRANE WATERPROOFING FOR BRIDGE DECKS – SPRAY APPLIED

The work under this heading shall conform to relevant provisions of Section 965. Materials used to perform this work shall be listed on the MassDOT Qualified Construction Materials List.

SAWING & SEALING JOINTS IN ASPHALT PAVEMENT AT BRIDGES

The work to be done under this Item consists of making a sealed kerf across the full width of the finished asphalt pavement at bridge abutments where called for on the Plans. The shape, width, and depth of the kerf shall be as shown on the Plans.

Prior to the start of the asphalt pavement operation, the Contractor shall place a mark on each curb or barrier on either side of the paved roadway. These marks shall be aligned with the actual end of the bridge deck and shall be placed so that they will not be covered or otherwise obscured by the asphalt pavement.

After the completion of the paving operation, the Contractor shall snap a straight chalk line on the pavement between these two marks. The Contractor shall then saw cut the pavement along this line to the depth, width and shape as shown on the Plans. The equipment shall be approved by the Engineer prior to commencing work.

After completing the saw cutting, the Contractor shall clean the saw groove of any dust and debris with an oil free air blast. If the groove was wet sawn, the groove shall be cleaned with a water blast to remove any remaining slurry and debris, vacuumed with a Wet-or-Dry vacuum to remove any standing water, and then dried with an air blast from a Hot-Air-Lance.

Once the groove is clean and dry, the Contractor shall fill it completely with a hot-applied bituminous crack sealer meeting the requirements of M3.05.4 in accordance with the manufacturer's application instructions and restrictions regarding ambient and material temperatures. The crack sealer shall be thoroughly cured prior to opening the road to traffic. To reduce tackiness, only boiler slag aggregate (black beauty) shall be scattered over the sealer when required by the Engineer. Conventional sand shall not be used for this purpose.

DRILLING AND GROUTING DOWELS

The work under this Item shall consist of drilling and grouting dowels complete in place as shown on the contract plans and in accordance with these specifications.

MATERIALS

The grout to be used for these dowels shall be Hilti HIT-RE 500 V3 Epoxy Adhesive or approved equal.

ITEM 995. (Continued)

CONSTRUCTION METHOD

The dowel hole diameter shall be per the grout manufacturer's recommendations for each size dowel. All dowel holes shall be diamond core drilled. The inner surfaces of diamond core drilled dowel holes shall be scored to develop sufficient keying action. The method of scoring of the dowel hole's inner surfaces shall be subject to the approval of the Engineer. The depth of the drilled dowel holes shall be as shown on the Plans. The holes shall be blown clear of any debris and shall have the approval of the Engineer prior to the placement of any grout material.

The drilling operation shall be performed without damage to any existing reinforcing or portion of the structure that is to remain in place. Any damage to any existing portion of the structure that is to remain in place shall be repaired to a condition equal to or better than existing condition prior to the beginning of the Contractor's operations and shall be repaired at the Contractor's expense.

The Contractor shall strictly follow the recommendations of the manufacturer for mixing and placing the grout material prior to the placement of the dowels. Any excessive grout around the hole after placement of the dowel shall be struck off smooth while the grout is still fresh.

SUBMITTALS

The Contractor shall submit the grout manufacturer's literature completely describing the products to be utilized. The materials shall be delivered clearly marked with legible and intact labels containing the manufacturer's name, brand name, and identification of the areas where temperatures conform to manufacturer's instructions and recommendations.

PRESTRESSED CONCRETE DECK BEAMS (S36-12)

A. General.

The work under this Heading consists of fabricating, transporting and installing prestressed concrete deck beams, and includes all necessary labor, materials, and equipment to complete the work as shown on the Plans. The work shall conform to the MassDOT Standard Specifications and the requirements of the current AASHTO LRFD Bridge Construction Specifications, supplemented by the current relevant provisions of the latest edition of PCI MNL-116 (The Manual for Quality Control for Plants and Production of Precast and Prestressed Concrete Products), except as noted herein. Section 930, M4.02.14, and M4.03.00 through M4.03.14 of the MassDOT Standard Specifications are superseded in their entirety by the requirements specified below.

QUALITY CONTROL

A. General.

Quality Control is the system used by the Contractor and Fabricator to monitor and assess their production processes at the plant facility and installation activities at the project site to ensure that the final product will meet the specified level of quality.

ITEM 995. (Continued)

B. Fabricator Quality Control.

Quality Control shall be performed by the Fabricator to ensure that the product is fabricated in conformance with the specifications herein. The Fabricator shall maintain a Quality Control system to monitor, assess, and adjust placement and fabrication processes to ensure the Prestressed Concrete Beam(s) meet the specified level of quality, through sufficient Quality Control sampling, testing, inspection, and corrective action (where required). The Fabricator's Quality Control system shall address all key activities during the placement and fabrication and shall be performed in conformance with the Fabricator's PCI Certification. Quality Control documentation shall meet the requirements of the *Fabricator Quality Control – Documentation* section below. Upon request, Fabricator Quality Control documentation shall be provided to the Engineer.

1. Plant.

Prior to the fabrication of Prestressed Concrete Beams, the Fabricator's precast concrete plant shall obtain the following:

(a) Certification by the Precast/Prestressed Concrete Institute (PCI) Plant Certification Program, for Prestressed Concrete Beam fabrication, Category B3 level or higher
(b) MassDOT Prequalification
(c) MassDOT Mix Design Approval

All concrete for a given Prestressed Concrete Beam shall be produced by a single company and plant, unless otherwise approved by the Engineer.

2. Personnel.

The Fabricator shall provide adequate training for all QC personnel in accordance with PCI certification. There shall be sufficient personnel trained and certified to perform the tests listed under Subsection M4.02.13, Part D. At a minimum, the Fabricator's Quality Control Personnel shall maintain the following qualifications and certifications:

(a) QC Manager with an active Precast/Prestressed Concrete Institute (PCI) Technician/Inspector Level II or higher, and a minimum of 5 years continuous experience in the manufacture of Prestressed Concrete Beams for state transportation departments. The QC Manager shall be on site while the batch plant is producing and placing concrete for the project.
(b) A Technician/Inspector having the Precast/Prestressed Concrete Institute (PCI) Technician/Inspector Level II or higher

The Contractor shall submit to the Engineer a copy of the Fabricator's Quality Control Personnel required qualifications, as specified above.

ITEM 995. (Continued)

3. Laboratory.

The Fabricator shall provide a room of sufficient size to house all equipment and to adequately perform all testing. The room shall have either a separate moisture storage room or curing box for concrete cylinders, and it shall be thermostatically controlled to maintain temperatures consistent with AASHTO T 23. It shall include a desk and file cabinet for proper record keeping, and have good lighting and ventilation. This room shall be kept for testing and quality control and not used for any other purpose. No exception from these requirements will be allowed without the express written permission of the Engineer.

4. Testing Equipment.

At a minimum, the Fabricator's plant facility shall have the following testing equipment:

(a) Air Content Meter Type A or B: AASHTO T 152
(b) Air Content Meter Volumetric Method: AASHTO T 196 (Required for Lightweight Concrete)
(c) Slump Cone: AASHTO T 119
(d) Cylinder Molds AASHTO M 205
(e) Concrete Testing Machine: AASHTO T 22
(f) Screening Sieve: AASHTO T 27, AASHTO T 11
(g) Curing Box: AASHTO T 23
(h) Spread Test Base Plate for Self-Consolidating Concrete (SCC): ASTM C1611
(i) All other equipment prescribed by AASHTO and ASTM standards for the tests to be performed by the Fabricator as specified

5. Inspection.

Quality Control personnel shall monitor and inspect the fabrication of each Prestressed Concrete Beam. Quality Control personnel shall report all inspection activities on Quality Control Inspection Reports and non-conformances on Non-Conformance Reports (NCRs) throughout the entire fabrication process, as speciefied herein.

6. Temperature Monitoring.

At a minimum, the Fabricator shall monitor, record, and report the temperatures of the form, ambient temperatures surrounding the concrete, and temperatures of the concrete continuously, without interruption as specified below:

(a) Prior to placement of concrete to verify that $T_i \geq 50°F$.
(b) Immediately after placement to verify that $T_i \geq 50°F$ is maintained.
(c) Throughout the entire duration of the curing cycle, at regular intervals not to exceed one hour until 100% Design Strength (f'_c) is attained and concrete has cooled to within 40°F of the ambient temperature surrounding the Prestressed Concrete Beam.

ITEM 995. (Continued)

At a minimum, the temperature measuring devices shall record and report the temperature of the concrete to the nearest 2°F. At least two temperature sensors (thermocouples) shall be positioned to record the maximum and minimum anticipated concrete temperatures. The anticipated minimum temperature shall be measured with one or more thermocouples at a distance no greater than 2 inches from the surface of the thinnest section. The anticipated maximum temperature shall be measured with one or more thermocouples at the center of the thickest section. Proposed temperature measurement locations shall be submitted to the Engineer for approval. Temperature recording devices shall be located within the curing enclosure and calibrated as required by PCI MNL-116 Section 4.18.4. Maximum heat increase and cool down rates shall comply with PCI MNL-116, Section 4.19. The Contractor shall furnish temperature logs recorded at a minimum frequency of once per hour to the Inspector as required, with each post-pour QC inspection report.

7. Sampling and Testing.

At a minimum, the Fabricator shall perform random Quality Control sampling and testing as specified in *Table 1: Quality Control Sampling and Testing*. The Fabricator shall perform additional Quality Control sampling and testing on concrete that has been retempered with admixtures or hold-back water during fabrication. Test Specimens shall conform to the requirements of Section M4.02.13 of the MassDOT Standard and Supplemental Specifications and AASHTO R 60, with the exception of the Stripping (80% f'_c) set of cylinders. Stripping (80% f'_c) cylinders shall be cured in the same location and environment as the Prestressed Concrete Beam they represent. If approved by the Engineer, compressive strength cylinder match curing equipment, that maintains the same concrete conditions that the corresponding Prestressed Concrete Beam is exposed to, may be utilized in lieu of Stripping (80% f'_c) field cured cylinders, with the use of thermocouples, controllers, and heaters.

ITEM 995. (Continued)

Table 1: Quality Control Sampling and Testing

Quality Characteristic	Test Method	Sample Size	Specification Limit	Lot Size [(c)]	Sublot Size [(d)]	Frequency	Point of Sampling
Slump (in.) [(a)]	AASHTO T 119	Per AASHTO	≤ 8 in. or as approved by the Engineer	Total Quantity of Beams fabricated on a Contract, per Bid Item, per Mix Design	One (1) Beam	One (1) per Sublot or fraction thereof	Point of Discharge
Air Content (%)	AASHTO T 152	Per AASHTO	5% ≤ % ≤ 8%				
Temperature (°F)	AASHTO T 309	Per AASHTO	50°F ≤ °F ≤ 90°F				
Compressive Strength (psi)	AASHTO T 22 AASHTO T 23	Stripping Cylinders: One (1) set of Three (3) 4 x 8 in.	≥ 80% f'_c at Stripping				
		7-day Cylinders: One (1) set of Three (3) 4 x 8 in.	For Information at 7 days				
		28-day Cylinders: One (1) set of Three (3) 4 x 8 in.	≥ 100% f'_c at 28 days				
		56-day Cylinders: One (1) set of Three (3) 4 x 8 in.	≥ 100% f'_c at 56 days [(b)]				

Notes:

(a) Self-consolidating concrete (SCC) shall meet the requirements of M4.02.17.
(b) 56-day Compressive Strength test specimens shall require testing only when 28-day Compressive Strength test specimens have failed to meet Design Strength (f'_c).
(c) Lot shall be defined as a specific quantity of material from a single source, produced or placed by the same controlled process.
(d) Sublot shall be defined as an equal division or part of a Lot from which a sample of material is obtained in order to assess the Quality Characteristics of the Lot.

ITEM 995. (Continued)

8. Certificate of Compliance.

The Fabricator shall provide a Certificate of Compliance in accordance with Standard Specifications, Division I, Section 6.01, stating that QC test cylinders have achieved the design strength, f'_c. A Certificate of Compliance shall accompany each shipment and shall be presented to the designee upon delivery to the site.

9. Documentation.

At a minimum, the Fabricator shall maintain a filing system for the following QC records and documentation. All QC records and documentation shall be made available to the Engineer upon request.

