GODFREY BROOK CAPACITY IMPROVEMENTS PROJECT
WEST STREET TO WATER STREET
TOWN OF MILFORD

ADDENDUM NO. 2

April 17, 2025

TO ALL BIDDERS:

The original Project Manual dated March 2025, for the above-captioned project is amended as stated in this Addendum. Receipt of this Addendum shall be acknowledged by inserting Addendum Number and Addendum Date in the space provided on the Bid Form. This Addendum consists of **2** pages plus attachments as listed below.

ADDENDUM NO. 2, ITEM NO. 1

RESPONSES TO QUESTIONS:

1. Q (asked via email):

   After conducting preliminary quantity takeoffs, there are several items that appear likely to substantially over-run the contract bid quantity:
   - 02200-4 Gravel Borrow – 760 CY
   - 02200-6 Crushed Stone – 280 TON
   - 02200-9 Streambed Borrow – 110 TON
   - 03300-1 Cast-in-place Concrete – 110 CY

   Please confirm the above bid quantities are accurate.

   A: *See Addendum No. 2, Item No. 2 for clarification to Method of Measurement under Section 02200, General Earthwork and Addendum No. 2, Item No. 3 for an updated Bid Form.*

ADDENDUM NO. 2, ITEM NO. 2

AMENDMENTS TO PROJECT MANUAL:

SECTION 02200, GENERAL EARTHWORK

ADD the following after Paragraph 4.01.F:

G. Measurement of fill materials will not include any material placed outside a vertical plane defined by the bottom of excavation as shown on the Drawings. Fill placed outside

these limits will be considered as for the Contractor's convenience and will not be measured or paid for separately (See Attachment 1).

ADDENDUM NO. 2, ITEM NO. 3

AMENDMENTS TO PROJECT MANUAL:

SECTION C-410, BID FORM FOR CONSTRUCTION CONTRACT

REPLACE in its entirety with revised **SECTION C-410, BID FORM FOR CONSTRUCTION CONTRACT** (See Attachment 2).

ATTACHMENTS

Attachment 1: SECTION 02200, GENERAL EARTHWORK *(19 pages)*

Attachment 2: SECTION C-410, BID FORM FOR CONSTRUCTION CONTRACT *(6 pages)*

END OF ADDENDUM NO. 2

Attachment 1: SECTION 02200, GENERAL EARTHWORK

SECTION 02200

GENERAL EARTHWORK

PART 1 – GENERAL

1.01 GENERAL PROVISIONS

A. Attention is directed to the CONSTRUCTION CONTRACT and all Sections within DIVISION 1 - GENERAL REQUIREMENTS, which are hereby made a part of this Section of the Specifications.

1.02 DESCRIPTION OF WORK

A. Contractor shall furnish all labor, materials, equipment, supervision, and shall perform all operations required to complete the work shown on the drawings, as directed by the Engineer, as herein specified, and as required to properly complete the work.

B. The work includes, but is not limited to, the following as outlined in these specifications or shown on the Contract Documents:

1. Pre-construction surveys of adjacent buildings and structures.
2. Installation, baseline surveying, and monitoring of deformation monitoring points as required on existing adjacent buildings at the following properties:
   a. 3 Roberts Ct
   b. 372 Draper Park
   c. 21 Church St.
   d. 23-25 Church St.
   e. 9 Water St.
   f. 11 Water St.
3. Crack gauges shall be installed on existing cracks observed on building walls during the pre-construction survey.
4. Trench excavation, bedding and backfill for all structures and utilities, complete.
5. Excavation, haul, backfill, compaction, and grading for all work of the documents.
6. The removal, hauling, and stockpiling of suitable excavated materials for subsequent use on the project including topsoil.
7. All rehandling, hauling, and placing of stockpiled materials for use in refilling, filling, backfilling and grading.
8. Protection of existing vegetation, buildings, decks, pavements and utilities not otherwise disturbed as part of the work.
9. Protection of the work of other Contractors or utilities, who may be performing work within the project area simultaneously with the work of this contract.

10. Design, furnishing, installing and removing all sheeting, shoring and bracing of general excavations (as required) to prevent damage to existing improvements and limit excavation quantities. As a minimum, loads on the temporary lateral support system will be those from soil, water, and traffic and construction equipment surcharges.
11. All excess materials not suitable or necessary for use in refilling, filling, backfilling and grading shall become the property of the Contractor and shall be removed from the site.
12. Provision and installation of all borrow earth materials needed to perform the work of the Contract, including processed gravel, crushed stone, riprap, streambank borrow, etc.
13. The spreading of onsite and borrow topsoil.

QUALITY ASSURANCE

A. General: Perform all earthwork in compliance with the latest edition of the Massachusetts Department of Transportation's Standard Specifications for Highways and Bridges hereinafter referred to as the "Standard Specifications".

B. Referenced Standards:

1. ASTM D422 Method for Particle Size Analysis of Soils.
2. ASTM D698 Test for Moisture-Density Relations of Soils using 5.5 lb Rammer and 12-inch Drop (Standard Proctor).
3. ASTM D1556 Test Method for Density of Soil in Place by the Sand Cone Method
4. ASTM D1557 Test Methods for moisture-density relations of soils and soil aggregate mixtures using 10 lb. Rammer and 18-inch drop.
5. ASTM D2167 Test for Density of Soil in Place by the Rubber Balloon Method.
6. ASTM D2487 Classification of Soils for Engineering Purposes.
7. ASTM D2922 Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
8. ASTM D3017 Test for Moisture Content of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
9. ASTM D4318 Test for Plastic Limit, Liquid Limit, and Plasticity Index of Soils.

C. Special Requirements:

1. Protection: Comply with all applicable regulations and safety orders in effect at the place of construction. Protect this and adjacent properties from all damage due to this operation. Protect open excavations, trenches, etc., with fences, covers or railings as required to maintain safe pedestrian and vehicular traffic.
2. Responsibility: The Contractor is responsible for the finished condition of their work. Notify the Engineer promptly in writing if any conditions exist which are contrary to requirements. Restore, without extra cost to the Engineer, street pavements, walks, curbs, gutters, trees, etc., that may be damaged in the

performance of work under this section, in a manner prescribed by authorities having jurisdiction.

