

TOWN OF GLASTONBURY

INVITATION TO BID

<u>BID #</u>	<u>ITEM</u>	<u>DATE & TIME REQUIRED</u>
GL-2011-20	Multi-Use Path Smith School to Bell Street	January 18 th , 2011 at 11:00 A.M.

The Town of Glastonbury is currently seeking bids for the construction of approximately 5,400 linear feet of paved multi-use path, including associated grading, storm drainage, parking area, and pre-cast concrete boardwalk.

Prevailing Wages: The Contractor must comply with Section 31-53 of the Connecticut General Statutes as amended, including annual adjustments in prevailing wages.

DAS Prequalification: The Contractor shall hold a current "DAS Contractor Prequalification Certificate" (not a predetermination letter) from the Department of Administrative Services of the State of Connecticut under the contractor classification of "Sitework". Bidders shall submit with their bids a "DAS Contractor Prequalification Certificate" along with a current "Update (Bid) Statement". Any bid submitted without these items shall be invalid. If you have any questions regarding these requirements contact the State of CT DAS at (860)-713-5280 or visit their web site at www.das.state.ct.us.

Bid Forms, Plans, and Specifications may be obtained from the Town's website at www.glastonbury-ct.gov at no cost or at the Office of the Purchasing Agent, Town Hall, 2155 Main Street, Glastonbury, Connecticut 06033, (second level) for a non-refundable fee of \$100.

The Town reserves the right to waive informalities or reject any part of, or the entire bid, when said action is deemed to be in the best interests of the Town. All Sealed Bids must be submitted to the Office of the Purchasing Agent no later than the time and date indicated. All bids will be publicly opened and read.

Mary F. Visone
Purchasing Agent

TABLE OF CONTENTS

SECTION

[INVITATION TO BID](#)

IB

[INFORMATION FOR BIDDERS](#)

IB

[GENERAL CONSTRUCTION SPECIFICATIONS](#)

GCS

[SPECIAL CONDITIONS](#)

SC

[DETAILED CONSTRUCTION SPECIFICATIONS](#)

DCS

[BID PROPOSAL](#)