(a) Current MassDOT Approved Mix Design Sheet(s) and Approval Letter(s)
(b) PCI Certification
(c) Current Qualifications and Certifications for QC Manager(s) and QC Technician(s)
(d) Most current set of Approved Shop Drawings
(e) Approved Placement, Finishing and Curing Plan
(f) Approved Dunnage Plan
(g) Fabricator Certificate of Compliance for each fabricated Prestressed Concrete Beam
(h) Admixture Manufacturer's Certification of Compliance for each approved Admixture
(i) Completed QC Inspection Report for each fabricated Prestressed Concrete Beam
(j) Identification Number for each fabricated Prestressed Concrete Beam
(k) Time and date of casting of each fabricated Prestressed Concrete Beam
(l) Date of stripping of each fabricated Prestressed Concrete Beam
(m) Batch Ticket Printout reporting the quantity of concrete produced for each batch of concrete produced
(n) Concrete temperature records for each fabricated Prestressed Concrete Beam
(o) QC Test Report Forms for each sublot of concrete produced
(p) Non-Conformance Reports (NCRs)
(q) Documentation of Repairs (if applicable)

ITEM 995. (Continued)

MATERIALS

A. Materials.

Materials shall meet the following specifications (if applicable):

General	M4.00.00
Portland Cement	M4.01.0
Blended Hydraulic Cements	M4.01.1
Fly Ash	M4.01.2
Cement Concrete	M4.02.00
Cement	M4.02.01
Cement Mortar	M4.02.15
Aggregates	M4.02.02
Lightweight Aggregates	M4.02.03
Water	M4.02.04
Cement Concrete Additives	M4.02.05
Proportioning	M4.02.06
Mixing and Delivery	M4.02.10
Test Specimens	M4.02.13
Mortar for Filling Keyways	M4.04.0
Slag	AASHTO M 302
High Performance Cement Concrete	M4.06.1
Self-Consolidating Concrete (SCC)	M4.02.17
Prestressing Strands	AASHTO M 203
Reinforcing Bars	M8.01.0
Epoxy Coated Reinforcing Bars	M8.01.7
Welded Wire Reinforcement	M8.01.2
Mechanical Reinforcing Bar Splicer	M8.01.9
Strand Chuck	M8.15.0
Lifting Devices	PCI MNL-116

1. Cement Concrete Mix Design.

The cement concrete shall be comprised of specified proportions of water and MassDOT approved aggregates, cement, supplementary cementitious materials (SCMs), and admixtures to form a homogenous composition. When used, self-consolidating concrete (SCC) shall meet the requirements of M4.02.17.

The Fabricator is responsible for developing the concrete mix to be used for fabricating prestressed beams and having it prequalified by the MassDOT Research and Materials Section. The mix design compressive strength shall be as shown on the plans and as prequalified by the MassDOT Research and Materials Section. Prequalification shall include the trial batch testing

ITEM 995. (Continued)

shown in Table 3. For previously prequalified mixes, the Fabricator shall perform any tests specified in Table 3 that were not previously performed.

If the concrete mix has not been prequalified by the MassDOT Research and Materials Section, the Fabricator shall design and submit for approval, the proportions and test results for a concrete mix that shall attain the requirements specified in Table 3. The proposed mix design and all required test results shall be submitted to the MassDOT Research and Materials Section for approval. Requirements for additional testing and receipt of additional documentation from the Fabricator will be determined by RMS. Unsatisfactory results or other conditions identified during this additional testing and additional documentation review, will require re-submission of a new mix design for review and approval.

The mix shall be formulated with calcium nitrite corrosion inhibitors, which shall be added at a rate of 3 gallons per cubic yard of concrete in order to increase the active corrosion threshold to 9.9 pounds of chloride per cubic yard of concrete at the reinforcing bar level. Prior to production of cement concrete, the Fabricator shall report and submit all proposed mix design formulations and its constituent materials onto the MassDOT Cement Concrete Mix Design Sheet to the MassDOT Research and Materials Section for review and approval. All mix design yields shall be designed for 1.0 cubic yards of concrete, with an allowable tolerance of +/- 1.0 %. All liquids incorporated into the proposed mix design(s) shall include both water and admixtures in the liquid mass calculation.

During production of cement concrete, the Fabricator shall not alter the previously approved mix design formulation or its constituent materials. Proposed alterations in source, type, batch quantity, or gradation to any of the constituent materials of the previously approved mix design formulation shall require a new MassDOT Mix Design Sheet submission to the MassDOT Research and materials Section for review and approval. Fabrication shall not occur without prior MassDOT mix design approval. All concrete used for prestressed concrete beams shall be batched by the Fabricator producing the prestressed concrete beams. The use of ready-mix concrete batched by others shall not be permitted.

The Fabricator shall notify MassDOT RMS to schedule trial batch testing for the new mix design(s). Trial batch testing shall meet the following requirements:

(a) Performed by a qualified laboratory and/or AASHTO accredited laboratory.
(b) Performed and/or sampled in the presence of a MassDOT Inspector.
(c) Meet the requirements as specified in *Table 3: Trial Batch Sampling Testing for New Mix Designs*. Self-consolidating concrete (SCC) shall meet M4.02.17.

Failure to perform all of the required trial batch testing or provide MassDOT RMS trial batch test results within the Specification Limits (as specified in Table 3) will result in the disqualification of the Fabricator's proposed mix design(s).

ITEM 995. (Continued)

Table 3: Trial Batch Sampling and Testing for New Mix Designs

Quality Characteristic	Test Method	Sample Size	Specification Limit	Performed By
Slump [(a)]	AASHTO T 119	Per AASHTO	Max. 8 inches or as approved by the Engineer	Quality Control
Air Content (AC)	AASHTO T 152	Per AASHTO	5% ≤ AC ≤ 8%	Quality Control
Temperature (°F)	AASHTO T 309	Per AASHTO	50°F ≤ °F ≤ 90°F	Quality Control
Compressive Strength [(b)]	AASHTO T 22 AASHTO T 23	28-day Cylinders: One (1) set of Three (3) 4 x 8 in.	Lab Mixed $f'_{cr} = 1.3\ f'_c$ at 28 days Batch Mixed $f'_{cr} = 1.2\ f'_c$ at 28 days	MassDOT
Alkali-Silica Reaction (ASR) [(d)]	ASTM C 1567	Per ASTM	M4.02.00	Quality Control
Resistance to Chloride Ion Penetration Chloride Ion Penetration [(e)]	AASHTO T 358 [(f)]	28-day Cylinders: One (1) set of Three (3) 4 x 8 in.	Resistivity ≥ 21 kΩ-cm at 28 days	MassDOT
Freeze/Thaw Durability [(c)]	AASHTO T 161 (Procedure A)	Per AASHTO	Relative Dynamic Modulus of Elasticity after 300 cycles ≥ 80%	Quality Control

Notes:

(a) Self-consolidating concrete (SCC) shall meet the requirements of M4.02.17.

(b) Trial batch compressive strength testing shall be performed by MassDOT. Acceptance will be based on compressive strength testing performed by MassDOT. For mixes requiring $f'_c > 8{,}000$ psi, three consecutive trial batches shall be performed, all achieving $f'_{cr} \geq 1.1\ f'_c$, for MassDOT approval.

(c) If an AASHTO accredited laboratory is preparing the trial batch test specimens, MassDOT Acceptance presence is not required. If the Fabricator is preparing the trial batch test specimens, MassDOT Acceptance presence is required during trial batch test specimen preparation.

(d) Alkali Silica Reaction (ASR) testing shall meet the requirements of M4.02.00. Independent laboratories performing ASR testing shall be listed on the MassDOT Quality Construction Materials List (QCML).

ITEM 995. (Continued)

(e) Calcium nitrite shall be removed from mix designs containing the admixture and replaced by an equivalent quantity of water when preparing Chloride Ion Penetration resistance trial batch test specimens.
(f) The Wenner probe tip spacing "a" shall be 1.5.

2. Reinforcement and Prestressing Strands.

The size and grade of steel reinforcement and prestressing strands shall be as indicated on the plans. All reinforcing steel shall be epoxy coated, Grade 60. All prestressing strands shall be uncoated.

3. Transverse Ties.

The transverse ties shall be low-relaxation strands meeting the requirements of AASHTO M 203. The size and grade shall be as indicated on the plans. The ties shall be supplied with a seamless polypropylene sheath which has corrosion inhibitor grease between the strand and sheath. The location of all transverse ties, shall be as shown on the plans.

4. Threaded Inserts

Threaded inserts are permissible in Prestressed Concrete Beams for installing formwork, utility supports, or deck drains. Threaded inserts shall be hot dip galvanized or made of stainless steeland shall not come in contact with the reinforcing steel. The number of threaded inserts installed for the Contractor's convenience shall be kept to a minimum.

CONSTRUCTION METHODS – PLANT FABRICATION

A. Shop Drawings

Prior to performing any work under this Section, the Contractor shall receive approval for all shop drawings for the Prestressed Concrete Beam being worked on and any special Contract requirements, provided that a complete shop drawing package is provided. The Contractor shall not order materials or begin work before receiving approved shop drawings. Engineer will reject any Prestressed Concrete Beams that deviate from the approved drawings or are fabricated prior to receiving written approval of the shop drawings. The Contractor shall bear full responsibility and costs for all materials ordered or work performed prior to the approval of the shop drawings or written authorization from Engineer.

The Contractor shall submit scaled shop drawings to the Engineer of Record for review and approval. An approval stamp shall appear on every shop drawing sheet. Wet-stamping or wet-signing is not required, provided that the stamp and reviewer name are legible. The Fabricator's name and address shall appear on each sheet.

Resubmittal of "Approved as Noted" shop drawings is not necessary for minor revisions, provided that the correction can be clearly understood and is unambiguous without possibility of

ITEM 995. (Continued)

misinterpretation. Shop drawings with questions or comments that require a response and/or additional information from the Fabricator must be resubmitted.

Detailed shop drawings shall be prepared in accordance with the relevant provisions of Subsection 5.02 and shall, at a minimum, contain the following:

(a) Number and type of Prestressed Concrete Beams including overall length, width and height.
(b) Skew angle.
(c) Location and spacing of strands, draped strands and their geometry, and/or location and spacing of strands to be debonded including the length of each strand's debondment.
(d) Location, size and geometry of all steel reinforcement, and mechanical reinforcing bar splicers if called for on the plans.
(e) Location and details of all inserts, anchors, and any other items required to be cast into the Prestressed Concrete Beams (whether detailed on the plans by the Engineer of Record or provided for the Contractor's convenience). Prestressed Concrete Beams shall not be fired or drilled into for attachment purposes. All hardware shall be galvanized except as noted.
(f) Locations and details of the lifting devices, including supporting calculations, type and amount of any additional reinforcing required for lifting. The Fabricator shall design all lifting devices based on the no cracking criteria in Chapter 8 of the PCI Design Handbook (7^{th} edition).
(g) The minimum compressive strength required prior to release of prestressing and prior to handling the Prestressed Concrete Beam.

The shop drawings shall not include procedures for placement, finishing, and curing of concrete. These details shall be included in the Placement, Finishing and Curing Plan that is to be submitted to the Engineer as described under *Placement, Finishing, and Curing Plan*.

B. Fabrication.

All Prestressed Concrete Beams shall be fabricated in accordance with the latest edition of PCI MNL-116 as modified herein.

C. Placement, Finishing and Curing Plan.

At least 30 days prior to start of fabrication, the Contractor shall submit the Fabricator's proposed Placement, Finishing and Curing Plan to the Engineer for approval. This shall be an independent submittal, separate from the fabrication shop drawings. The Placement, Finishing and Curing Plan shall include the following:

(a) Method of Mixing
(b) Method of Placement
(c) Method of Consolidation
(d) Method of Finishing
(e) Method of Initial Curing

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(f) Method of Intermediate Curing
(g) Method of Final Curing
(h) Moisture Retention Materials and Equipment (water spray equipment, saturated covers, sheet materials, liquid membrane-forming compounds, accelerated curing equipment, etc.)
(i) Cylinder Curing Methods, Location, and Environmental Control (temperature, humidity, etc.)
(j) Temperature Monitoring, Recording, and Reporting

D. Dunnage Plan Shop Drawings.

At least 30 days prior to the start of fabrication, the Contractor shall submit proposed Dunnage Plan Shop Drawings to the Engineer of Record for review and approval. This shall be an independent submittal, separate from the fabrication shop drawings. The Dunnage Plan Shop Drawings shall include the following:

(a) Proposed layout of the Prestressed Concrete Beams for storage in yard and during shipping
(b) Support and blocking point locations
(c) Support and blocking materials

E. Reinforcement.

The reinforcing bars shall be installed in accordance with Section 901.62 of the Supplemental Specifications, including tolerances for cover and horizontal spacing of bars. Components of mechanical reinforcing bar splicers shall be set with the tolerances shown on the plans. The reinforcing bars and mechanical reinforcing bar splicers shall be assembled into a rigid cage that will maintain its shape in the form and which will not allow individual reinforcing bars to move during the placement of concrete. This cage shall be secured in the form so that the clearances to all faces of the concrete, as shown on the plans, shall be maintained.

F. Placing and Tensioning Strands.

Placing and tensioning strands shall be in accordance with PCI MNL-116. The location of all prestressing strands shall be as indicated on the plans.

G. Tolerances.

Fabrication shall comply with tolerances specified on the plans. Tolerances for steel reinforcement placement shall be in accordance with 901.62. In the absence of specifications on the plans, tolerances shall comply with the latest version of the PCI MNL 135, Precast Tolerance Manual.