3. Surveyor Qualifications: The Contractor's Professional Land Surveyors shall be registered in the Commonwealth of Massachusetts and with at least five (5) years of experience performing construction surveying and monitoring of geotechnical instrumentation.

4. Unusual Conditions: The Contractor shall not work in excessively cold, wet or other unfavorable weather. Other unusual conditions encountered during operations, if not covered herein, will be brought promptly to the attention of the Engineer and appropriate instructions will be issued. Rock, soft spots at locations where bearing value is required, and other concealed site conditions are in this category. No work is to be done over spongy or other unsuitable material without such instructions.

D. Codes and Standards:

1. All work and materials shall conform to the latest applicable sections under the state's various jurisdictions; the Standard Specifications for Highways and Bridges, Massachusetts Department of Transportation, hereinafter referred to as the "Standard Specifications"; as well as the codes and standards referenced in the individual sections. In case of conflict, the codes and standards referenced in the individual sections shall govern.

2. All work and materials shall also be in full accordance with the latest rules, regulations, and safety orders of the State's Division of Industrial Safety OSHA, A.N.S.I. - A10.1 Safety Code for Building Construction, and all other state, county, city, municipality, and the utility laws rules, and regulations. Nothing in these Plans and Specifications shall be construed to permit work not conforming to the above.

3. When the Specifications call for material or construction of better quality or larger size than is required by the above-mentioned codes and standards, then the provisions of the Specifications shall take precedence over the requirements of said codes and standards. If there is any direct conflict between the above-referenced codes and standards and Plans or Specifications, the codes and standards shall govern.

E. Permits:

1. Order of Conditions: All work shall comply with the Order of Conditions issued by the Milford Conservation Commission under the Massachusetts Wetlands Protection Act. Refer to Section 01060 Regulatory Requirements, Section 01560 Temporary Sediment & Erosion Control.

2. 401 Water Quality Certification: All work shall comply with the 401 Water Quality Certification issued by the Massachusetts Department of Environmental Protection Agency. Refer to Section 01060 Regulatory Requirements, Section 01560 Temporary Sediment & Erosion Control.

3. Section 404 Self Verification Notification Form: All work shall comply with the United States Army Corps of Engineers Section 404 Self Verification Notification

Form. Refer to Section 01060 Regulatory Requirements, Section 01560 Temporary Sediment & Erosion Control.

1.04 JOB CONDITIONS:

A. Site Information: Data on indicated subsurface conditions are not intended as representations or warranties of accuracy. It shall be expressly understood that Engineer will not be responsible for interpretations or conclusions drawn therefrom by Contractor. Data is made available for convenience of Contractor.

B. Existing Utilities:

1. Locate existing underground utilities. Contact Dig Safe (1-888-344-7233) 72 hours prior to any excavation work.

2. Should uncharted or incorrectly charted utilities be encountered, consult utility company, Engineer immediately for directions. Cooperate with Engineer and utility companies in keeping respective services and facilities in operation. Repair damaged utilities to the satisfaction of utility company and Engineer. Provide minimum 48-hour notice to the Engineer and utility company prior to interruption.

C. Construction Procedures: The Contractor shall be solely responsible for and shall have control over construction means, methods, techniques, sequences and procedures. The Contractor shall assume full responsibility for his actions and shall be responsible for adequately insuring against all claims which may arise from any construction procedure. The Contractor shall indemnify and hold harmless the Engineer and/or any of his Agents from any claim arising from the Contractor's (or subcontractor's) actions.

D. Protection of Persons and Property:

1. Barricade open excavations and post warning signs and lights. Operate warning lights as required by authorities having jurisdiction.

2. Protect all existing structures during construction.

3. Contractor shall conduct a pre-construction survey of the abutting properties and structures and monitor existing properties for deformation and/or settlement during construction.

E. Dust Control: Control dust on and near the Work, and on and near all off-site borrow areas. Thoroughly moisten all surfaces to prevent dust from being a nuisance to the public, and operation of existing facilities.

1.05 SAFETY

A. General: The Contractor is solely responsible for designing and constructing stable temporary excavations and should shore, slope, or bench the sides of the excavation as required to maintain the stability of both the excavation sides and bottom. Construction site safety generally is the sole responsibility of the Contractor, who shall also be solely responsible for the means, methods and sequencing of construction

operations. Under no circumstances should the information provided in these plans and specifications be interpreted to mean that the Engineer is assuming responsibility for construction site safety or the Contractor's activities; such responsibility is not being implied and should not be inferred.

B. Regulations: All excavations shall be made in conformance with all applicable laws and regulations. In particular, all excavations shall be in conformance with the regulations of the U.S. Department of Labor, Occupational Safety and Health Administration (OSHA). These regulations are the Occupational Safety and Health Standards - Excavations found in 29 CFR Part 1926 Subpart P - Excavations, as amended.

C. Excavations and Slopes: The Contractor's "responsible person", as defined in 29 CFR Part 1926, should evaluate the soils exposed in the excavations as part of the Contractor's safety procedures. The Contractor's "responsible person" should establish a minimum lateral distance from the crest of all slopes for all vehicles and spoil piles. Likewise, the Contractor's "responsible person" should establish protective measures for exposed slope faces.

1.06 SUBMITTALS

A. Refer to SECTION 01300 - SUBMITTALS for submittal provisions and procedures.

B. Contractor shall submit, at least ten (10) days prior to the commencement of work, the proposed construction schedule, sequence of construction, coordinate with temporary traffic controls, methods of construction including equipment to be used, excavation support methods and details, and proposed locations of haul roads and staging areas within work limits.

C. The Contractor shall submit two (2) fifty-pound (50 lb.) samples of each type of fill proposed for use at the Site (on-site and off-site material) to the Town at least ten (10) days prior to intended use. The Contractor can coordinate with the Town and/or Engineer a visit to the quarry for visual inspection of the proposed riprap and stream cobble material prior to delivery to site.