BP

ATTACHMENT A – PREVAILING WAGE RATE DOCUMENTATION

ATTACHMENT B – INLAND WETLANDS PERMIT

ATTACHMENT C – TOWN PLAN AND ZONING COMMISSION FLOOD ZONE PERMIT

ATTACHMENT D – DEPARTMENT OF THE ARMY PERMIT

ATTACHMENT E – 401 WATER QUALITY CERTIFICATION

ATTACHMENT F – GEOTECHNICAL INVESTIGATION REPORT

ATTACHMENT G – MODEL DRILLED SHAFT SPECIFICATION FOR FOUNDATION SYSTEM DESIGN

ATTACHMENT H – CONSTRUCTION PLANS

**MULTI-USE PATH SMITH SCHOOL TO BELL STREET
INFORMATION FOR BIDDERS**

BID #GL-2011-20

1. Sealed bids **(one original and one copy)** on the attached Bid Forms will be received at the Office of the Purchasing Agent, Town Hall, 2155 Main Street, Glastonbury, Connecticut 06033 (second level). At the designated time of opening, they will be publicly opened, read, recorded and placed on file.
2. Whenever it is deemed to be in the best interest of the Town, the Town Manager, Purchasing Agent or designated representative shall waive informalities in any and all bids. The right is reserved to reject any bid, or any part of any bid, when such action is deemed to be in the best interest of the Town of Glastonbury.
3. The award will be on the basis of bid total cost unless otherwise specified. The bid total cost shall be arrived at by the mathematical calculation of the unit price multiplied times the number of units specified for each line item, and the total sum of all line items in the bid. In the event that the Town finds computational errors in a respondent's bid proposal, the bid total cost shall be recalculated by the Town based on the unit prices contained in the bid proposal.
4. Bids will be carefully evaluated as to conformance with stated specifications.
5. The envelope enclosing your bid should be clearly marked by bid number, time of bid opening, and date.
6. Specifications must be submitted complete in every detail and, when requested, samples shall be provided. If a bid involves any exception from stated specifications, they must be clearly noted as exceptions, underlined, and attached to the bid.
7. The Bid Documents contain the provisions required for the requested item. Information obtained from an officer, agent, or employee of the Town or any other person shall not affect the risks or obligations assumed by the Bidder or relieve him/her from fulfilling any of the conditions of the bid.
8. Each Bidder is held responsible for the examination and/or to have acquainted themselves with any conditions at the job site which would affect their work before submitting a bid. Failure to meet this criteria shall not relieve the Bidder of the responsibility of completing the bid without extra cost to the Town of Glastonbury.
9. 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. No Bidder may withdraw a bid within sixty (60) days after the actual date of the opening thereof. Should there be reasons why a bid cannot be awarded within the specified period, the time may be extended by mutual agreement between the Town and the Bidder.
10. Each bid must be accompanied by a bid bond payable to the Town for ten percent (10%) of the total amount of the bid. The bid bond of the successful Bidder will be retained until the payment bond and performance bond have been executed and approved, after which it will be returned. A certified check may be used in lieu of a bid bond. The Town of Glastonbury will not be liable for the accrual of any interest on any certified check submitted. Cashier's checks will not be accepted.
11. A 100% Performance and Payment bond are required of the successful bidder. This bond shall cover all aspects of the specification and shall be delivered to the Purchasing Agent prior to the issuance of a purchase order. The Performance and Payment Bond will be returned upon the delivery and acceptance of the bid items.
12. The Bidder agrees and warrants that in the submission of this sealed Bid, they will not discriminate or permit discrimination against any person or group of persons on the grounds of

race, color, religion, national origin, sex, or physical disability including, but not limited to blindness, unless it is shown by such Bidder that such disability prevents performance of that which must be done to successfully fulfill the terms of this sealed Bid or in any manner which is prohibited by the laws of the United States or the State of Connecticut: and further agrees to provide the Human Relations Commission with such information requested by the Commission concerning the employment practices and procedures of the Bidder. An Affirmative Action Statement will be required by the successful Bidder.

13. Bidder agrees to comply with all of the latest Federal and State Safety Standards and Regulations and certifies that all work required in this bid will conform to and comply with said standards and regulations. Bidder further agrees to indemnify and hold harmless the Town for all damages assessed against the Town as a result of Bidder's failure to comply with said standards and/or regulations.
14. All correspondence regarding any purchase made by the Town of Glastonbury shall reference the Town's purchase order number. Each shipping container shall clearly indicate both Town purchase order number and item number.
15. Bidder is required to review the Town of Glastonbury Code of Ethics adopted July 8, 2003 and effective August 1, 2003. Bidder shall acknowledge that they have reviewed the document in the area provided on the bid/proposal response page (BP). The selected Bidder will also be required to complete and sign an Acknowledgement Form prior to award. The Code of Ethics and the Consultant Acknowledgement Form can be accessed at the Town of Glastonbury website at www.glastonbury-ct.gov. Upon entering the website click on **General Information**, then **Bids and Quotes** which will bring you to the links for the **Code of Ethics** and the **Consultant Acknowledgement Form**. If the Bidder does not have access to the internet, a copy of these documents can be obtained through the Purchasing Department at the address listed within this bid/proposal.
16. **Non-Resident Contractors:** The Town is required to report names of non-resident (out-of-State) contractors to the State of Connecticut, Department of Revenue Services (DRS) to ensure that Employment Taxes and other applicable taxes are being paid by Contractors. **Upon award, all non-resident contractors must furnish a five percent (5%) sales tax guarantee bond (State Form AU-766) or a cash bond for five percent (5%) of the total contract price (State Form AU-72) to DRS even though this project is exempt from most sales and use taxes.**