H. Forms.

Concrete shall be cast in rigidly constructed forms, which will maintain the Prestressed Concrete Beams within specified tolerances to the shapes, lines and dimensions shown on the approved fabrication drawings. Forms shall be constructed from flat, smooth, non-absorbent

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material and shall be sufficiently tight to prevent the leakage of the plastic concrete. When wood forms are used, all faces in contact with the concrete shall be laminated or coated with a non-absorbent material. All worn or damaged forms, which cause irregularities on the concrete surface or damage to the concrete during form removal, shall be repaired or replaced before being reused. Any defects or damage of more than "Category 2, Minor Defects" made to the concrete, due to form work, stripping or handling, shall be subject to repair or rejection, as defined in the *Repairs and Replacement* section. If threaded inserts are cast into the elements for support of formwork, the inserts shall be recessed a minimum of 1 inch and shall be plugged after use with a grout of the same color as that of the precast cement concrete.

Where applicable, the material used for forming voids in concrete deck beams and box beams shall be sufficiently strong and resistant to water to support the wet concrete, which is to be packed around the void forms, without collapsing. The void forms shall be securely anchored so that no movement will occur during placing and consolidation of the concrete. Void drains shall be installed at the locations shown on the plans and Fabricator shall ensure that the drains are in contact with the void form. After the beams have been cast and removed from the forms, the Fabricator shall check that the drains are still in contact with the void form by inserting a rigid probe into the drain for a distance greater than the thickness of the concrete at the void drain.

I. Mixing of Concrete.

The concrete shall be proportioned and mixed in conformance with the Fabricator's approved mix design and M4.02.10 Mixing and Delivery. Fabrication shall not occur without prior mix design approval. The Fabricator shall provide copies of batch tickets to the Engineer.

J. Placement of Concrete.

Prior to the placement of concrete, the temperature of the forms shall be greater than or equal to 50°F. Quality Control inspection shall be performed by the Fabricator as specified in the *Fabricator Quality Control* section. The Fabricator shall verify all materials and equipment required for protecting and curing the concrete are readily available and meet the requirements of the *Final Curing Methods* section below. All items encased in the concrete shall be accurately placed in the position shown on the Plans and firmly held during the placing and setting of the concrete. Clearance from the forms shall be maintained by supports, spacers, or hangers and shall be of approved shape and dimension.

During placement, the concrete shall maintain a concrete temperature range between 50°F and 90°F. The Fabricator shall minimize the time to concrete placement (measured from start of mixing to completion of placement). In no event shall time to placement exceed 90 minutes. The Fabricator shall perform additional Quality Control sampling and testing on concrete that has been retempered with admixtures or hold-back water during the placement of the concrete as specified in the *Fabricator Quality Control* section above. Delays or shutdowns of over 30 minutes shall not be allowed during the continuous filling of individual forms.

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K. Consolidation of Concrete.

Suitable means shall be used for placing concrete to prevent segregation or displacement of reinforcing steel or forms. The concrete shall be thoroughly consolidated by external or internal vibrators or a combination of both. Vibrators shall not be used to move concrete within the forms. Vibrators shall be used as specified in 901.63C and as directed by the Engineer. Concrete shall be placed and consolidated in a way that minimizes the presence of surface voids or bug holes on the formed surfaces. When used, self-consolidating concrete (SCC) shall meet the requirements of M4.02.17.

L. Finishing of Concrete.

The top of the prestressed concrete beams shall be given a rake finish with a ¼" amplitude applied transversely across the beam to the limits shown on the plans.

M. Exposed Surfaces of Prestressed Concrete Beams.

As soon as conditions permit, before the concrete has fully hardened, all dirt, laitance, and loose aggregate shall be removed from the exposed concrete surfaces. Contractor shall not allow foot traffic on the uncured concrete until it has reached sufficient strength to prevent damage.

N. Exposed Surfaces of Shear Keys and Closure Pour Shear Keys.

If the beams have shear keys cast in the sides of the beams, the surfaces of the shear keys shall be abrasive blasted prior to shipment. Fabricator may utilize a surface retarder with water blast, abrasive blast, or a combination of both to achieve the desired shear key finish. The abrasive blast shall use oil free compressed air. The profile of the shear key surfaces shall be similar to that of 60 grit sandpaper.

O. Initial Curing Methods.

After the placement of concrete and prior to concrete finishing, the Fabricator shall initiate initial curing methods when the concrete surface begins to dry, to reduce moisture loss from the surface. Application of one or more of the following initial curing methods shall occur immediately after the bleed water sheen has disappeared.

1. Fogging.

Fogging nozzles shall atomize water into a fog-like mist. The fog spray shall be directed and remain visibly suspended above the concrete surface, to increase the humidity of the air and reduce the rate of evaporation. Water from fogging shall not be worked into the surface during finishing operations and shall be removed or allowed to evaporate prior to finishing.

2. Liquid-applied Evaporation Reducers

Evaporation reducers shall be sprayed onto the freshly placed concrete surface to produce an effective monomolecular film that reduces the risk of plastic-shrinkage cracking and rate of evaporation of the bleed water from the concrete surface. Evaporation reducers shall be applied in accordance with manufacturer's recommendations.

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P. Intermediate Curing Methods.

The Fabricator shall initiate intermediate curing methods if concrete finishing has taken place prior to the concrete reaching final set. The freshly finished concrete surface shall be protected from moisture loss, by the continuation of initial curing methods (fogging and evaporation reducers) until final curing methods are applied or by the use of liquid membrane-forming curing compounds (see *Liquid Membrane-Forming Compounds for Curing* section).

Q. Final Curing Methods.

The Fabricator shall initiate and apply final curing methods to the concrete immediately after the following conditions are met:

(a) Completion of concrete finishing
(b) Final set of concrete
(c) Concrete has hardened sufficiently enough to prevent surface damage

During fabrication of Prestressed Concrete Beams, the Fabricator shall maintain the required concrete temperature ranges throughout the entire duration of the final curing method cycle as specified herein. Controlled and gradual termination of the final curing method shall occur after all specified conditions are met. The concrete temperature shall be reduced at a rate not to exceed 36°F per hour until the concrete temperature is within 20°F of the ambient temperature outside of the final curing method enclosure. The Fabricator shall maintain a minimum concrete temperature of 40°F until 100% f'c is attained (see *Handling and Storage* section below).

1. Water Spray Curing.

All exposed concrete surfaces shall remain moist with a continuous fine spray of water throughout the entire duration of the final curing method cycle (see *Table 4: Final Curing Method Cycle for Water Spray*).

Table 4: Final Curing Method Cycle for Water Spray

Sustained Concrete Temperature	Final Curing Method Cycle Duration	Compressive Strength
50°F ≤ °F ≤ 90°F	≥ Five (5) days	≥ 80% f'_c

10. Saturated Covers for Curing.

All exposed concrete surfaces shall remain moist with a continuous application of saturated covers throughout the entire duration of the final curing method cycle (see *Table 5: Final Curing Method Cycle for Saturated Covers*). Saturated covers shall be allowed to dry thoroughly before removal to provide uniform, slow drying of the concrete surface.

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Table 5: Final Curing Method Cycle for Saturated Covers

Sustained Concrete Temperature	Final Curing Method Cycle Duration	Compressive Strength
50°F ≤ °F ≤ 90°F	≥ Three (3) days	≥ 80% f'_c

Saturated covers, such as burlap, cotton mats, and other coverings of absorbent materials shall meet the requirements of AASHTO M 182, Class 3. Saturated covers shall be in good condition, free from holes, tears, or other defects that would render it unsuitable for curing concrete. Saturated covers shall be dried to prevent mildew when storing. Prior to application, saturated covers shall be thoroughly rinsed in water and free of harmful substances that are deleterious or cause discoloration to the concrete. Saturated covers shall have sufficient thickness and proper positioning onto the concrete surface to maximize moisture retention.

Saturated covers shall contain a sufficient amount of moisture to prevent moisture loss from the surface of the concrete. Saturated covers shall be kept continuously moist so that a film of water remains on the concrete surface throughout the entire duration of the final curing method cycle. The Fabricator shall not permit the saturated covers to dry and absorb water from the concrete. Use of polyethylene film (see *Polyethylene Film* section) may be applied over the saturated cover to potentially decrease the need for continuous watering.

11. Sheet Materials for Curing.

All exposed concrete surfaces shall remain moist with a continuous application of curing sheet materials throughout the entire duration of the final curing method cycle (see *Table 6: Final Curing Method Cycle for Curing Sheet Materials*).

Table 6: Final Curing Method Cycle for Sheet Materials

Sustained Concrete Temperature	Final Curing Method Cycle Duration	Compressive Strength
50°F ≤ °F ≤ 90°F	≥ Three (3) days	≥ 80% f'_c

Sheet Materials used for curing, such as polyethylene film, white burlap-polyethylene sheeting, and reinforced paper shall meet the requirements of ASTM C171 and the specifications herein. Sheet materials shall inhibit moisture loss and reduce temperature rise in concrete exposed to radiation from the sun during the final curing method cycle. Adjoining covers shall overlap not less than 12 inches. All edges of the covers shall be secured to maintain a moist environment.

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(a) Polyethylene Film.

Polyethylene film shall meet the requirements of ASTM C171, consist of a single sheet manufactured from polyethylene resins, be free of visible defects, and have a uniform appearance. Careful considerations shall be taken by the Fabricator to prevent the film from tearing during storage and application, so as to not disrupt the continuity of the film (polyethylene film reinforced with glass or other fibers is more durable and less likely to be torn). The Fabricator shall monitor the application of the film to prevent uneven spots from appearing (mottling) on the concrete surface, due to variations in temperature, moisture content, or both. The Fabricator shall prevent mottling from occurring on the concrete surface by applying additional water under the film or applying a combination of polyethylene film bonded to absorbent fabric to the concrete surface to retain and evenly distribute the moisture.
Immediately following final finishing, polyethylene film shall be placed over the surface of the fresh concrete surface, so as to not damage the surface of the concrete and shall be placed and weighted so that it remains in contact with the concrete throughout the entire duration of the final curing method cycle. The film shall extend beyond the edges of the concrete surface. The film shall be placed flat on the concrete surface, avoiding wrinkles, to minimize mottling. Edges of adjacent polyethylene film shall overlap a minimum of 6 inches and be tightly sealed with the use of sand, wood planks, pressure-sensitive tape, mastic, or glue to maintain close contact with the concrete surface, retain moisture, and prevent the formation of air pockets throughout the entire duration of the final curing method cycle.

(b) **White Burlap-Polyethylene Sheeting**

White burlap-polyethylene sheeting shall meet the requirements of ASTM C171, be securely bonded to the burlap so to avoid separation of the materials during handling and curing of the concrete, and be applied in the same manner as the polyethylene film.

(c) Reinforced Impervious Paper.

Reinforced impervious paper shall meet the requirements of ASTM C171, consist of two sheets of kraft paper cemented together with a bituminous adhesive and reinforced with embedded cords or strands of fiber running in both directions, and be white in color. Reinforced impervious paper shall be treated to prevent tearing when wetted and dried.

Reinforced impervious paper can be reused so long as it is effective in retaining moisture on the concrete surface. The Fabricator shall visually inspect the reinforced impervious paper for all holes, tears, and pin holes from deterioration of the paper through repeated use by holding the paper up to the light. The paper shall be discarded and prohibited from use when the moisture is no longer retained.

After the concrete has hardened sufficiently to prevent surface damage, the concrete surface shall be thoroughly wetted prior to the application of the reinforced impervious paper, and be applied in the same manner as the polyethylene film.

12. Liquid Membrane-Forming Compounds for Curing.

All exposed concrete surfaces shall remain moist with a continuous application of liquid membrane-forming compounds throughout the entire duration of the final curing method cycle (see *Table 7: Final Curing Method Cycle for Liquid Membrane-Forming Compounds*).

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Table 7: Final Curing Method Cycle for Liquid Membrane-Forming Compounds

Sustained Concrete Temperature	Final Curing Method Cycle Duration	Compressive Strength
50°F ≤ °F ≤ 90°F	≥ Seven (7) days	≥ 80% f'_c

Liquid membrane-forming compounds shall meet the requirements of ASTM C 1315, Type I, Class A and shall exhibit specific properties, such as alkali resistance, acid resistance, adhesion-promoting quality, and resistance to degradation by ultraviolet light, in addition to moisture-retention capabilities. Liquid membrane-forming compounds shall consist of waxes, resins, chlorinated rubber, or other materials to reduce evaporation of moisture from concrete. Liquid membrane-forming compounds shall be applied in accordance with the manufacturer's recommendations.

Liquid membrane-forming compounds shall be applied immediately after the disappearance of the surface water sheen following final finishing. All exposed surfaces shall be wetted immediately after form removal and kept moist to prevent absorption of the compound, allowing the curing membrane to remain on the concrete surface for proper membrane moisture retention. The concrete shall reach a uniformly damp appearance with no free water on the surface prior to the application of the compound.