D. Contractor shall submit, at least ten (10) days prior to placement, testing information relative to the proposed source of all earth materials to be imported into the site. Testing information shall include the following:

1. Description of source(s) of materials.
2. Physical Properties.
3. Grain size analysis.
4. "Modified Proctor" analysis of maximum dry density and optimum moisture content (ASTM D1557)
5. Liquid and Plastic Limits.

E. Contractor shall submit all plans, sections, details, and calculations describing the Contractor’s proposed temporary earth support system. The design of the bracing

and support system shall be certified by a Professional Engineer licensed in Massachusetts.

F. Within two (2) weeks of the Notice to Proceed but no later than ten (10) days prior to the start of work at the Site, the Contractor shall submit the name, contact information, qualifications, and certifications of its proposed Independent Materials Testing Laboratory, including the names and credentials of proposed field testing technicians. The Town shall be the sole judge of the appropriateness of the proposed Laboratory and personnel.

1.07 FIELD MEASUREMENTS

A. Contractor shall verify survey benchmarks and intended elevations for the work prior to commencement of work.
B. Contractor shall verify final grades for conformance to design plans.
C. Contractor shall make measurements for determination of pay quantities per Specification associated with the work.

1.08 COORDINATION OF WORK

A. Other contractors, as well as various utility companies, may also be working on the site. The Contractor must coordinate his activities with all such parties so as to prevent conflicts in construction operations.

1.09 LAYOUT AND GRADES

A. Lines and grades shall be set by a Professional Land Surveyor, registered in the State of Massachusetts, in accordance with the Contractor Drawings and Specifications. Establish and maintain permanent benchmarks. Maintain all established bounds and benchmarks and replace as directed any which are destroyed or disturbed.

1.10 FROST PROTECTION AND SNOW REMOVAL

A. The Contractor shall, at their own expense, keep the operations under this Contract clear and free of accumulations of ice and snow within the limit of work and elsewhere as needed to carry out the active work.
B. Although the placement of fill is not expected, the Contractor shall not place fill over frozen soils and shall not place frozen fill. All frozen soils shall be removed to the satisfaction of the Engineer prior to fill placement.

PART 2 – PRODUCTS

2.01 SOIL MATERIALS

A. General: Fill and backfill material shall have less than 1% organic material by weight and shall be free from deleterious substances. Backfill shall not contain any

materials over 12 inches in greatest dimension. Material having a dimension greater than 6 inches shall not be used for backfill within 6 inches of any pipe, culvert, or structure, or in the upper 6 inches of fill. Materials shall be selected from approved on-site, or off-site borrow sources.

B. Ordinary Borrow: Ordinary Borrow shall meet the requirements under Subsection M1.01.0 of the Standard Specifications. This material shall have the physical characteristics of soils designated as group A-1, A-2-4, or A-3 under AASHTO-M145. It shall have properties such that it may be readily spread and compacted for the intended use.

C. Gravel Borrow: Gravel Borrow shall meet the requirements for Gravel Borrow per Subsection M.1.03.0 of the Standard Specifications. Gravel Borrow shall conform to the following gradation requirements:

Sieve Size	Percent Passing by Weight
1/2-inch	50-85
No. 4	40-75
No. 50	8-28
No. 200	0-10

Maximum size of stone in gravel shall be as follows:

Type b: 3 inches largest dimension
Type c: 2 inches largest dimension

D. Processed Gravel Borrow: Processed Gravel shall meet the requirements of Subsection M.1.03.1 of the Massachusetts Department of Transportation, Standard Specifications for Highways and Bridges. Processed Gravel shall conform to the following gradation requirements:

Sieve Size	Percent Passing by Weight
3-inch	100
1 1/2-inch	70-100
1/4 inch	50-85
No. 4	30-60
No. 200	0-15

E. Topsoil Borrow:

1. Topsoil Borrow shall consist of fertile, friable, natural topsoil, reasonably free of stumps, roots, stiff clay, stones larger than 1 inch diameter, noxious weeds, sticks, brush, or other litter, and shall otherwise meet the requirements of Subsection M1.07.0 of the Standard Specifications.
2. Topsoil Borrow shall be obtained from off-site sources.

F. Low Permeability Material Borrow: Low Permeability Material borrow shall meet the requirements for Impervious Borrow per Subsection M.1.08.0 of the Standard Specifications except borrow shall not be 'peat and other highly organic soils'.

G. All other materials not specifically described but required for proper completion of the Work shall be as approved by the Engineer.

2.02 AGGREGATES AND RELATED MATERIALS

A. Pipe Bedding Material: Where called for on the Drawings, Pipe Bedding Material shall consist of Crushed Stone as specified in this Section.

B. Crushed Stone: Crushed Stone shall meet the requirements of Subsection M2.01.0 and M2.01.1 of the Standard Specifications. Crushed Stone shall conform to the following gradation requirements:

Sieve Size	Percent Passing by Weight
2-inch	100
1 1/2-inch	95-100
1-inch	35-70
3/4-inch	0-25

C. Streambed Borrow:

1. Streambed Borrow shall be of natural origin and consist of angular to sub-rounded stones, similar in appearance and texture to the existing stream bed material in the project area.

2. Streambed Borrow shall be substantially free of shale, products from crushing or blasting operations, organic materials, and debris. Stones greater than one inch in diameter shall be generally free of fractured faces or any dimensions that are larger than the maximum size stated in the streambed material gradation requirements.

3. Materials salvaged from the project site that meet the requirements of streambed material may be used if obtained from within the limit of work and as approved by the Engineer.

4. Streambed borrow shall meet the following gradation:

	MIN. (in.)	MAX. (in.)
D_{15}	5.5	7.8
D_{50}	8.5	10.5
D_{85}	11.5	14.0
D_{100}	18.0	20.0

D. Riprap: Riprap shall meet the requirements for "Stone for Pipe Ends" of Subsection M2.02.3 of the Massachusetts Department of Transportation, Standard Specifications for Highways and Bridges.