See State Notice to Non-Resident Contractors SN 2005 (12). If the above bond is not provided, the Town is required to withhold five percent (5%) from the contractor's payments and forward it to the State DRS. The contractor must promptly furnish to the Town a copy of the **Certificate of Compliance** issued by the State DRS.
17. Bidder shall include on a sheet(s) attached to its proposal a complete disclosure of all past and pending mediation, arbitration and litigation cases that the bidder or its principals (regardless of their place of employment) have been involved in for the most recent five years. Please include a statement of the issues in dispute and their resolution. Acceptability of Bidder based upon this disclosure shall lie solely with the Town.
18. Bidder or its principals, regardless of their place of employment, shall not have been convicted of, nor entered any plea of guilty, or nolo contendere, or otherwise have been found civilly liable or criminally responsible for any criminal offense or civil action. Bidder shall not be in violation of any State or local ethics standards or other offenses arising out of the submission of bids or proposals, or performance of work on public works projects or contracts.
19. It is the responsibility of the bidder to check the Town's website before submitting bid for addendums posted prior to bid opening.

20. **Prevailing Wage Rates:** Respondents shall comply with State Statutes concerning Employment and Labor Practices, if applicable, and Section 31-53 of the Connecticut General Statutes, as amended (Prevailing Wages). Wage Rate Determination for this project from the State of Connecticut is included in the Bid Documents. Certified payrolls for site labor shall be submitted weekly to the Town's Representative or his designee on the correct State of Connecticut form (see RFP). The Town reserves the right to, without prior notice, audit payroll checks given to workers on site in order to ascertain that wages and fringe benefits are being paid as required by the State of Connecticut. Please make special note of the State requirement to adjust wage and fringe benefit rates on each July 1st following the original published rates.

NOTE that respondent is to include in its proposal all costs required by such annual increases in the PREVAILING RATES. NO escalation clauses are to be included in the respondent's proposal and NO escalation clauses will be in the Contract Agreement. Respondent is to anticipate any future increases and include these costs in the proposal response.

Contractor's invoices will not be paid if certified payrolls are incomplete, incorrect or not received in a timely manner.

All Apprentices must be registered with the State of Connecticut and their number shall not exceed the number allowed by law. Otherwise, all workers must be paid at least the Journeyman rate listed including benefits.

OSHA SAFETY AND HEALTH CERTIFICATION: Effective July 1, 2009: Any Mechanic, Laborer, or Worker, who performs work in a classification listed on the prevailing wage rate schedule on any public works project covered under C.G.S. Section 31-53, both on site and on or in the public building, must have completed a federal OSHA Safety and Health course within the last 5 years.

21. **Copeland Anti-Kickback Act:** The bidder shall comply with the Copeland Anti-Kickback Act (18 U.S.C. 874) as supplemented in Department of Labor Relations (29 CFR, Part 3.). This act provides that the Contractor is prohibited from inducing, by any means, any person employed in the construction, completion, or repair of public work, to give up any part of the compensation to which he is otherwise entitled.
22. **DAS Contractor Prequalification:** The Contractor shall hold a current "DAS Contractor Prequalification Certificate" (not a predetermination letter) from the Department of Administrative Services of the State of Connecticut under the contractor classification of "Sitework". Bidders shall submit with their bids a "DAS Contractor Prequalification Certificate" along with a current "Update (Bid) Statement". Any bid submitted without these items shall be invalid. If you have any questions regarding these requirements contact the State of CT, DAS at (860)-713-5280 or visit their web site at www.das.state.ct.us.
23. Each bid shall also include a description of three (3) projects completed by the bidder with references to demonstrate successful experience with similar projects.

IMPORTANT: Failure to comply with general rules may result in disqualification of the Bidder.

**MULTI-USE PATH SMITH SCHOOL TO BELL STREET
INFORMATION FOR BIDDERS**

BID #GL-2011-20

NOTE: Any technical questions regarding this bid shall be made **in writing** (email acceptable) and directed to Daniel A. Pennington P.E., Town Engineer / Manager of Physical Services, 2155 Main Street, PO Box 6523, Glastonbury, CT 06033; daniel.pennington@glastonbury-ct.gov. Fax (860) 652-7734 between the hours of 8:00 a.m. – 4:30 p.m. For administrative questions concerning this bid/proposal, please contact Mary F. Visone, Purchasing Agent, at (860) 652-7588. All questions, answers, and/or addenda, as applicable will be posted on the Town's website at www.glastonbury-ct.gov. (Upon entering the website click on Bids & RFP's). The request must be received at least five (5) business days prior to the advertised response deadline. **It is the respondent's responsibility to check the website for addenda prior to submission of any bid/proposal.**

01.00 WORKMANSHIP, MATERIALS AND EMPLOYEES

01.01 Wherever in this contract the word "Engineer" is used, it shall be understood as referring to the Town Engineer/Manager of Physical Services of the Town of Glastonbury acting personally or through any assistants duly authorized.