If patching or finishing repairs are to be performed prior to the application of the compound, the Precast Concrete Bridge Element shall be covered temporarily with saturated covers until the repairs are completed and the compound is applied. Only areas being repaired shall be uncovered during this period. While the saturated covers are removed to facilitate the patching process, the work shall continue uninterrupted. If for any reason the work is interrupted, saturated covers shall be placed onto the uncovered concrete surface, until the work continues and is completed, at which time the curing compound shall be applied to the repaired area.

Careful considerations shall be made by the Fabricator to determine if the evaporation rate is exceeding the rate of bleeding, thus causing the surface to appear dry even though bleeding is still occurring. Under such conditions, the application of liquid membrane-forming compounds to the concrete surface shall be delayed, in order to prevent bleed water from being sealed below the concrete surface and avert map cracking of the membrane films, reduction in moisture-retention capability, and reapplication of the compound. To diagnose and prevent this condition, the Fabricator shall place a transparent plastic sheet over a test area of the uncured and unfinished concrete surface and shall determine if any bleed water accumulates under the plastic.

The compound shall be applied in two applications at right angles to each other to ensure uniform and more complete coverage. On very deeply textured surfaces, the surface area to be treated shall be at least twice the surface area of a troweled or floated surface. In such cases, two separate applications may be needed, each at 200 ft^2/gal., with the first being allowed to become tacky before the second is applied.

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The curing compound shall be applied by power sprayer, using appropriate wands and nozzles with pressures between 25 and 100 psi. For very small areas such as repairs, the compound shall be applied with a wide, soft-bristled brush or paint roller. The compound shall be stirred or agitated before use and applied uniformly in accordance with the manufacturer's recommended rate. The Fabricator shall verify the application rates are in accordance with the manufacturer's recommended rate.

When the concrete surface is to receive paint, finishes, or toppings that require positive bond to the concrete, it is critical that the curing procedures and subsequent coatings, finishes, or toppings be compatible to achieve the necessary bond

After the termination of the final curing method cycle has occured, liquid membrane-forming compounds shall be removed by blast-cleaning from any concrete surface that is to receive paint, finishes, plastic concrete from secondary pour, grout, or any other toppings that require bonding to the concrete surface. These surfaces shall be further blast-cleaned to remove the cement matrix down to exposed aggregate to ensure proper bonding to the material. The method used to remove the curing compound shall not damage the reinforcement and coating. Compounds are prohibited on any concrete surface that will have a penetrating or coating type treatment such as a sealer, stain, or waterproofing membrane applied to it.

13. Accelerated Curing.

Accelerated curing shall use live steam or radiant heat with moisture in accordance with PCI MNL-116 as modified herein. The concrete temperature shall meet the maximum heat increase and cool down rates as specified herein. Concrete temperature monitoring shall meet the requirements of the *Temperature Monitoring* section. Excessive and fluctuating rates of heating and cooling shall be prohibited. The concrete temperature shall not exceed 158°F at any time. The Fabricator shall meet the following accelerated curing sequencing and requirements.

(a) Initial Delay Period.

The initial delay period shall be defined as the duration immediately following the placement of the concrete and the attainment of initial set of the concrete. The Fabricator shall determine the time of initial set in accordance with AASHTO T 197 specifications. Throughout the entire duration of the initial delay period, initial curing shall be implemented. The temperature increase period (see *Temperature Increase Period* section) shall not occur until initial set of the concrete is attained. During the initial delay period, the concrete temperature shall meet the following requirements:

i. Concrete temperature rate of increase shall not exceed 10°F per hour.
ii. Total concrete temperature increase shall not exceed 40°F higher than the placement concrete temperature or 100°F, whichever is less

(b) Temperature Increase Period.

The temperature increase period shall be defined as the duration immediately following the completion of the initial delay period (after initial set) and immediately prior to the start of the constant maximum temperature period. Application of steam to the enclosure shall not occur until the initial delay period is complete. After the initial delay period is complete, all exposed concrete

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surfaces shall be cured in a moist environment where the concrete temperature increases at a rate not to exceed 36°F per hour.

(c) Constant Maximum Temperature Period.

The constant maximum temperature period shall be defined as the duration immediately following the completion of the temperature increase period and immediately prior to the start of the temperature decrease period. After the temperature increase period is complete, all exposed concrete surfaces shall be cured in a moist environment at a controlled and constant elevated temperature throughout the entire duration of the constant maximum temperature period. Termination of the constant maximum temperature period and the start of the termination decrease period shall occur after all specified conditions are met (see *Table 8: Constant Maximum Temperature Period*).

Table 8: Constant Maximum Temperature Period

Sustained Concrete Temperature	Constant Maximum Temperature Period	Compressive Strength
120°F ≤ °F ≤ 158°F	6 hrs ≤ Time ≤ 48 hrs	≥ 80% f'_c

(d) Temperature Decrease Period.

After the constant maximum temperature period is complete, the concrete temperature shall be cured in a moist environment at a controlled and reduced rate not to exceed 36°F per hour until the concrete temperature is within 20°F of the ambient temperature outside of the curing enclosure.

R. Release.

The Fabricator shall not release strands or handle the Prestressed Concrete Beam until Quality Control compressive strength cylinders attain a minimum compressive strength of 80% Design Strength (f'_c) or the specified detensioning compression strength as indicated on the approved shop drawings has been achieved. All exposed concrete surfaces shall continue to be cured in conformance with the *Final Curing Methods* sections until completion.

S. Handling and Storage of Prestressed Concrete Beams.

Prestressed Concrete Beams may be exposed to temperatures below freezing (32°F) when the chosen curing cycle has been completed, provided that the following conditions are met:

(a) Prestressed Concrete Beams are protected from precipitation with polyethylene curing covers until 100% f'_c is attained
(b) Prestressed Concrete Beams maintain a minimum concrete temperature of 40°F until 100% f'_c is attained

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Prestressed Concrete Beams damaged during handling and storage will be repaired or replaced at Engineer's direction at no cost to the Town or Engineer. Prestressed Concrete Beams shall be lifted at the designated points by approved lifting devices embedded in the concrete and in accordance with proper lifting and handling procedures. Storage areas shall be smooth and well compacted to prevent damage due to differential settlement. Prestressed Concrete Beams shall be supported on the ground by means of continuous blocking, in accordance with the approved dunnage plan.

Prestressed Concrete Beams shall be loaded on a trailer with blocking as described above, in accordance with the approved dunnage plan. Shock-absorbing cushioning material shall be used at all bearing points during transportation of the Prestressed Concrete Beams. Blocking shall be provided at all locations of tie-down straps. Prestressed Concrete Beams stored prior to shipment shall be inspected by the Contractor prior to being delivered to the site to identify damage that would be cause for repair or rejection.

T. Repairs and Replacement.

In the event defects are identified, they shall be classified in the following categories and a non-conformance report (NCR) shall be filed if required. The NCR shall be submitted to the Engineer for review. Defects in all categories shall be documented by plant Quality Control personnel and made available to the Engineer upon request. Any required repairs shall utilize materials listed on the MassDOT QCML.

Where noted, defects shall be repaired according to the PCI Northeast Region Guidelines for Resolution of Non-Conformances in Prestressed Concrete Beams, Report Number PCINE-18-RNPCBE. Please note that reference to PCINE-18-RNPCBE is made for repair details only. In the case of conflicts with this Special Provision, this Special Provision shall govern.

1. Category 1, Surface Defects.

Category 1 defects do not need to be repaired, and an NCR does not need to be filed. Surface defects are defined as the following:

(a) Surface voids or bug holes that are less than 5/8-inch in diameter and less than ¼-inch deep, except when classified as Category 4
(b) Cracks less than or equal to 0.006 inches wide
(c) Cracks less than or equal to 0.125 inches wide on surfaces that will receive a concrete overlay or spray-applied membrane waterproofing

2. Category 2, Minor Defects.

Category 2 defects shall be repaired, but an NCR does not need to be filed. Minor defects are defined as the following:

(a) Spalls, honeycombing, surface voids that are less than 2 inches deep and have no dimension greater than 12 inches
(b) Cracks less than or equal to 0.016 inches that will not receive a concrete overlay or spray-applied membrane waterproofing

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(c) Broken or spalled corners that will be covered by field-cast concrete

Minor defects shall be repaired according to PCINE-18-RNPCBE. Cracks shall be sealed according to the PCI Repair Procedure #14 in PCINE-18-RNPCBE.

3. Category 3, Major Defects.

For Category 3 defects, the Fabricator shall prepare an NCR that documents the defect and describes the proposed repair procedure. The NCR shall be submitted to the Engineer for approval prior to performing the repair. Major defects are defined as the following:

(a) Spalls, honeycombing and surface voids that are deeper than 2 inches or have any dimension greater than 12 inches, when measured along a straight line
(b) Concentrated area of defects consisting of four or more Category 2 Defects within a 4-square foot area
(c) Exposed reinforcing steel
(d) Cracks greater than 0.016 inches and less than or equal to 0.060 inches in width that will not receive a concrete overlay or spray-applied membrane waterproofing
(e) Bearing area spalls with dimensions not exceeding 3 inches
(f) Cracks, spalls and honeycombing that will be encased in cast in place concrete need not be repaired, but the limits and location of the defects shall be documented with an NCR

Upon Engineer approval, defects and cracks shall be repaired according to PCINE-18-RNPCBE and this specification. All repairs shall be completed at the expense of the Contractor.

4. Category 4, Rejectable Defects.

Rejectable defects as determined by the Engineer may be cause for rejection. Fabricator may submit an NCR with a proposed repair procedure, requesting approval. Some rejectable defects are defined as the following:

(a) Surface defects on more than 5% of the surface area which will be exposed to view after installation
(b) Minor defects that in total make up more than 5% of the surface area of the unit
(c) Cracks greater than 0.060 inches in width except as noted in Category 1
(d) Elements fabricated outside of the specified tolerances
(e) MassDOT compressive strength testing that does not meet the specified Design Strength, f'_c

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U. Shipping.

Prior to shipment, the Fabricator shall perform the following actions and provide the required documentation to the Engineer:

(a) Prestressed Concrete Beams shall remain at the Fabricator's plant for a minimum of 7 days after cast date.
(b) QC Inspection Reports shall be signed by the Quality Control Manager and provided to the Engineer.
(c) QC Compressive Strength Test Report Forms attaining Design Strength, f'c for the Prestressed Concrete Beam's representative sublot shall be generated by the Fabricator and provided to the Engineer.
(d) Certificate of Compliance shall be generated by the Fabricator as described under the Fabricator Quality Control section and provided to the Engineer.
(e) All approved Corrective Actions submitted on the Non-Conformance Reports (NCR), shall be verified to have been completed by the Quality Control Manager.
(f) All NCRs shall be signed off by the Quality Control Manager.

V. Delivery.

Upon Delivery, the following documentation shall be provided to designee:

(a) QC Compressive Strength Test Report Forms attaining Design Strength, f'c for the Prestressed Concrete Beam's representative sublot.
(b) Certificate of Compliance generated by the Fabricator as described under the Fabricator Quality Control section.
(c) QC Inspection Reports signed by the Quality Control Manager.

The Contractor shall inspect the Prestressed Concrete Beams upon receipt at the site. Prestressed Concrete Beams damaged during delivery shall be repaired or replaced at Engineer's direction at no cost to the Town or Engineer.

CONSTRUCTION METHODS – FIELD CONSTRUCTION

A. General.

All of the Contractor's field personnel involved in the erection and assembly of the Prestressed Concrete Beams shall have knowledge of and follow the approved Erection Procedure and Quality Control Plan for Prestressed Concrete Beam Assembly.

Prior to installation, the following documentation shall be reviewed and confirmed by the designee:

(a) QC Compressive Strength Test Report Forms attaining Design Strength, f'_c for the Prestressed Concrete Beam's representative sublot.
(b) Certificate of Compliance generated by the Fabricator as described under the Fabricator Quality Control section.
(c) QC Inspection Reports signed by the Quality Control Manager.

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Field construction staff shall verify that the Resident Engineer has accepted all Prestressed Concrete Beams prior to installation.

B. Erection Procedure and Quality Control Plan for Prestressed Concrete Beam Assembly.

Prior to the erection, the Contractor shall submit an Erection Procedure and a Quality Control Plan for Prestressed Concrete Beam Assembly for approval by the Engineer. This submittal shall include computations and drawings for the transport, hoisting, erection and handling of the Prestressed Concrete Beams. The Erection Procedure and Quality Control Plan for Prestressed Concrete Beam Assembly shall be prepared and stamped by a Professional Engineer registered in the Commonwealth of Massachusetts with working knowledge of the Contractor's equipment, approved shop drawings, and materials to build the bridge. The Erection Procedure and Quality Control Plan for Prestressed Concrete Beam Assembly shall, at a minimum, include the following:

1. Erection Procedure

The Erection Procedure shall be prepared to conform to the requirements of 960.61, Erection and the applicable sections in Chapter 8 of the PCI Design Handbook (seventh edition) for handling, erection, and bracing requirements. At a minimum, the Erection Procedure shall provide:

(a) Steel reinforcing details, and location and details of lifting devices
(b) Minimum concrete compressive strength for handling the Prestressed Concrete Beams.
(c) Concrete stresses stresses during handling, transport, and erection.
(d) Crane capacities, pick radii, sling geometry, and lifting hardware.
(e) Verification that the equipment can handle all pick loads and weights with the required factor of safety.
(f) Evaluation of construction sequence and evaluation of any geometric conflicts in the lifting of the Prestressed Concrete Beams and setting them on the abutments and piers.
(g) Design of crane supports including verification of subgrade for support.
(h) Location and design of all temporary bracing that will be required during erection.