2.03 GEOTEXTILE FABRIC

A. Geotextile Fabric shall be used as called out in the project drawings and to separate crushed stone from surrounding soils. The fabric shall meet Subsection M9.50.0 of the Massachusetts Department of Transportation, Standard Specifications for Highways and Bridges. The fabric shall consist of Mirafi 600X or approved equal.

PART 3 - EXECUTION

3.01 GENERAL

A. Work under this Section shall include earthwork necessary for installation of culverts, utility piping and conduit, utility structures, site retaining walls, fencing and other work of the project. Earthwork under this Section shall also include earthwork to prepare subgrade and sub-base materials as required for pavement construction.

3.02 SHEETING AND SHORING

A. Mobilization for sheeting and shoring operations shall not begin until after design of soil support system has been reviewed by the Town and Engineer.

B. Work shall not be started until all materials and equipment necessary for proper sheeting and shoring of the excavation are either on the site of the work or immediately available for use as required.

C. All sheeting and shoring shall meet the requirements of OSHA Regulations (Standards – 29 CFR) 1926 Subpart P Excavations.

3.03 EARTH EXCAVATION

A. Earth excavation is otherwise unclassified and includes excavation to required elevations, regardless of character of materials and obstructions encountered, other than rock.

B. Earth excavation includes the excavation of existing pavements, utility structures, and masonry.

C. Earth Excavation includes onsite topsoil stripped and stacked or stockpiled for respreading at project completion. Contractor shall make efforts to isolate the stripped topsoil from other materials prior to reuse.

D. Unauthorized Excavation: Materials removed beyond indicated subgrade elevations or dimensions shall be corrected by backfilling and compacting with gravel borrow at the Contractor's expense.

E. When excavation has reached required subgrade elevations, notify Engineer for inspection. If unsuitable bearing materials are encountered, excavate and replace as directed by the Engineer. Removal of unsuitable material and its replacement shall be paid on basis of unit prices established in the Contract for Earth excavation.

F. Stability of Excavations: Slope sides of excavations to comply with codes and ordinances having jurisdiction. Shore and brace where sloping is not possible because of space restrictions or instability of material excavated. Maintain sides and slopes of excavations in safe condition until completion of backfilling. See sub-section 1.05 SAFETY in this Section.

G. Cold Weather Protection: Protect excavation bottoms against freezing.

3.04 ROCK EXCAVATION

A. Definitions and Classifications: The following classifications of excavation will be made only when rock excavation is encountered:

1. Earth excavation consists of removal and disposal of pavements and other obstructions visible on the ground surface, underground structures and utilities indicated to be demolished and removed, material of any classification indicated in data on subsurface conditions, and other materials encountered that are not otherwise classified as rock excavation as defined below.

2. Rock excavation consists of removal and disposal of materials encountered that cannot be excavated without continuous and systematic drilling and blasting or continuous use of a ripper or other special equipment, except such materials that are classed as earth excavation. Typical of materials classified as Rock Excavation are as follows:

   a. Rock or stone in original ledge

   b. Hard shale or limestone in original ledge

   c. Boulders on-site, outside trench limits exceeding two cubic yards in volume. Excavation of existing stone channels, even if grouted together, shall not be considered rock excavation unless individual stones exceed two cubic yards.

   d. Boulders within trench limits exceeding one cubic yard in volume

3. "Trench" is defined as an excavation of any length in which the width is less than the depth, except that no excavation in excess of eight (8) feet wide shall be considered as a trench. No excavation above final finished grades shall be considered as a Trench.

4. Should highly fractured or weathered bedrock be encountered during excavation, the following rules shall apply:

   a. When the material is encountered in trenching operations or under footings and may be excavated or ripped with a hydraulic backhoe equivalent to or larger than a Caterpillar 235, it shall be classified as Earth Excavation. When it is demonstrated to the satisfaction of the Engineer that this material can no longer be removed with a hydraulic backhoe and requires drilling and blasting or hammering, this material shall be classified as Rock Excavation.

   b. When this material is encountered in open excavation, it shall be classified as Earth Excavation until drilling and blasting or continuous ripping is necessary as defined herein above.

5. Intermittent drilling and ripping performed to increase production and not necessary to permit excavation of material encountered will be classified as Earth Excavation.

B. Measurements

1. When, during the process of excavation, rock is encountered, such material shall be uncovered and exposed, and the Engineer shall be notified by the Contractor, before proceeding further. The areas in question shall then be measured as hereinafter specified.

2. Failure on the part of the Contractor to uncover such material and to notify the Engineer and proceeding by the Contractor with the excavation before measurements are taken, will forfeit the Contractor's right of claim towards the classification of the excavated material as rock.

3. The Contractor shall take measurements of rock before removal and make computations of volume of rock encountered within the Payment Lines. Measurements shall be taken in the presence of the Engineer and the computations approved by the Engineer. The Owner has the option to perform independent measurements and computations of rock quantities.

4. Where removal of boulder or ledge is required outside the established payment lines, the extent of this removal and basis of payment shall be determined by the Engineer.

5. Excavate rock encountered to subgrade as specified herein and shown on the Drawings.

3.05 EXCESS EXCAVATION

A. Clean excess earth or rock excavation may be transported and disposed of by the Contractor at the Town of Milford's Asylum Street property, in coordination with the Highway Surveyor.

3.06 MATERIAL STORAGE

A. Stockpile satisfactory excavated materials only where directed in the field by the Engineer. Place, grade and shape stockpiles for proper drainage. Do not store within drip line of trees.

3.07 TRENCHING

A. General: Verify all existing grades, inverts, utilities, obstacles, and topographical conditions prior to trenching. If existing conditions differ from Contract Documents, immediately notify Engineer.

B. Existing Surfaces: All existing surfaces which will be reused, such as topsoil or granite curbing, shall be removed at the start of the excavation process and shall be stockpiled in such a manner as to be readily available for replacement at the completion of backfill operations. Surfacing which shall not be reused shall be disposed of by the Contractor.