01.02 The entire work described herein shall be completed in accordance with the plans and specifications to the full intent and meaning of the same. Unless otherwise specified, all materials incorporated in the permanent work shall be new, and both workmanship and material shall be of good quality. The Contractor shall, if required, furnish satisfactory evidence as to the kind and quality of materials.

01.03 The wording "furnish", "install", "construct", "furnish and install", or any similar terms, unless specifically noted to the contrary, shall include all labor, materials, water, tools, equipment, light, power, transportation, and any other services required for the completion of the work.

01.04 The Contractor shall at all times enforce strict discipline and good order among his employees, and shall seek to avoid employing on the work any unfit person or anyone not skilled in the work assigned to him.

02.00 SUPERINTENDENT

02.01 The Contractor shall keep on the work during its progress, in the absence of the Contractor, a competent Superintendent. The Superintendent shall be acceptable to the Engineer and shall fully represent the Contractor. All directions given to the Superintendent shall be binding as if given to the Contractor.

03.00 PRECONSTRUCTION MEETING

03.01 A Preconstruction Meeting will be held with the Engineer, Contractor, and any private utility company prior to commencing any work. The Engineer shall arrange the meeting based on a mutually convenient time.

04.00 PERMITS

04.01 Other than local permits, all permits, licenses, and fees required for the performance of the Contract work shall be secured and paid for by the Contractor.

05.00 PROPERTY ACCESS

05.01 The Contractor shall take all proper precautions to protect from injury or unnecessary interference, and provide proper means of access to abutting property where the existing access is cut off by the Contractor.

05.02 The Contractor shall take all proper precautions to protect persons from injury or unnecessary inconvenience and leave an unobstructed way along the public and private places for travelers, vehicles, and access to hydrants.

05.03 The Contractor shall make arrangements with the adjacent property owners for such trespass as he may reasonably anticipate in the performance of the work. All such arrangements shall be reported, in writing, to the Engineer.

06.00 PROTECTION OF THE PUBLIC AND OF WORK AND PROPERTY

06.01 The Contractor shall continuously maintain adequate protection of all work from damage, and shall take all reasonable precautions to protect the Town from injury or loss arising in connection with the Contract.

06.02 The Contractor shall adequately protect adjacent private and public property as provided by law and the Contract Documents.

06.03 The Contractor shall make good any damage, injury, or loss of his work and to the property of the Town resulting from lack of reasonable protective precautions.

07.00 EXISTING IMPROVEMENTS

07.01 The Contractor shall conduct his work so as to minimize damage to existing improvements. Except where specifically stated otherwise in the specifications, drawings, or as directed by the Engineer, it will be the responsibility of the Contractor to restore to their original condition, as near as practical, all improvements on public or private property. This shall include:

- a. Property within and adjacent to the side of installation such as shrubs, walks, driveways, fences, etc.
- b. Utility mains, ducts, poles, and services. The Contractor is hereby notified that utilities, if/where shown on the plans, are at approximate locations. These locations are subject to possible errors in the source of information and errors in transcription. The Contractor shall make certain of the exact location of all mains, ducts, poles, and services prior to excavation.

08.00 SEPARATE CONTRACTS

08.01 The Engineer reserves the right to let other contracts in connection with this work. The Contractor shall afford other contractors reasonable opportunity for the introduction and storage of their materials and the execution of their work, and shall properly connect and coordinate his work with theirs. Wherever work being done by the Town of Glastonbury forces or by other contractors is contiguous to work covered by this Contract, the respective rights of the various interests involved shall be established by the Engineer to secure the completion of the various portions of the work.

09.00 INSPECTION OF WORK

09.01 The Town shall provide sufficient personnel for the inspection of the work.

09.02 The Engineer shall at all times have access to the work whenever it is in preparation or progress, and the Contractor shall provide proper facilities for such access and for inspection.