2. Quality Control Plan for Prestressed Concrete Beam Assembly

The Quality Control Plan for Prestressed Concrete Beam Assembly is a document prepared and submitted by the Contractor prior to the start of work which requires the Contractor to identify and detail the sequence of construction in accordance with the project schedule and which clearly identifies all stages of field construction. The assembly procedures for the Prestressed Concrete Beams shall be submitted on full size 24"x36" sheets. This document will be treated as a Construction Procedure and will be reviewed by both the Designer and the District Construction Office.

At a minimum, the Quality Control Plan for Prestressed Concrete Beam Assembly shall include the following:

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(a) Listing of the equipment, materials, and personnel including their assigned responsibilities that will be used to erect and assemble the Prestressed Concrete Beams on site.
(b) Documentation of all preparatory work necessary for moving personnel, equipment, supplies, and incidentals to the project site before beginning work.
(c) Detailed schedule showing the sequence of operations that the Contractor will follow to complete the field construction from setting working points and working lines to the casting of closure pours and the curing of the closure pour concrete, as described below and as called for on the plans.
(d) For NEDBT and NEXT D beams, Contractor's means for ensuring that the Prestressed Concrete Beam shall align to the roadway profile and cross slope and means for adjusting the final deck slab elevation.
(e) Timeline and descriptions of Quality Control activities to be followed throughout the field construction operations including methods and procedures for controlling tolerance limits both horizontally and vertically.

C. Survey and Layout.

Working points, working lines, and benchmark elevations shall be established prior to placement of all elements. The Contractor is responsible for field survey as necessary to complete the work. Town Representative reserves the right to perform additional independent survey. If discrepancies are found, the Contractor may be required to verify previous survey data.

D. Adjacent Prestressed Concrete Deck Beams

1. Beam Layout and Erection.

Prestressed concrete beams shall be installed to the line and grade shown on the plans in accordance with the Contractor's approved Erection Procedure and Assembly Plan. The location of the beams on the abutments and piers shall be laid out according to the nominal width of the beams as shown on the plans. Each beam shall be erected such that after erection, the beam shall lie entirely within the horizontal lines defined by its nominal width for its entire length and shall not infringe on the space allocated for any adjacent beam. The Contractor may adjust the width of the shear key between beams.

Immediately prior to erecting the beams, the keyway surfaces shall be cleaned at the job site of all dust, dirt, and carbonation using a high-pressure water blast.

After all beams are erected, the actual overall width of the beams as laid out shall not deviate from the nominal dimension shown on the framing plan beyond a tolerance of +0 inches and -1 inches.

After the beam layout has been accepted by the Engineer, the Contractor shall cut the lifting devices off below the top of the beam.

2. Transverse Tie Tensioning.

Unless shown otherwise on the plans, the transverse ties shall be tensioned to 5,000 pounds before the keyways are filled. After the keyways are filled with mortar (M4.04.0) and the mortar

ITEM 995. (Continued)

has cured, the ties shall be tensioned as specified on the plans. No traffic or heavy equipment shall be allowed on the bridge until all transverse ties have been properly tensioned and the deck has been cast and cured.

3. Mortaring of Keyways.

The precast concrete keyways that will receive mortar shall be free of materials such as paint, oil, curing compound, bond breaker, dirt etc. that will inhibit bonding. The precast concrete keyways shall be hydro-blasted with equipment that can remove asphaltic material, oils, dirt, rubber, curing compounds, paint carbonation, laitance, and other potentially detrimental materials, which may interfere with the bonding of the mortar and precast concrete.

Exposed reinforcing steel in the precast beam shall be protected from damage during the cleaning of the keyways. Damaged epoxy coating of steel reinforcement shall be repaired, and the reinforcing steel shall be cleaned as directed by the Engineer.

Mortar (M4.04.0) shall be placed in strict accordance with the manufacturer's recommendations and instructions.

The keyways shall be filled flush to the top of the beams and any vertical misalignment between beams shall be feathered out on a slope of 1 to 12. Curing shall be performed in strict accordance with the manufacturer's recommendations. The keyways shall not be filled in cold weather when either the ambient temperature or the prestressed concrete beam's temperature is below the mortar manufacturer's recommendation. No localized heating of either the prestressed concrete beams or of the air surrounding the keyway will be permitted in an attempt to reach application temperatures.

If the keyways are not filled within five days after the beams are erected, the Contractor shall cover and protect the keyways from weather and debris until they are filled.

4. Concrete Deck Slab Placement.

Prior to casting the concrete deck slab, the top of the beam shall be clean and free of all laitance or bond inhibiting agents. The concrete deck slab shall be placed after the transverse ties have been fully tensioned. Deck concrete shall be placed against the beam concrete without the use of any bonding agents.

After the formwork has been removed, all threaded inserts that have been cast into the beams for support of the formwork shall be plugged after use with a grout of the same color as that of the precast cement concrete.

ITEM 995. (Continued)

SCHEDULE OF BASIS FOR PARTIAL PAYMENT

At the time of bid, the Contractor shall submit on his/her proposal form a schedule of unit prices for the major component Sub-Items that make up Item 995. as well as his/her total bridge structure Lump Sum cost for Bridge Structure No. N-18-002 (7YC). The bridge superstructure Lump Sum breakdown quantities provided in the proposal form are estimated and not guaranteed. The total of all partial payments to the Contractor shall equal the Lump Sum contract price regardless of the accuracy of the quantities furnished by the Engineer for the individual bridge components. The cost of labor and materials for any Item not listed but required to complete the work shall be considered incidental to Item 995. and no further compensation will be allowed.

Sub-Item	Description	Quantity	Unit	Unit Price	Total
482.31	Sawing & Sealing Joints In Asphalt Pavement At Bridges	55	FT		
904.4	4000 PSI, ¾ Inch, 585 HP Cement Concrete	40	CY		
905.2	5000 PSI, 3/8 Inch, 710 HP Cement Concrete	30	CY		
910.1	Steel Reinforcement for Structures – Epoxy Coated	15850	LB		
912.	Drilling and Grouting Dowels	250	EA		
930.301	Prestressed Concrete Deck Beams (S36-12)	195	FT		
960.	Structural Steel	500	LB		
965.	Membrane Waterproofing for Bridge Decks	715	SF		
970.	Damp-Proofing	70	FT		

Total Lump Sum for Item 995. =

_____

The schedule on the proposal form applies only to Bridge Structure No. N-18-002 (7YC). Payment for similar materials and construction at locations other than at this bridge structure shall not be included under this Item. Sub-Item numbering is presented for information only in coordination with MassDOT Standard Nomenclature.

SECTION 02010

ITEM 999.1 POLICE ALLOWANCE ALLOWANCE

GENERAL

The Contractor shall furnish police services required to direct traffic on existing roadways where traffic is maintained. The Contractor shall provide such police officers as may be deemed necessary by either the Engineer or the Town for the direction and control of all traffic traveling within the project area. The police officers shall be obtained from the Town of North Reading Police Department as applicable. The police officers shall be paid by the Contractor at the prevailing rate of wages established by the Town of North Reading. The Town shall reimburse the Contractor for police services. The Contractor shall only pay the Detail rate. The surcharge rate shall not be reimbursed.

The services of uniformed police officers for the maintenance of traffic shall be used if required by the North Reading Police Department (PD). The Contractor shall be responsible for contacting the police department and arranging for a police detail at least 24 hours before the detail is needed. The Contractor shall be responsible for checking and signing all police detail slips on a daily basis as they occur, noting the name of the officer, the municipal PD, the date and time the officer arrived and ended provision of the traffic detail. The actual payment to the PD will be made directly by the Contractor who will be reimbursed by the Town by including proof of payment to the PD attached to the submitted pay request.

To cancel a scheduled Police Detail, the Contractor shall notify the PD a minimum of two hours prior to when the detail was to begin. The Contractor should note the name of the person at the PD who was contacted, along with the date and time of the cancellation. Failure to give at least a two-hour prior notice to the PD to cancel a scheduled police detail will result in the Contractor paying the four-hour minimum uniformed officer(s) charge at the contracted police wage rate, with no compensation from the Town.

Nothing contained herein shall be construed as relieving the Contractor of any of his/her responsibilities for protection of persons and property under the terms of the Contract.

ALLOWANCE OF POLICE SERVICES

An allowance of Ten Thousand Dollars ($10,000) for Bridge No. N-18-002 (7YC) for the furnishing of police services has been included in all bids. This ALLOWANCE is determined by multiplying the number of hours estimated as necessary by the prevailing hourly rate of wages established for such services. The Contractor shall submit certified copies of itemized bills of services rendered for review and approval by the Engineer. The allowance will be adjusted to the actual amount paid for authorized and approved police services as stipulated and shall include other payments due to any legal requirements of the State and Federal government

A. General

1. Description

(a.) The work includes furnishing and installing all pipe, fittings, valves, structures and appurtenances required for the proposed system to supply water to users of the Town of North Reading's Water System.

(b.) Work and materials shall be performed in accordance with the Massachusetts Plumbing Code when work is within ten (10) feet of buildings.

(c.) Only one water service shall be installed per parcel.

2. Submittals

(a.) Materials List and Shop Drawings

(1.) Materials list of materials proposed shall be submitted to the Town.

(2.) Approved shop drawings for all materials and structures shall be submitted to the Town.

(3.) The Town of North Reading standard detail drawings are an Appendix to this document.

(b.) As-Built Drawings

(1.) Submit three (3) copies of As-Built Drawings to the DPW upon completion and acceptance of work.

(2.) As-Built Drawings shall be complete and shall indicate the true measurement and location, horizontal and vertical, of all new construction. As-Built Drawings shall include a minimum of three (3) ties to each valve cover and curb stop from fixed permanent objects. As-Built drawings shall also contain any additional information required by the municipality and shall be stamped with the seal of a Licensed Land Surveyor and Licensed Professional Engineer. The Town may, at its discretion, require that as-built plans be submitted on electronic form (e.g., AutoCAD release 2002 or higher).

3. Inspection

(a.) The Applicant is responsible for the provisions and all test requirements specified herein. In addition, all pipe and appurtenances may be inspected at the plant for compliance with these specifications by an independent testing laboratory.

(b.) Inspection of the pipe and appurtenances may also be made after delivery. The pipe and appurtenances shall be subject to rejection at any time on account of failure to meet any of the specification requirements, even though samples may have been accepted as satisfactory at the place of manufacture. Pipe and appurtenances rejected after delivery shall be marked for identification and shall be removed from the site at once.

4. Delivery, Storage and Handling

(a.) All materials shall be adequately protected from damage during transit. Pipes shall not be dropped.
(b.) All pipe and other appurtenances shall be inspected before placement in the work and any found to be defective from any cause, including damage caused by handling, and determined by the Town to be unrepairable shall be removed at once.
(c.) Storage and handling of pipes and other appurtenances shall be in accordance with the manufacturer's recommendations, subject to the approval of the Town.

B. Materials

1. General

(a.) The Materials section summarizes the Town's standards to be used in public or private components that affect the Town's water system. All materials should conform to the applicable AWWA standards unless otherwise noted.

2. Lead Free

(a.) All materials used in public or private water systems within the Town of North Reading's water system must be certified "lead free."

3. Pipe

(a.) All water mains shall be minimum Ductile Iron Class 52, single gasket, double sealing pipe with cement mortar lining. All ductile iron water main pipe shall be rated for a minimum operating pressure of 350 psi. All water main shall be encased in polyethylene film when the trench is backfilled with control density fill.
(b.) All water mains shall be minimum 8-inch diameter. All hydrant branches shall be a minimum of 6-inch diameter.
(c.) Push-on type joints are recommended on straight runs of pipe. Gaskets must be standard for pipe used and be acceptable to the DPW. A minimum of two brass wedges per joint shall be used to maintain conductivity and facilitate lock-on.
(d.) Mechanical joint restraints shall consist of individually actuated wedges that increase their resistance to pull out as pressure or external forces increase. The device shall be capable of full mechanical joint deflection during assembly and the flexibility of the joint shall be maintained after burial. They shall have a rated work pressure of 350 psi in sizes 16-inch and smaller and 250 psi on in sizes greater than 16 inches.
(e.) The Town has standardized on the Series 1100 MEGA-LUG restraint as produced by EBAA Iron, Inc. or approved equal.

(f.) Nitrile gaskets shall be used where petroleum contamination exists.

(g.) Ductile iron fittings shall be used and shall be cement lined. Fittings shall be equipped with a mechanical joint restraint, unless otherwise specified by the DPW. Mechanical joint fittings in sizes 4 inch through 12 inch shall be ductile iron compact fittings and rated for 350 psi working pressure. All nuts and bolts shall be of a type equal to ductile iron or KOR-10 steel T-bolts and nuts or an approved equal.