C. Width: Trenches shall be at least 12" wide, but should not be wider than the pipe outside diameter plus 8" clear each side, unless shown otherwise on the plans. Provide minimum 6" clear each side of pipe.

D. Trench Foundation:

1. Provide a smooth, firm, and stable surface free from rock points. Provide crushed stone pipe bedding material or foundation as shown on the plans.

2. Accurately shape all pipe foundations (soil or granular material) to fit the bottom of the pipe shape and; at each joint, shape foundation to ensure continuous bearing of pipe barrel.

E. Grading and Stockpiling Trenched Material: Control the stockpiling of trenched material in a manner to prevent water running into the excavations.

3.07 CHANNEL EXCAVATION

A. General: Verify all existing grades, inverts, utilities, obstacles, and topographical conditions prior to conducting channel excavation. If existing conditions differ from Contract Drawings, immediately notify the Engineer.

B. Width: Channel excavation shall be at least width of precast concrete channel plus four (4) feet in earth material, and plus three (3) feet in rock material, as shown on the Contract Drawings.

C. Depth: Depth of channel shall be to grade set within the Contract Drawings.

D. Grading and Stockpiling Excavated Material: Control the stockpiling of excavated material in a manner to prevent water running into the excavations.

3.08 BLASTING

A. When blasting is found necessary for removal of rock, the Contractor shall comply with the provisions of this Section and shall take all reasonable precautions for the protection of individuals and property exposed to his operations. Explosives shall be stored, handled and employed in accordance with Federal, State, and local regulations and permitting authorities.

B. Pre-blast surveys will be required.

C. The Contractor shall submit to the Engineer a complete description of his proposed plans and methods of blasting prior to proceeding with the work. As part of his review of the Contractor's plan, the Engineer may designate an exploratory area of rock excavation to which the Contractor will confine this initial drilling and blasting operation. No additional drilling or blasting will be performed until the Engineer examination of the blasting effects has been completed and the original plan of operations reaffirmed or revised in writing, based on the Engineer.

D. Approval of methods and procedures for initiating the work, as well as meeting the herein stated maximum peak particle velocity and overpressure requirements, will not relieve the Contractor of his responsibilities in connection with the work, safety, or direct or indirect damages to existing or new structures. All damage caused by

Contractor's blasting operations shall be repaired to the full satisfaction of the Town at no additional cost to the Owner.

E. Blasting shall be done by experienced powdermen who are licensed to use explosives. Accurate records shall be maintained, noting the location of each blast, time of detonation, total explosive weight in each blast, maximum explosive weight per delay in each blast hole, and designation of delay cap used in each hole.

F. The Contractor shall take all precautions necessary to warn and/or protect any individuals exposed to his operations prior to any blasting. Blasting mats or other approved flyrock protection will be employed for all blasting.

G. Contractor shall use controlled blasting procedures to meet the requirements of this specification and to prevent overblast and fracture damage to rock remaining in place, particularly where such rock is supporting structures or utilities. Controlled blasting procedures shall include, but are not limited to, line drilling and presplit blasting.

H. Non-explosive demolition and rock excavation techniques will be required where the Contractor is unable to satisfy the requirements of this Section with explosive techniques. Such non-explosive techniques shall include, but not be limited to, the use of jackhammers and expanding chemical demolition agents.

I. The amount of vibration and overpressure generated by blasting shall not exceed regulatory statutes or directives established by State, Town or other authorities. In no case shall the peak particle velocity generated by blasting exceed one (1) inch per second as measured at the property line, nor shall the overpressure be greater than 140 decibels. Additionally, peak particle velocities experienced by freshly placed concrete shall be controlled to the following limits:

Elapsed Time After Casting	Maximum Peak Particle Velocity
0 to 2 Hours	0.1 inch per second
2 to 24 Hours	0.5 inch per second
24 to 72 Hours	1 inch per second
more than 72 Hours	2 inches per second

3.09 DEWATERING

A. Construction Dewatering shall comply with provisions and standards of all environmental permits and Section 01565 Temporary Water Control.

B. Prevent surface water from flowing into excavations.

C. Remove water to prevent softening of trenches, foundation bottoms, undercutting of footings, and soil changes detrimental to stability of subgrades and foundations. Provide and maintain pumps, well points, sumps and discharge lines, and other dewatering system components necessary to convey water away from excavations.

3.10 BACKFILL FOR UTILITY TRENCHES AND STRUCTURES

A. Bedding for Pipes: Place pipe on minimum 6" specified pipe bedding material in trench (minimum 8" in rock), fill simultaneously on each side of the pipe, for the full width of the trench to provide complete crushed stone bedding as shown on the plans for the bottom quadrant of the pipe.

B. Bedding for Box Culverts and Precast Channels: Place utility structures and box culverts on minimum 12" crushed stone foundation. Place and compact as specified.

C. Backfill for Pipes, Culverts, and Structures:

1. All backfill beneath areas not to be subsequently paved shall consist of suitable material excavated from the trench or, where suitable material is not available, ordinary borrow from offsite sources. The intent shall be to utilize excavated material whenever possible.

2. The Engineer may direct the Contractor to use ordinary borrow as backfill whenever, in the Engineer's opinion, the excavated material is unsuitable for reuse as backfill material.

3. The backfill material shall be spread and compacted in layers not exceeding eight inches (8") compacted thickness, except the last layer which shall be 4" in compacted depth.

3.11 COMPACTION

A. Percentage of Maximum Density Requirements: Compact each layer of fill, backfill and granular materials to not less than the following percentages of the maximum dry density as described by ASTM D1557 (Modified Proctor):

92 Percent	beneath disturbed areas which are to remain unpaved;
95 Percent	beneath structural components and beneath areas which are to be paved.

B. Equipment: Use power-driven hand tampers for compacting materials adjacent to structures and in trenches. Provide equipment capable of adding moisture to the soil material or for aerating the soil as determined necessary by moisture-density tests.