09.03 If the specifications or the Engineer's instructions require any work to be specially tested or approved, the Contractor shall give the Engineer timely notice of its readiness for inspection and, if the inspection is by another authority other than the Engineer, of the date fixed for such inspection. Inspections by the Engineer shall be made promptly. If any work should be covered up without approval or consent of the Engineer, it must, if required by the Engineer, be uncovered for examination and properly restored at the Contractor's expense.

09.04 Reinspection of any work may be ordered by the Engineer. If such work is found to be in accordance with the Contract Documents, the Town shall pay the cost of reinspection and replacement. If such work is not in accordance with the Contract Documents, the Contractor shall pay such cost.

10.00 RIGHT TO INCREASE OR DECREASE WORK

10.01 The Town shall have the right to increase or decrease the amount of work herein specified as may be required.

11.00 RIGHT OF ENGINEER TO STOP WORK FOR WEATHER CONDITIONS

11.01 Should the work, in the opinion of the Engineer, be in danger by reason of inclemency of weather, or could not be finished in time to prevent such danger, the Contractor shall cease operations upon order of the Engineer, and shall not resume them until ordered to do so by the Engineer when the weather conditions are favorable. The Contractor shall, upon such orders, discontinue work, remove all materials or appliances for or in use upon the work, and place the streets in proper condition for use by the public during the time the work is suspended as herein provided, without cost to the Town.

12.00 CONTRACTOR TO BE RESPONSIBLE FOR IMPERFECT WORK OR MATERIALS

12.01 Any faithful work or imperfect material that may be discovered before the acceptance and the payment of the work shall be corrected upon the order of the Engineer. The acceptance and payment of the work does not in any manner relieve the Contractor of his obligation to construct work in the proper manner and the use of materials herein specified.

13.00 TOWN MAY NOTIFY CONTRACTOR IF WORK IS NOT CARRIED ON SATISFACTORILY

13.01 If, in the opinion of the Engineer, the Contractor is not proceeding with the work at a sufficient rate of progress so as to finish in the time specified, or has abandoned said work, or is not complying with the terms and stipulations or the Contract and specifications, the Engineer may serve notice on the Contractor to adopt such methods as will ensure the completion of the work in the time specified.

13.02 If, within five days after the Engineer has notified the Contractor that his work is not being carried on satisfactorily as before mentioned, the Engineer shall have the right to annul the Contract and manage the work under the direction of the Engineer, or re-let, for the very best interest of the Town as a new contract, the work under said new Contract shall be considered the responsibility of the defaulting Contractor.

13.03 Additional costs incurred over and above the original Contract shall be borne by the Performance Bond.

14.00 DEDUCTIONS FOR UNCORRECTED WORK

14.01 If the Engineer deems it inexpedient to correct work that has been damaged or that was not done in accordance with the Contract, an equitable deduction from the Contract price shall be made therefor.

14.02 The Contractor shall promptly remove from the premises all materials condemned by the Engineer as failing to meet Contract requirements, whether incorporated in the work or not, and the Contractor shall promptly replace and re-execute his own work in accordance with the Contract and without expense to the Town, and shall bear the expense of making good all work by other contractors destroyed or damaged by such removal or replacement.

14.03 If the Contractor does not remove such condemned work and materials as promptly as possible after written notice, the Engineer may remove them and store the materials at the expense of the Contractor.

15.00 CLEANING UP

15.01 The Contractor must remove all debris of every description as the work progresses and leave the surroundings in a neat and orderly condition to the satisfaction of the Engineer.

15.02 Upon completion, and before acceptance and final payment, the Contractor shall remove from the site all equipment, forms, surplus material, rubbish and miscellaneous debris and leave the site in a neat and presentable condition.

16.00 ROYALTIES AND PATENTS

16.01 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 Town of Glastonbury harmless from loss on account thereof, except that the Town of Glastonbury shall be responsible for all such loss when a particular manufacturer, product, or process is specified by the Town of Glastonbury.