(h.) Couplings shall be provided with plain, Grade 27, rubber gaskets and track-head bolts with nuts. Couplings shall be Smith Blair, Style 441 or Dress, Style 38 or 360 repair Clamps or an approved equal. If the outer diameter of the pipe permits, a Dresser coupling is preferred.

4. Valves

(a.) Resilient Seat Gate Valves.

(1.) Resilient seat gate valve bodies shall be manufactured of ductile iron. Gate valves shall be open left (counter clockwise). All valves shall be designed for minimum 250 psi working water pressure.

(2.) The Town has standardized on American Flow Control and Kennedy or an approved equal.

(b.) Gate Boxes

(1.) Valve boxes shall be adjustable, Buffalo-Style with the lower part manufactured of cast iron and the upper part of steel or cast iron. The valve box shall be designed and constructed to prevent direct transmission of traffic loads to the pipe or valve. The top of the cover shall be flush with the top of the box rim.

(2.) Box covers shall be round frame and cover. The boxes shall be labeled to differentiate between hydrant valves ("HYD"), division valves ("DIV"), Blow-Off ("B.O.") and generic valves as indicated in the Construction Details.

(c.) Tapping Sleeves & Valves

(1.) Tapping sleeves shall be of the mechanical joint type. The valves shall be flanged by mechanical joint outlet with non-rising stem and designed for vertical burial. Tapping valves shall be rated at 200 psi working pressure and shop tested at 300 psi. Bolts on bonnet and stuffing box shall be stainless steel (316 stainless steel), stuffing boxes shall be "O" ring type. The operating nut shall be 2 inches square. Gaskets shall cover the entire flange surface. Valves shall open left, (counter clockwise).

(2.) The Town has standardized on American Darling 1004 or an approved equal.

5. Piping Connections

(a.) Service Connections

(1.) All service pipe shall be type "K" copper tubing, 1-inch minimum. All services shall have a curb valve and valve box installed at the property line.

(2.) Plastic services are allowed on a case-by-case basis. In such circumstances, the Town will require that the applicant verify that no petroleum constituents are present in subsurface soil in the vicinity of the service. Plastic water services shall be Polyethylene manufactured of PE3408 materials with SDR-9 minimum wall thickness, as defined in ASTM D3350. Polyethylene pipe shall be blue plastic and pressure class 200 psi. Dimensional and performance characteristics shall conform to the requirements of AWWA C901. The use of polyethylene pipe and tubing may be allowed for water services two (2) inches or under in diameter (4-inch and larger diameter water services shall use cement lined ductile iron water pipe). Polyethylene pipe shall be installed with enough slack to compensate for settlement and compaction and shall be laid on a bed of fine grained material

(3.) Curb valves shall include a drain.

(4.) The Town has standardized on lead-free service connections manufactured by either McDonald, Mueller, Ford or an approved equal. Copper tubing shall be of the type commercially known as type "K" soft and conforms to ASTM Specifications B-88-49.

(5.) Curb boxes shall be Buffalo box style.

(b.) Corporations

(1.) Corporations for 1 inch installations shall be heavy pattern, solid plug, easy turning. The inlet shall be an AWWA (CC) thread. The 1-1/2 inch and 2 inch corporations shall be of a tee head ball valve type which incorporates Teflon seats to assure self-centering of a Teflon coated bronze ball. The corporation shall be easy turning and non-binding. The inlet shall be an AWWA (CC) thread. Corporations shall be subject to a sustained hydraulic pressure of 200 psi. All 1½ and 2-inch saddles shall have stainless steel straps.

6. Hydrants

(a.) Hydrants shall have a 5-1/4-inch valve opened by turning the operating unit in the counter clockwise direction. The hydrant shall have one 4-1/2- inch steamer and two 2-1/2- inch hose connections. The hose and steamer connections shall have National Standard Thread. The operating nuts shall be pentagonal in shape, 1-1/2- inch from point to opposite flat and shall open left (counter clockwise). The hydrant shall be the hub or mechanical-joint type having a 6-inch pipe connection.

(b.) The hydrant valve shall consist of a cast iron valve and valve bottom and hydrant valve rubber. The rod threads shall be permanently sealed from contact with water. The hydrant valve shall seal against the bronze hydrant seat. The upper barrel shall be ductile iron with markings identifying size, model and year of manufacture. The lower barrel shall be ductile iron.

(c.) The upper barrel shall connect to the lower barrel with a breakable traffic flange and 8 bolts and nuts. This connection shall allow 360 degree rotation of the upper nozzle section.

(d.) The hydrant shall have a bronze drain ring securely held between the barrel and base flange. It shall provide bronze to bronze threaded connection for hydrant seal. The bronze drain ring shall serve as a non-corrosive multi-port drain channel.

(e.) The hydrant shall have a minimum working pressure of 200 psi. Hydrant design shall be of positive automatic drain type to prevent freezing.

(f.) All hydrants that will not be Town owned shall be painted red. Hydrants that are Town owned, or will be Town owned, shall be factory painted with Rust-Oleum brand hydrant paint to the Town's paint scheme:

Hydrant body: Safety Red

Caps: Safety Yellow

(g.) The Town has standardized on American Darling Model No. B-84B as manufactured by American Flow Control Inc, Mueller Super Centurion Model 250 as manufactured by Mueller Company, and United States Fireflo Model F-06 as manufactured by United Water products.

C. Execution

(a.) General This section summarizes the Town's standardized methods for the installation and maintenance of certain aspects of the water system. All procedures shall be performed consistent with AWWA standards.

(b.) Piping

(1.) The sizing of water mains shall be based on sound engineering principals. All water mains shall be minimum 8-inch nominal diameter. All hydrant connections shall be minimum 6-inch diameter.

(2.) All piping shall be installed with a minimum 5-foot cover. In such cases where 5-foot cover is not possible, the piping shall be appropriately insulated. Water pipe shall be installed with minimum distance from sewer and septic pipe as summarized in Section 3.3.1.2 H.

(3.) Pipe shall be laid accurately to line and grade in sand bedding conforming to MassDOT Standard Spec. M1.04.0 Sand Borrow and AWWA guidelines. The depth of the sand bedding shall be one half (1/2) the diameter of the pipe under the main and one half (1/2) the diameter of the pipe over the main or 6 inches both under and over the pipe, whichever is greater. Bedding

shall be placed in layers not over six inches thick, and each layer shall be thoroughly compacted by tamping and chinking on each side of pipe to provide uniform support.

(4.) Backfill material placed above the bedding material and below the roadway foundation shall conform to the North Reading Street Opening Construction Standards, as applicable.

(5.) Push-on type joints are recommended on straight runs of pipe. Gaskets must be standard for pipe used and be acceptable to the DPW. Mechanical joint restraints shall be used for valves, bends, hydrants and piping sections less than 50 feet.

(6.) Push-on pipe gaskets shall be clean and thoroughly coated with lubricant supplied by the manufacturer during installation.

(c.) Pressure Tests

(1.) All pressure testing shall be performed by a qualified third party approved by the Town. All pressure testing must be in conformance to a written plan submitted to, and approved by, the Town.

(2.) The pipelines shall be tested (in sections if required by the Town) for strength and for leakage at a pressure of 200 pounds per square inch. In certain circumstances, the Town may require higher pressure tests. The tests for leakage shall last for two hours although the Town may allow a one hour test subject to advanced approval. No more than 1,000 feet of water main shall be tested in a single test.

(3.) The additional water needed to maintain the required pressure shall be accurately measured in a manner approved by the Town. The container shall be clearly labeled with its capacity in gallons. Allowable leakage amounts will be determined by the AWWA standards for pressure testing Ductile Iron pipe (AWWA C600 latest revision).

(4) Tests shall be made for all newly installed pipe and when required by the Town. A 24-hour notice shall be given to the Town prior to all tests. The Contractor will make all necessary arrangements for securing the water for test purposes and will stand the expense of these arrangements. For private funded projects where water is collected straight from an un-metered source, the Contractor shall notify the Town of the quantity of water to be used. The Town will subsequently bill the contractor for that water usage.

(e.) During this test all hydrant laterals shall be in the open position. Methods of testing and plans showing sections to be tested shall be submitted to the Town for approval as requested. The Contractor will not perform a pressure test against existing valves unless authorized by the Town.

(f.) The Contractor shall submit a written report to the DPW summarizing the results. The Contractor shall repair all leaks discovered under any of the required tests and retest the pipe. The Town will not accept any installation where a final test has not been passed.

(d.) Chlorination of the Pipeline

(1.) Prior to disinfection, the Contractor shall submit a detailed disinfection plan to the DPW. The plan shall be prepared consistent with AWWA standards and it shall outline and describe the disinfection procedures. At minimum, the plan shall include the following components:

- Chlorine dosage and Injection – The Disinfection Plan shall summarize the intended chlorine dosage and the method for establishing that dosage. The disinfection may be accomplished by introducing into all the various parts of the new water mains a liquid solution containing one percent available chlorine in such volume that the rate of dosage to the water mains shall be at least 50 parts per million of available chlorine. The Disinfection Plan shall document the locations and methods for applying the chlorine into the pipeline.
- Disinfection Period and Flushing – The contact period for this disinfection shall be at least twenty-four hours, and a longer period will be required if tests of residual chlorine show it to be less than the required minimum of 25 mg/l. The pipeline shall be adequately flushed with potable water and the Disinfection Plan shall document the method for de-chlorinating and discharging the residual water. All discharges must comply with local, state and federal requirements.
- Sampling – Sampling shall be performed by an independent certified laboratory according to AWWA C651 – Disinfecting Water Mains. After flushing he chlorine, the water shall sit in the pipe for 24 hours and then be sampled. After this sample is taken, the same water shall remain for another 24 hours' retention time and shall be sampled again (i.e., samples will be taken at 24 and 48 hours after flushing).

(2.) The Contractor shall not proceed with the disinfection procedures until the Disinfection Plan has been approved by the DPW. All sampling results shall be submitted to the DPW prior to activation of the water main.

(3.) Continuous lengths of water main can be chlorinated in lengths up to 1,000 feet unless otherwise approved by DPW.

(4.) Connections at cuttings shall be swabbed with a 50-PPM solution of chlorine at locations when other methods are not applicable.

(5.) All water used to disinfect pipe shall be discharged and managed consistent with the appropriate state and local regulations. These shall include the Town of North Reading Conservation Commission permitting and the Illicit *Discharges to Municipal Separate Storm Sewer System* bylaw and rules & regulations.

(d.) Valves

(1.) All material shall be inspected for defects prior to installation. Defective materials shall be immediately removed from the site. All foreign matter shall be removed from valve openings and seat faces. All nuts and bolts shall be checked for tightness. Non-wooden blocking shall be placed under each valve to insure against settlement.

(e.) Tapping

(1.) Where there is more than one public water main in a street, the Town shall determine which main the owner may tap for water service pipe connection. Water mains designated as transmission mains shall not be tapped for water service, except when approved by the Town.
(2.) Tapping sleeves are allowed for taps up to and including ½ diameter of the main being tapped. Any tap greater than ½ diameter of the main shall require a solid 3-way Tee unless written approval is granted by the Town.

(f.) Thrust Restraint

(1.) Thrust Blocks

A. Thrust blocks may only be used against undisturbed soil. They shall be designed in accordance with the Design Standards using the appropriate concrete and pressures as specified in the Construction Details and the AWWA standards and guidelines.

(2.) Tie Rods

A. Tie rod systems may be used where approved by the Town. All materials shall be steel and coated with an approved bituminous coating or other approved corrosion resistant coatings. Unless otherwise required or approved by the Engineer, the Contractor shall install tie rods in accordance with the following schedule for all fittings:

Minimum Tie Rod Design

Pipe Size (inches)	Number of Rods	Tie Rod Diameter (inches)
4"-12"	2	¾"
16"	4	¾"

(g.) Electrical Grounding

(1.) No electrical grounds shall be made on water service pipes where a driven ground rod can provide the needed grounding service. Electrical grounding shall be provided in accordance with the Massachusetts Electric Code.

(h.) Sprinkler Connections

(1.) Sprinkler connection shall be coordinated with the property owner. Sprinkler valves shall only be operated by a certified sprinkler operator. The certified sprinkler operator shall bleed air from the sprinkler system upon completion of installation.

D. References

1. All materials and execution shall conform to the highest applicable standards. If there is a conflict between other standards, or between other standards and these Design standards, then the most stringent criteria shall be used.
2. The Town commonly references AWWA standards as guidance for the materials and execution of work performed on the Town's water infrastructure. The following summarizes select AWWA standards applicable to the sections in these Design Standards. This list is not exclusive as other standards may apply. The latest revision of each standard shall be referenced.