C. Moisture Conditioning: Uniformly apply water in such manner as to prevent free water appearing on the surface, either during or subsequent to compaction operations. Compaction by flooding is prohibited.

D. Re-fill, re-grade and re-finish any area that becomes unsatisfactory due to settling. All areas or portions thereof that do not meet minimum density requirements shall be reworked and compacted until they meet the project density requirements.

3.12 GRADING

A. General: Uniformly grade areas within limits of grading, including adjacent

transition areas. Finish surfaces within specified tolerances, compact with uniform levels or slopes between points where elevations are indicated, or between such points and existing grades.

B. Grading Tolerances: Plus or minus 0.1 foot of finished grade.

C. Placing Fill Materials: Place and compact fill materials so as to attain the indicated thicknesses uniformly, and grade to smooth transitions.

D. Placing Topsoil and Fine Grading:

1. Scarify sub-grade to depth of 2 inches before placing topsoil.

2. Contractor shall utilize previously stockpiled topsoil stripped from on-site locations unless specifically directed by the Engineer. All large, stiff clods, lumps, stones over three inches, brush, roots, stumps, litter and other foreign materials shall be removed from the topsoil prior to placement. Compaction shall be obtained by rolling or any method that produces satisfactory results and depressions caused by settlement or compaction shall be regraded to provide a smooth uniform even finished grade. If necessary on-site topsoil may be augmented with Topsoil Borrow.

3. Topsoil shall be evenly spread and compacted to a minimum thickness of 6 inches. Maximum depth of topsoil shall be 12 inches.

4. Do not handle topsoil in a wet or muddy state, or dump or spread in areas where subgrade is not in proper condition.

5. Unless otherwise noted, topsoil surface shall be 1/2 inch below top of header boards, walks, pavement, and utility structures.

3.13 CONTROL AND TESTING

A. The services of qualified geotechnical personnel will be engaged by the Contractor for the making of tests to determine the moisture-density relationships, and suitability of materials for compaction, for observing the installation and monitoring of the settlement platforms and for observation of the site preparation and the selection, placing, and compaction of the fill. In-place density and moisture content tests will be performed as required.

B. The Contractor shall cooperate with the testing personnel so as to permit proper observation and testing of the work without unnecessary delays.

C. Perform compaction testing as specified herein. Minimum testing frequency shall be two (2) tests per 200 linear feet of trench backfilled, one at approximately one-half the total backfill height, and one at top of backfill, or as otherwise determined by the Engineer.

3.14 TRENCHING THROUGH PAVEMENT

A. Trenching Through Newly Installed Pavement: Trenching through new pavement installed under this contract is prohibited. When trenching is necessary, contact Engineer for approval. Backfill full height of trench using compacted gravel borrow

or other materials as directed by Engineer.

B. Trenching through Existing Pavement: Backfill full height of trench using compacted gravel borrow.

3.15 CUTTING AND FILLING AROUND EXISTING TREES

A. Excavating, filling or grading within the branch drip line of trees that are to remain shall be performed as follows:

1. Trenching: Do not cut tree roots. Tunnel under or around by careful hand digging to prevent injury to roots.

2. Lowering Grades: Leave rounded mounds at tree, grading smoothly into lower level. Exposed or broken roots shall be cut clean, painted with tree paint and covered with 3 inches of fill.

3.16 DISPOSAL OF EXCESS AND UNSUITABLE MATERIAL

A. Excess or unsuitable excavated materials, including topsoil, waste materials, trash, debris, and previously-installed pipe and appurtenances shall become the property of the Contractor and shall be properly disposed of at off-site disposal areas in an appropriate location consistent with all local, state and federal regulations at no additional cost to the Town.

B. Burning on site is prohibited.

3.18 STREAMBED BORROW

A. General: Streambed borrow material shall be installed within the precast stream channel to create a natural stream substrate.

B. Placing Streambed Borrow:

1. Clean stream channel of loose aggregate, dust, laitance, dirt, oil grease by brush-hammering, chipping or brushing.
2. Thoroughly dampen the bottom of the concrete channel.
3. Pour non-shrink grout within channel to a depth of 4 inches.
4. Dump streambed borrow onto the non-shrink grout to the depth shown on design plans. Borrow shall be a consistent depth of approximately 8 inches.
5. Larger stones 14 to 20 inches in diameter shall be placed in a random fashion both laterally and vertically. Stones shall be placed at distances apart of between five and fifteen feet. Some of the stones shall be placed to extend above the finished stream profile at a distance of up to 1 foot.

3.18 MAINTENANCE

A. Protect areas graded to final subgrade elevations from traffic and erosion. Keep free of trash and debris. Repair and re-establish grades in settled, eroded and rutted areas to specified elevations.

B. Where settlement is noticeable during general project warranty period, remove surface pavement, lawn or other finish; backfill and compact with appropriate fill material as directed by geotechnical engineer; and replace surface treatment. Restore appearance, quality and conditions of surface or finish to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

PART 4 - COMPENSATION

4.01 METHOD OF MEASUREMENT

A. Excavation: Earth and Rock Excavation will be measured in their original position by the cross section method except that where such measurement is impractical the volume shall be measured by such other methods as the Engineer may determine. In calculating excavation, the sides of the excavation shall be considered vertical, from the bottom of the excavation to the surface. Horizontal excavation limits for pipes and box culverts have been denoted on the plans. Horizontal excavation limits for other structures shall be as detailed on the plans or if not detailed shall be 1 foot beyond the outside of the structure in rock or 2 feet beyond the outside of the structure in earth. When approved by the Engineer, excavation of unsuitable materials shall be measured in the original position. Excavation otherwise outside the limits prescribed for payment will be considered as for the Contractor's convenience and will not be included for payment in any excavation item, nor will the refilling of any such area be included under any item of filling material.

B. Borrow: Ordinary Borrow, Gravel Borrow, and Topsoil Borrow will be measured in place in their final compacted and trimmed condition. When this method of measurement is impractical, the Engineer and Contractor shall agree in writing to an alternate method of measurement.