17.00 ACCESS TO CONTRACTOR RECORDS FOR AUDIT

17.01 The Contractor shall allow the State, Town, or other duly authorized representative access to any books, papers, and records of the Contractor for the purposes of making audit, examination, excerpts, and transcriptions.

01.00 NOTICE TO CONTRACTOR

- 01.01 Intent of Contract: The intent of the Contract is to prescribe a complete work or improvement that the Contractor undertakes to do, in full compliance with the specifications, plans, special provisions, proposal, and Contract. The Contractor shall perform all work in close conformity with the lines, grades, typical cross-sections, dimensions, and other data shown on the plans or as modified by written orders, including the furnishing of all materials, implements, machinery, equipment, tools, supplies, transportation, labor, and all other things necessary to the satisfactory prosecution and completion of the project.
- 01.02 The Contractor is hereby alerted to the fact that the State of Connecticut Department of Transportation Standard Specifications for Roads, Bridges and Incidental Construction, Form 816 (Form 816") and supplements thereto are to be considered part of the Contract Documents. The Form 816 shall not be provided by the Town and any cost associated therewith shall be the responsibility of the Contractor. In case of any discrepancy between the Contract Drawings or Specifications and the Form 816, the matter shall immediately be submitted to the Engineer. The Engineer shall have sole authority in resolving any discrepancies.
- 01.03 **Protection of State Listed Species of Special Concern Eastern Box Turtle**: The Contractor is hereby made aware that the wetland permit issued for this project requires that this construction work be conducted in such a manner as to protect this turtle from harm during construction activities. The Contractor will be required to strictly adhere to these permit guidelines, including: searching work areas each morning before starting equipment to ensure that no turtles are within the travel paths or work areas; relocating turtles away from the construction area; notifying Town staff of the location that turtles have been found; closing off construction staging areas with silt fence at night to prevent turtles from accessing these areas, and other related items as described in the wetlands permit. This work will not be measured and paid for separately, but rather will be included in the general cost of the project.
- 01.04 Much time and effort has gone into this project in an effort to minimize impact on trees and adjacent properties. The Contractor is hereby made aware that trees along the project corridor must be protected from damage as described in Section 002.0 Preparation of Site, including installation of high-visibility construction fence or other measures as approved by the Engineer. Trimming of tree limbs that conflict with equipment operations must also be completed to raise the canopy as required for passage of construction equipment without damaging tree limbs, as described in Section 002.0 Preparation of Site. Extreme care shall be taken by the Contractor to honor commitments made by the Town. Prior to doing any work, the Contractor shall meet with the Engineer to become familiar with the conditions encountered and commitments made.
- 01.05 The Contractor is hereby alerted to the fact that the proposed width of the multi-use path is not intended to accommodate two-way construction traffic. As such, construction vehicles will be required to use approved construction turnouts at various trail junction locations and construction staging areas. Additional clearing beyond the limits noted in the contract to accommodate equipment will not be allowed. Long backing maneuvers will be required for construction vehicles over distances exceeding 500 feet between certain work areas and the closest approved construction turn-out.
- 01.06 The Contractor is hereby alerted to the fact that **no truck traffic** will be permitted to access the project area through the Smith Middle School property on school days during the hours of peak operation between 7:15 and 8:30 A.M. and between 2:00 and 3:15

P.M. The Contractor is also notified that students will be crossing the main school driveway for access to school athletic fields during normal hours of school operation. As such, all construction traffic shall strictly obey posted speed limits when traveling through the school grounds.

02.00 COMMUNICATIONS

02.01 All notices, demands, requests, instructions, approvals, proposals, and claims must be in writing.

02.02 Any notice to, or demand upon, the Contractor shall be sufficiently given if delivered at the office of the Contractor stated on the signature page of the Agreement (or at such other office as the Contractor may, from time to time, designate) in a sealed, postage-prepaid envelope or delivered with charges prepaid to any telegraph company for transmission, in each case addressed to such office.

02.03 All papers required to be delivered to the Town shall, unless otherwise specified in writing to the Contractor, be delivered to the Town Engineer/Manager of Physical Services, 2155 Main Street, Glastonbury, CT 06033, and any notice to, or demand upon, the Town shall be delivered at the above address in a sealed, postage-prepaid envelope or delivered with charges prepaid to any telegraph company for transmission, in each case addressed to such office or to such other representatives of the Town, or to such other address as the Town may subsequently specify in writing to the Contractor for such purpose.