Standards	Title/Subject
ASTM D3350.	Standard Specification for Polyethylene Plastic Pipe and Fittings Materials
AWWA C104/ ANSI 21.4.	American National Standard for Cement-Mortar Lining for Ductile-Iron Pipe and Fittings for Water
AWWA C105/ ANSI A21.5.	American Standard for Polyethylene Encasement for Ductile-Iron Pipe Systems
AWWA C110/ ANSI A21.10.	American National Standard for Ductile-Iron and Grey-Iron Fittings, 3 Inch Through 48 Inch for Water
AWWA C111/ ANSI A21.11.	American National Standard for Rubber-Gasket Joints for Ductile-Iron Pressure Pipe and Fittings
AWWA C150/ ANSI A21.50.	American National Standard for the Thickness Design of Ductile-Iron Pipe
AWWA C151/ ANSI A21.51.	American National Standard for Ductile-Iron Pipe, Centrifugally Cast, for Water or Other Liquids
AWWA C153/ANSI A21.53.	American National Standard for Ductile-Iron Compact Fittings, 3 In. Through 64 In.
AWWA C502. AWWA	Standards for Dry-Barrel Fire Hydrants
AWWA C504 AWWA	Standard for Rubber-Seated Butterfly Valves
AWWA C509. AWWA	Standard for Resilient-Seated Gate Valves for Water Supply Service
AWWA C515. AWWA	Standard for Reduced-Wall Resilient-Seated Gate Valves for Water Supply Service
AWWA C600. AWWA	Standard for the Installation of Ductile-Iron Water Mains and Their Appurtenances
AWWA C651. AWWA	Standard for Disinfecting Water Mains
AWWA C901.	Polyethylene (PE) Pressure Pipe and Tubing, ½ Inch – 3 Inch, for Water Service

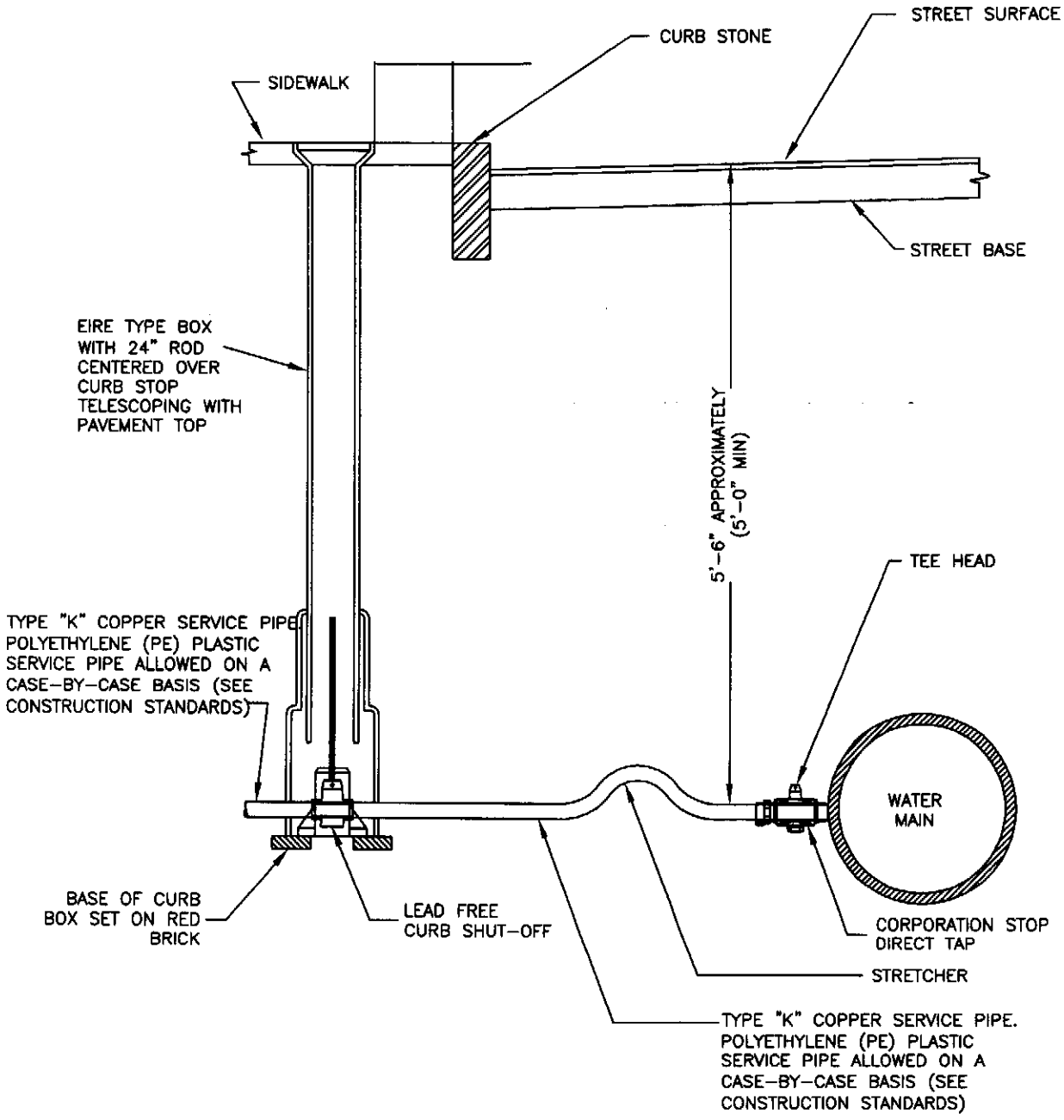
TOWN OF NORTH READING

APPENDIX

WATER CONSTRUCTION STANDARDS

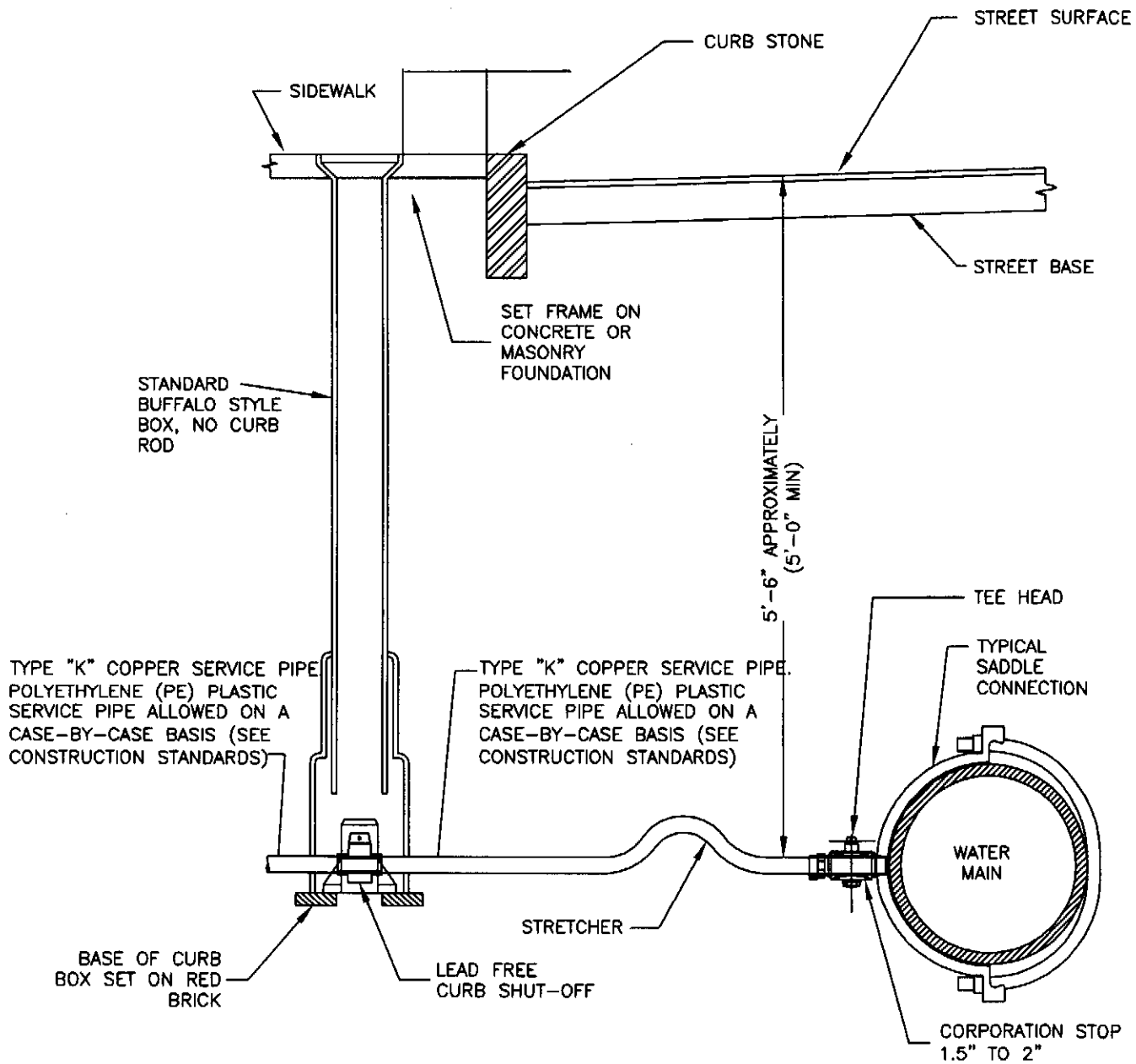
STANDARD DETAIL DRAWINGS

W-1	Typical for 1" water service connection
W-2	Typical for 1-1/2" to 2" water service connection
W-3	Typical Tapping sleeve water main connection
W-4	Typical thrust restraints using tie rods and friction clamps
W-5	Water main trench detail
W-6	Fire hydrant installation
W-7	Meter installation
W-8	Gate Valve installation



NOT TO SCALE

TOWN OF NORTH READING DEPARTMENT OF PUBLIC WORKS	TYPICAL WATER CONNECTION FOR 1" SERVICE	DATE: JANUARY 2012	DETAIL NO. W-1



NOT TO SCALE

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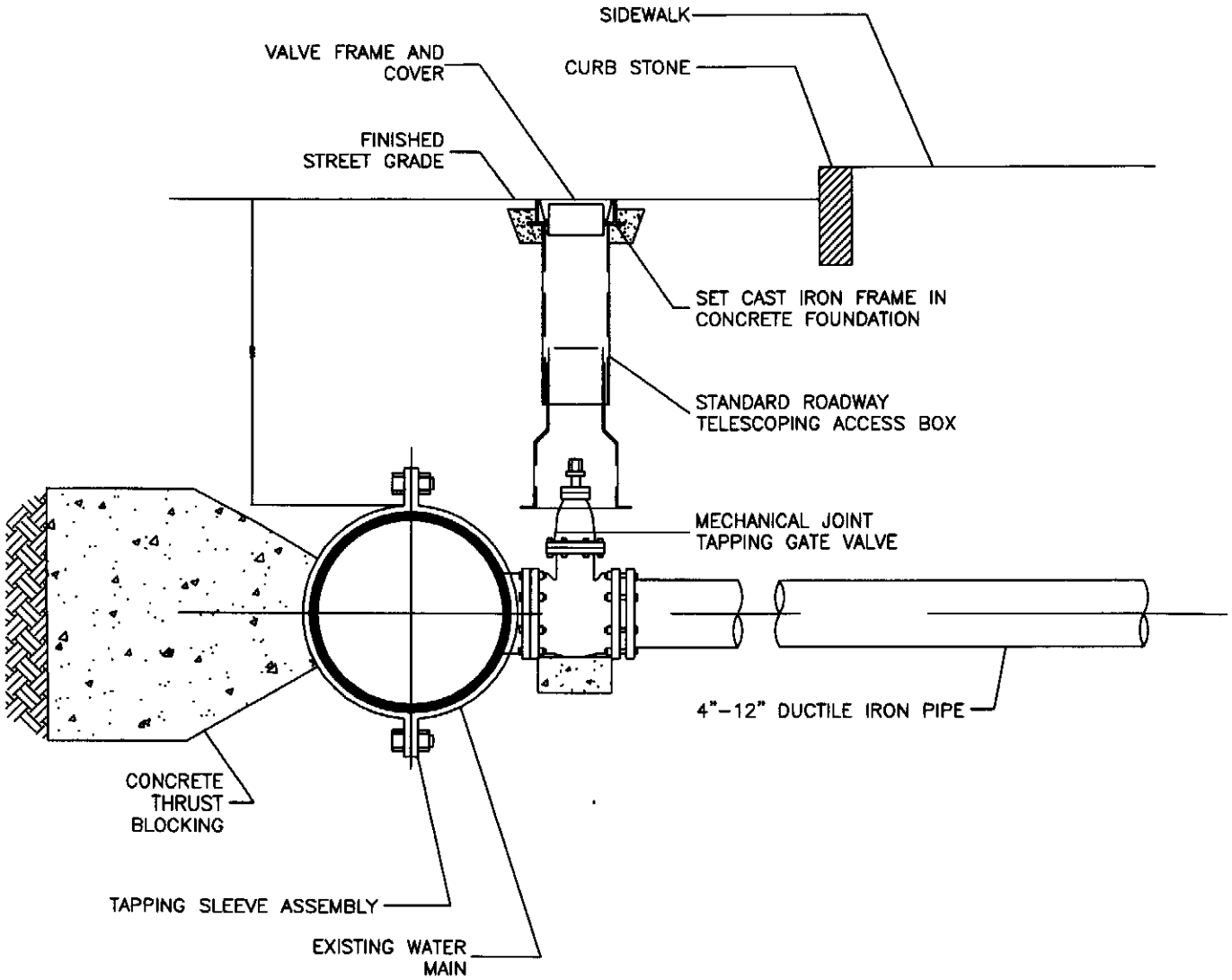