C. Crushed Stone: Crushed stone complete in place shall be measured by the ton. The weight slips shall be countersigned by the Engineer upon delivery, and no weight slip not so countersigned shall be included for any payment under the Contract.

D. Streambed Borrow: Streambed borrow complete in place shall be measured by the ton. The weight slips shall be countersigned by the Engineer upon delivery, and no weight slip not so countersigned shall be included for any payment under the Contract.

E. Riprap: Riprap complete in place shall be measured by the ton. The weight slips shall be countersigned by the Engineer upon delivery, and no weight slip not so countersigned shall be included for any payment under the Contract.

F. Geotextile Fabric: Geotextile fabric shall be measured by the square foot of fabric laid in place. All overlap of geotextile fabric shall be incidental to the placement of the fabric and shall not be measured.

G. Measurement of fill materials will not include any material placed outside a vertical plane defined by the bottom of excavation as shown on the

Drawings. Fill placed outside these limits will be considered as for the Contractor's convenience and will not be measured or paid for separately.

4.02 BASIS OF PAYMENT

A. Earth Excavation will be paid for at the contract unit price per cubic yard, complete in place, and shall include all backfilling of excavations using suitable excavated material or borrow, compaction and the respreading of onsite topsoil, grading and fine grading. Backfilling material when not using excavated material will be paid for at the contract unit price for the material authorized to be used.

B. Rock Excavation will be paid for at the contract unit price per cubic yard, complete in place, and shall include all backfilling of excavations using suitable excavated material or borrow. Backfilling material when not using excavated material will be paid for at the contract unit price for the material authorized to be used.

C. Ordinary Borrow will be paid for at the contract unit price per cubic yard, complete in place.

D. Gravel Borrow will be paid for at the contract unit price per cubic yard, complete in place and accepted.

E. Crushed Stone will be paid for at the contract unit price per ton, complete in place and accepted.

F. Topsoil Borrow will be paid for at the contract unit price per cubic yard, complete in place and accepted.

G. Riprap will be paid for at the contract unit price per ton, complete in place and accepted, including all geotextile fabric as required by the plans.

H. Streambed Borrow will be paid for at the contract unit price per ton, complete in place and accepted.

I. Geotextile Fabric will be paid for at the contract unit price per square yard, complete in place and accepted.

4.03 PAYMENT ITEMS

Pay Item	Description	Pay Unit
02200-1	Earth Excavation	Cubic Yard
02200-2	Rock Excavation	Cubic Yard
02200-3	Ordinary Borrow	Cubic Yard
02200-4	Gravel Borrow	Cubic Yard
02200-5	Processed Gravel Borrow	Cubic Yard
02200-6	Crushed Stone	Ton
02200-7	Topsoil Borrow	Cubic Yard
02200-8	Riprap	Ton
02200-9	Streambed Borrow	Ton
02200-10	Geotextile Fabric	Square Yard

THERE ARE NO OTHER PAY ITEMS UNDER THIS SECTION.

PAYMENT FOR OTHER WORK REQUIRED BY THIS SECTION SHALL BE INCLUDED IN THE CONTRACT UNIT PRICES OF THESE ITEMS.

*******END OF SECTION*******

Attachment 2: SECTION C-410, BID FORM FOR CONSTRUCTION CONTRACT

BID FORM FOR CONSTRUCTION CONTRACT

The terms used in this Bid with initial capital letters have the meanings stated in the Instructions to Bidders, the General Conditions, and the Supplementary Conditions.

ARTICLE 1—OWNER AND BIDDER

1.01 This Bid is submitted to: **Town of Milford Board of Selectmen; Milford Town Hall; 52 Main Street; Milford, Massachusetts 01757-2679**

1.02 The undersigned Bidder proposes and agrees, if this Bid is accepted, to enter into an Agreement with Owner in the form included in the Bidding Documents to perform all Work as specified or indicated in the Bidding Documents for the prices and within the times indicated in this Bid and in accordance with the other terms and conditions of the Bidding Documents.

ARTICLE 2—ATTACHMENTS TO THIS BID

2.01 The following documents are submitted with and made a condition of this Bid:

A. Required Bid security;

B. List of Proposed Subcontractors;

C. List of Proposed Suppliers;

D. Evidence of authority to do business in the state of the Project; or a written covenant to obtain such authority within the time for acceptance of Bids;

E. Contractor's license number as evidence of Bidder's State Contractor's License or a covenant by Bidder to obtain said license within the time for acceptance of Bids;

F. Required Bidder Qualification Statement with supporting data; and

ARTICLE 3—BASIS OF BID—LUMP SUM BID AND UNIT PRICES

3.01 *Lump Sum Bids*

A. Bidder will complete the Work in accordance with the Contract Documents for the following lump sum (stipulated) price(s), together with any Unit Prices indicated in Paragraph 3.02:

1. Lump Sum Price (Single Lump Sum)

01500-1 Temporary Facility & Control	$
01500-2 Temporary Project Signage	$
01560-1 Temporary Sediment & Erosion Control	$
01565-1 Temporary Water Control	$
02020-1 Mobilization	$
02100-1 Site Preparation & Demolition	$
02800-2 Trash Rack Improvements	$
02970-1 Site Restoration	$
Total for all Lump Sum	**$**