02.04 Any such notice shall be deemed to have been given as of the time of actual delivery or, in case of mailing, when the same should have been received in due course of post or, in the case of telegrams, at the time of actual receipt, as the case may be.

03.00 PARTIAL USE OF IMPROVEMENTS

03.01 The Town may, at its election, give notice to the Contractor and place in use those sections of the work that have been completed, inspected and can be accepted as complying with the Contractor Documents and if, in its opinion, each such section is reasonably safe and fit for the use and accommodation for which it was intended, provided:

- a. The use of such sections of the work shall not materially impede the completion of the remainder of the work by the Contractor.
- b. The Contractor shall not be responsible for any damages or maintenance costs due directly to the use of such sections.
- c. The use of such sections shall in no way relieve the Contractor of his liability due to having used defective materials or to poor workmanship.
- d. The period of guarantee shall not begin until the date of the final acceptance of all work required under this Contract.

04.00 INSURANCE

04.01 The Contractor shall, at its own expense and cost, obtain and keep in force during the entire duration of the Project or Work the following insurance coverage covering the

Contractor and all of its agents, employees and sub-contractors and other providers of services and shall name **the Town and Board of Education** on a primary and non-contributory basis to the Bidders Commercial General Liability and Automobile Liability policies. **These requirements shall be clearly stated in the remarks section on the Contractors Certificate of Insurance.** Insurance shall be written with Carriers approved in the State of Connecticut and with a minimum Best's Rating of A-. In addition, all Carriers are subject to approval by the Town. Minimum Limits and requirements are stated below:

a. Worker's Compensation Insurance:

- Statutory Coverage
- Employer's Liability
- \$100,000 each accident/\$500,000 disease-policy limit/\$100,000 disease each employee

b. Commercial General Liability:

- Including Premises and Operations, Products and Completed Operations, Personal and Advertising Injury, Contractual Liability and Independent Contractors
- Limits of Liability for Bodily Injury and Property Damage
Each Occurrence: \$1,000,000
Aggregate: \$2,000,000
(The Aggregate Limit shall apply separately to each job.)
- A Waiver of Subrogation shall be provided.

c. Automobile Insurance:

- Including all owned, hired, borrowed, and non-owned vehicles
- Limit of Liability for Bodily Injury and Property Damage
Per Accident: \$1,000,000

d. Umbrella Liability:

- Limits of Liability in excess of Employer's Commercial General Liability and Automobile Liability:
Each Occurrence: \$5,000,000
Aggregate: \$5,000,000

04.02 The Bidder shall direct its Insurer to provide a Certificate of Insurance to the Town before any work is performed. The Contractor shall be responsible to notify the Town 30 days in advance with written notice of cancellation or non-renewal. The Certificate shall evidence all required coverage including the Additional Insured and Waiver of Subrogation. The Bidder shall provide the Town copies of any such insurance policies upon request.

04.03 INDEMNIFICATION: To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Town, the Board of Education, and their consultants, agents, and

employees from and against all claims, damages, losses and expenses, direct, indirect or consequential (including but not limited to fees and charges of engineers, attorneys and other professionals and court and arbitration costs) arising out of or resulting from the performance of the Contractor's work, provided that such claim, damage, loss or expense is caused in whole or in part by any negligent act or omission by the Contractor, or breach of its obligations herein or by any person or organization directly or indirectly employed or engaged by the Contractor to perform or furnish either of the services, or anyone for whose acts the Contractor may be liable, regardless of whether or not it is caused in part by a party indemnified hereunder.

05.00 WORK BY OTHERS

05.01 Private utilities, contractors, developers or other parties may be expected to be working within the Contract area during this Contract. It shall be the responsibility of the Contractor to coordinate his work with the work being done by others in order that the construction shall proceed in an efficient and logical manner. The Contractor shall have no claim or claims whatever against the Town, the Engineer, or other parties due to delays or other reasons caused by the work by others or his failure to coordinate such work.