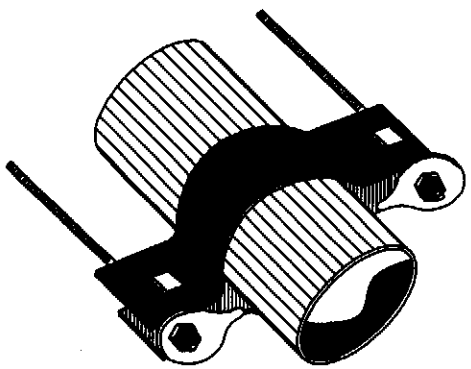
NOTES

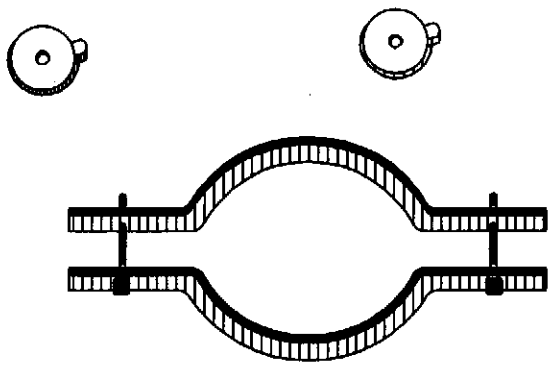
1. MAXIMUM TAPPING SLEEVE SHALL NOT BE GREATER THAN 1/2 DIAMETER OF CONNECTING MAIN
2. MEGA LUG RESTRAINTS ON ALL MECHANICAL JOINTS

NOT TO SCALE

TOWN OF NORTH READING DEPARTMENT OF PUBLIC WORKS	TYPICAL CONNECTION (TAPPING SLEEVE)	DATE: JANUARY 2012	DETAIL NO. W–3

SCHEDULE OF TIE RODS		
PIPE SIZE	NUMBER OF RODS PER FITTING	DIAMETER OF RODS
4" – 12"	2	3/4"
16"	4	3/4"
20" – 24"	4	1 1/2"





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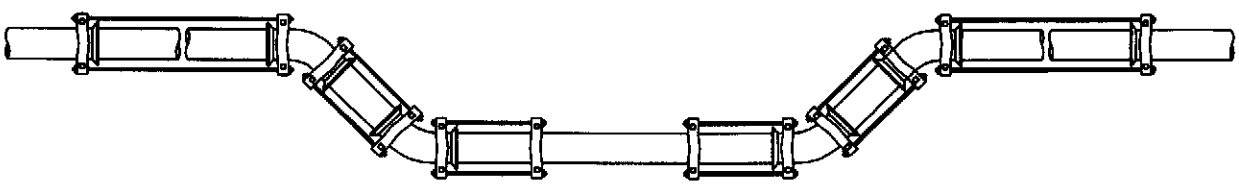
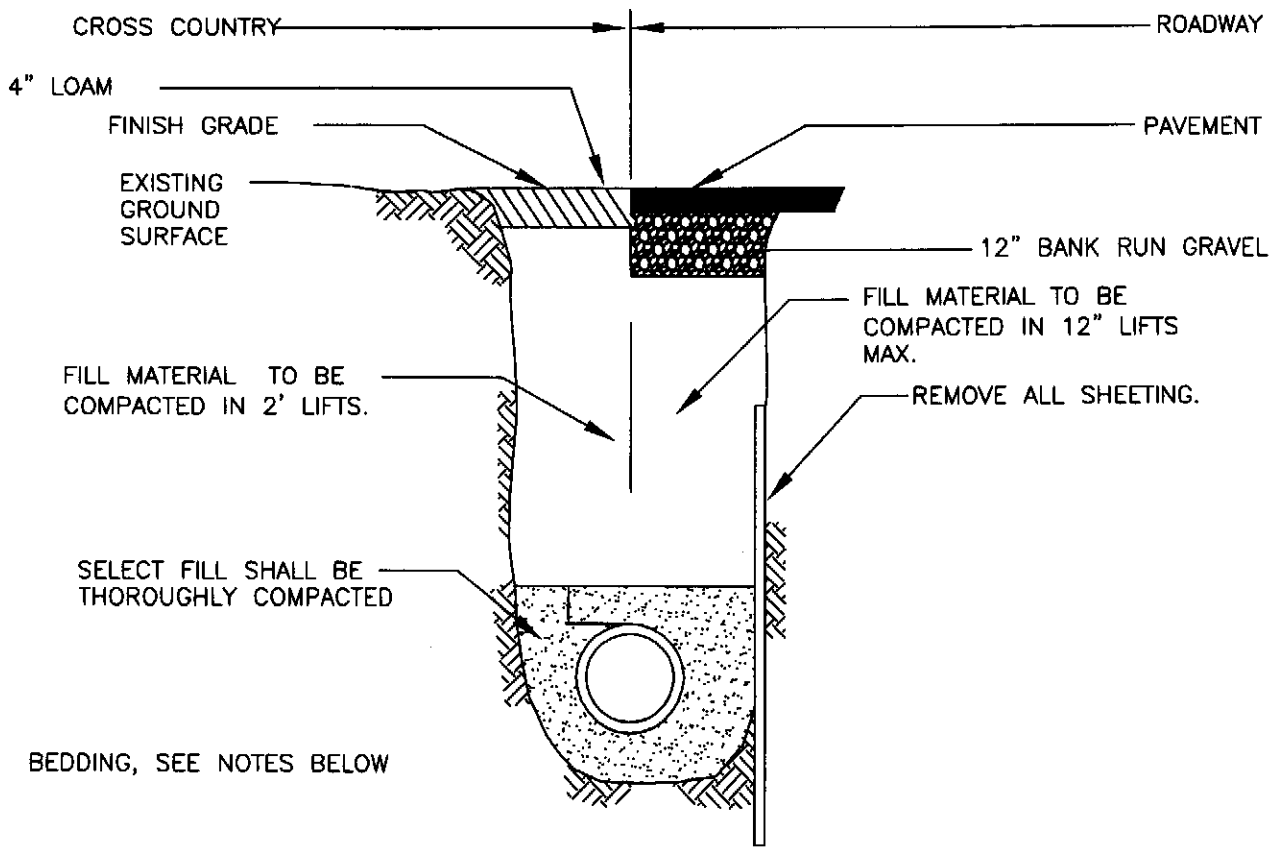


NOT TO SCALE

TOWN OF NORTH READING DEPARTMENT OF PUBLIC WORKS	TYPICAL THRUST RESTRAINTS USING TIE RODS AND FRICTON CLAMPS	DATE: JANUARY 2012	DETAIL NO. W–4



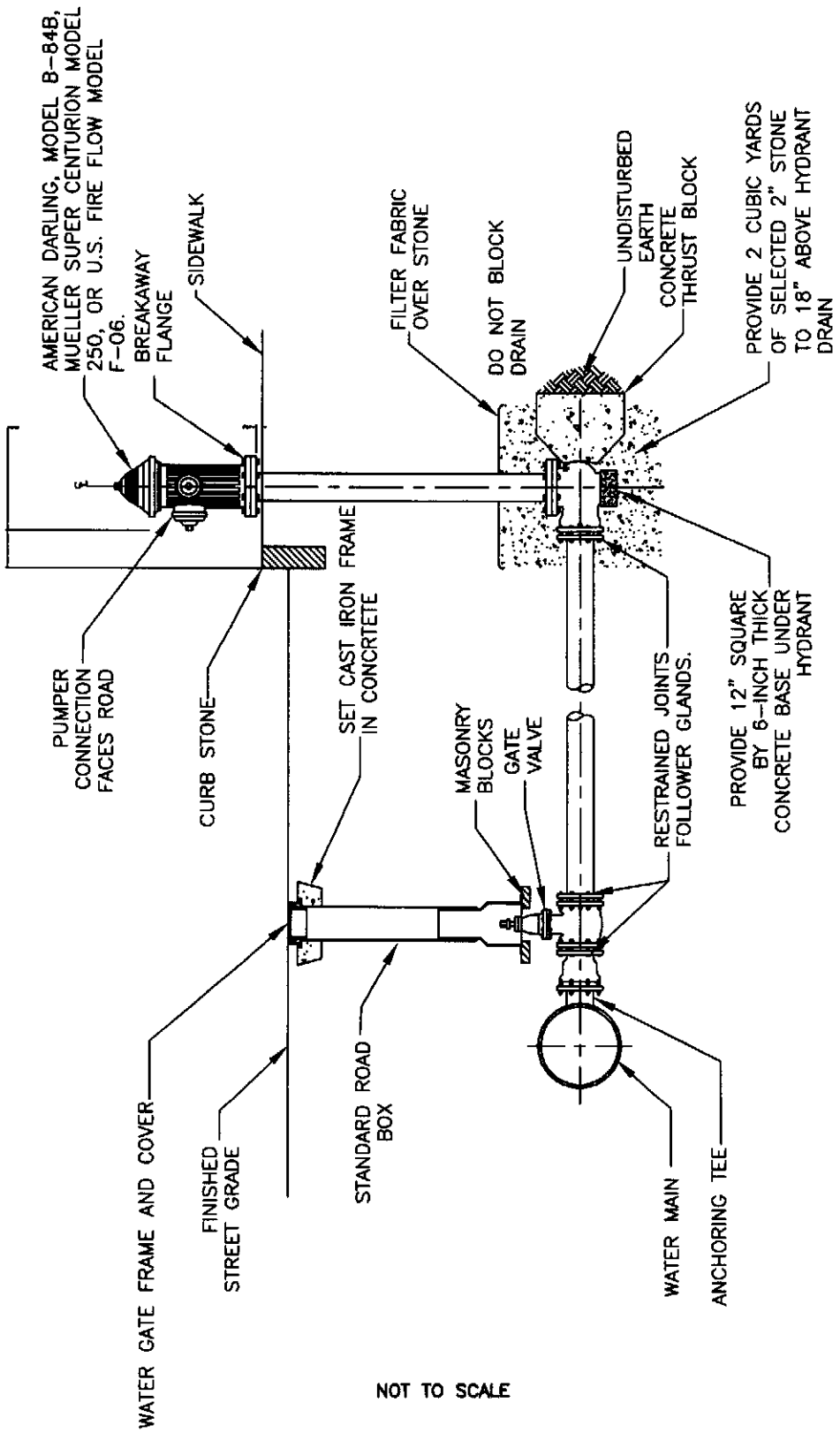
NOTE: 5'–0" MIN. COVER

NOTES

1. TOWN OF NORTH READING MAY REQUIRE FLOWABLE FILL AT ITS DISCRETION.
2. FOR LOCATIONS WHERE LEDGE IS NOT ENCOUNTERED IN TRENCH, PIPE CAN LAY ON UNDISTURBED EARTH, OR ON SAND BEDDING CONSISTENT WITH AWWA GUIDELINES.
3. FOR LOCATIONS WHERE LEDGE IS ENCOUNTERED, SAND BEDDING SHALL BE A MINIMUM OF 12" THICK UNDER PIPE.
4. FILL MATERIAL SHALL BE COMPACTED TO 95% PROCTER DENSITY.
5. SEE THE TOWN OF NORTH READING STREET OPENING CONSTRUCTION STANDARDS FOR TRENCH BACKFILLING AND PAVEMENT RESTORATION.

NOT TO SCALE

TOWN OF NORTH READING DEPARTMENT OF PUBLIC WORKS	WATER MAIN TRENCH DETAIL	DATE: JANUARY 2012	DETAIL NO. W–5



NOT TO SCALE

TOWN OF NORTH READING DEPARTMENT OF PUBLIC WORKS	FIRE HYDRANT INSTALLATION	DATE: JANUARY 2012	DETAIL NO. W-6

APPENDIX A

PREVAILING WAGE RATES

APPENDIX B

PROJECT PLANS

PLANS OF PARK STREET OVER MARTINS BROOK IN THE TOWN OF NORTH READING, MIDDLESEX COUNTY

PREPARED BY TEC, INC.
DATED 03/25/2024
19 SHEETS

APPENDIX C

WETLAND REPORT

AND

HYDRAULIC REPORT

APPENDIX D

ENVIRONMENTAL PERMITS:

NOTICE OF INTENT

ORDER OF CONDITIONS

AND

SELF VERIFICATION NOTIFICATION

APPENDIX E

DETOUR PERMITS:

MASSDOT ACCESS PERMIT