3.02 *Unit Price Bids*

A. Bidder will perform the following Work at the indicated unit prices:

Item No.	Description	Unit	Estimated Quantity	Bid Unit Price	Bid Amount
02200-1	Earth Excavation	CY	610		$
02200-2	Rock Excavation	CY	10		$
02200-3	Ordinary Borrow	CY	100		$
02200-4	Gravel Borrow	CY	760		$
02200-5	Processed Gravel Borrow	CY	90		$
02200-6	Crushed Stone	TON	450		$
02200-7	Topsoil Borrow	CY	20		$
02200-8	Riprap	TON	5		$
02200-9	Streambed Borrow	TON	110		$
02200-10	Geotextile Fabric	SY	650		$
02230-1	Handling, Loading, Transporting and Disposal of Type A – MCP Regulated Soil – Re-Use at Unlined Landfill	TON	1		$
02230-2	Handling, Loading, Transportation and Disposal of Type B – MCP Regulated Soil – Re-Use at Lined Landfill	TON	1		$
02230-3	Handling, Loading, Transportation and Disposal of Type C – MCP Regulated Soil – In-State Recycling	TON	1		$
02230-4	Handling, Loading, Transportation and Disposal of Type D – MCP Regulated Soil – Out of State Recycling/Disposal	TON	1		$
02230-5	Handling, Loading, Transportation and Disposal of Special Waste-Bulk	TON	1		$
02230-6	Handling, Loading, Transportation and Disposal of Special Waste-Pipe	LF	10		$
02500-1	Bituminous Concrete Paving	TON	150		$
02500-2	Concrete Sidewalks	SY	10		$
02720-1	12-Inch Reinforced Concrete Drainpipe	LF	60		$
02720-2	4-Inch Polyvinyl Chloride Drainage Pipe	LF	40		$
02720-3	Precast Deep Sump Catch Basin	EA	4		$
02720-4	Precast Area Drain	EA	4		$
02720-5	12-Inch Flanged Inline Check Valve	EA	4		$
02720-6	9'W x 5'H Precast Box Culvert	LF	40		$

02720-7	Precast U-Shaped Channel (6' Wide)	LF	451		$
02720-8	Precast U-Shaped Channel (Width Varies)	LF	81		$
02720-9	Membrane Waterproofing	SF	12,850		$
02800-1	Vehicle Access Bar Gate	EA	1		$
02910-1	Chain Link Fence	LF	520		$
02910-2	Guardrail, Steel W-Beam	LF	270		$
02970-2	Seeding	SY	1,300		$
03300-1	Cast-in-Place Concrete	CY	140		$
Total of All Unit Price Bid Items					$

B. Bidder acknowledges that:

1. each Bid Unit Price includes an amount considered by Bidder to be adequate to cover Contractor's overhead and profit for each separately identified item, and

2. estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids, and final payment for all Unit Price Work will be based on actual quantities, determined as provided in the Contract Documents.

3.03 *Total Bid Price (Lump Sum and Unit Prices)*

Total Bid Price (Total of all Lump Sum and Unit Price Bids)	$

ARTICLE 4—TIME OF COMPLETION

4.01 Bidder agrees that the Work will be substantially complete and will be completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions on or before the dates or within the number of calendar days indicated in the Agreement.

4.02 Bidder accepts the provisions of the Agreement as to liquidated damages.

ARTICLE 5—BIDDER'S ACKNOWLEDGEMENTS: ACCEPTANCE PERIOD, INSTRUCTIONS, AND RECEIPT OF ADDENDA

5.01 *Bid Acceptance Period*

A. This Bid will remain subject to acceptance for 60 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.

5.02 *Instructions to Bidders*

A. Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security.

5.03 *Receipt of Addenda*

A. Bidder hereby acknowledges receipt of the following Addenda

Addendum Number	Addendum Date

ARTICLE 6—BIDDER'S REPRESENTATIONS AND CERTIFICATIONS

6.01 *Bidder's Representations*

A. In submitting this Bid, Bidder represents the following:

1. Bidder has examined and carefully studied the Bidding Documents, including Addenda.
2. Bidder has visited the Site, conducted a thorough visual examination of the Site and adjacent areas, and become familiar with the general, local, and Site conditions that may affect cost, progress, and performance of the Work.
3. Bidder is familiar with all Laws and Regulations that may affect cost, progress, and performance of the Work.
4. Bidder has carefully studied the reports of explorations and tests of subsurface conditions at or adjacent to the Site and the drawings of physical conditions relating to existing surface or subsurface structures at the Site that have been identified in the Supplementary Conditions, with respect to the Technical Data in such reports and drawings.
5. Bidder has carefully studied the reports and drawings relating to Hazardous Environmental Conditions, if any, at or adjacent to the Site that have been identified in the Supplementary Conditions, with respect to Technical Data in such reports and drawings.
6. Bidder has considered the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and the Technical Data identified in the Supplementary Conditions or by definition, with respect to the effect of such information, observations, and Technical Data on (a) the cost, progress, and performance of the Work; (b) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, if selected as Contractor; and (c) Bidder's (Contractor's) safety precautions and programs.
7. Based on the information and observations referred to in the preceding paragraph, Bidder agrees that no further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract.
8. Bidder is aware of the general nature of work to be performed by Owner and others at the Site that relates to the Work as indicated in the Bidding Documents.
9. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and of discrepancies

between Site conditions and the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.

10. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.

11. The submission of this Bid constitutes an incontrovertible representation by Bidder that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.

6.02 *Bidder's Certifications*

A. The Bidder certifies the following:

1. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation.

2. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid.

3. Bidder has not solicited or induced any individual or entity to refrain from bidding.

4. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 8.02.A:

a. Corrupt practice means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process.

b. Fraudulent practice means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition.

c. Collusive practice means a scheme or arrangement between two or more Bidders, with or without the knowledge of Owner, a purpose of which is to establish bid prices at artificial, non-competitive levels.

d. Coercive practice means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the bidding process or affect the execution of the Contract.

BIDDER hereby submits this Bid as set forth above:

Bidder:

_____

(typed or printed name of organization)

By: _____

(individual's signature)

Name: _____

(typed or printed)

Title: _____

(typed or printed)

Date: _____

(typed or printed)

If Bidder is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.

Attest: _____

(individual's signature)

Name: _____

(typed or printed)

Title: _____

(typed or printed)

Date: _____

(typed or printed)

Address for giving notices:

_____

_____

Bidder's Contact:

Name: _____

(typed or printed)

Title: _____

(typed or printed)

Phone: _____

Email: _____

Address:

_____

_____

_____

Bidder's Contractor License No.: (if applicable) _____