06.00 CONTRACTOR'S WORK, STORAGE, AND STAGING AREAS

06.01 The Contractor shall contact the Town to determine if any specific locations will be designated, or gain its approval prior to using any area for storage of equipment, materials and trailers during the period of this Contract. The Contractor shall confine his work/storage area to the limits as designated or approved and shall be responsible for the security of the work/storage area. Upon completion of the Contract, the Contractor shall remove all equipment and materials, except as otherwise specified, and restore the site to its original condition as approved by the Engineer and at not cost to the Town.

07.00 DISPOSAL AREA

07.01 The Tryon Street Bulky Waste Facility will be available to the Contractor, at no charge, for disposal of materials that are accepted at that facility. Acceptable materials include brush, stumps, demolition materials, and excess excavated earth materials. Unacceptable materials are hazardous wastes such as pesticides, oil based paints and thinners, or other wastes as designated by the State Department of Environmental Protection. Demolition material cannot contain asbestos or other hazardous materials. The Contractor is required to obtain a disposal area for all other unsuitable or surplus materials at no cost to the Town.

08.00 DUST CONTROL

08.01 During the progress of the work, the Contractor shall conduct his operations and maintain the area of his activities so as to minimize the creation and dispersion of dust. If the Engineer decides that it is necessary to use water or calcium chloride for more effective dust control, the Contractor shall furnish and spread the material, as directed, without additional compensation.

09.00 MAINTENANCE / GUARANTEE PERIOD

09.01 The Contractor shall be held responsible to the Town for maintenance for a minimum of one-year following completion of all work under this Contract with respect to defects, settlements, etc.

10.00 PROTECTION OF EXISTING UTILITIES

10.01 Before starting any excavation, the Contractor shall submit to the Engineer plans or details showing the proposed method the Contractor will use to support and protect all existing utilities during construction. The furnishing of such plans and details shall not serve to relieve the Contractor of any responsibility for the proper conduct of the work.

10.02 There will be no extra payment for submitting plans or details for supporting and protecting all existing utilities during construction.

11.00 TIME FOR COMPLETION/NOTICE TO PROCEED

11.01 Within fourteen (14) calendar days after the date of the Notice of Award, the Contractor must provide the appropriate bond and insurance certificates to the Town Purchasing Agent and must be issued a Purchase Order for the Project prior to initiating any work.

11.02 The work under this Contract shall be substantially complete by August 15th, 2011.

12.00 LIQUIDATED DAMAGES

12.01 As actual damages for any delay in completion of the work that the Contractor is required to perform under this Contract are impossible to determine, the Contractor and the Sureties shall be liable for and shall pay to the Town the sum of \$100.00 as fixed, agreed and liquidated damages for each calendar day of delay from the above-stipulated completion, or completion as modified in writing by both parties, until such work is satisfactorily completed and accepted.

13.00 SCHEDULE OF DRAWINGS

13.01 The Contractor is hereby alerted that the plan set entitled "Proposed Multi-Use Path from Smith Middle School to Bell Street", including twenty one (21) plan sheets prepared by the Town of Glastonbury Engineering Division is to be considered part of these specifications.

14.00 CHANGES IN THE WORK

14.01 The Town reserves the right to perform portions of the work in connection with these plans and specifications. The reduction in the work to be performed by the Contractor shall be made without invalidating the Contract. Whenever work is done by the Town contiguous to other work covered by this Contract, the Contractor shall provide reasonable opportunity for the execution of the work and shall properly coordinate his work with that of the Town.

15.00 LAYOUT OF WORK

15.01 The Town shall provide stake-out of the work in accordance with the plans or as directed by the Engineer. The Contractor shall protect all stakes from damage or destruction and shall be responsible to assure that the grade stakes have not been altered prior to actual construction. The Town shall replace grade stakes that have been removed, at no cost to the Contractor, if their removal was caused by reasons beyond reasonable care and protection by the Contractor. If it is determined by the Engineer that the Contractor did not provide reasonable protection, the cost of restaking will be deducted from any amounts due the Contractor in the performance of the work.

16.00 REMOVAL AND STORAGE OF MATERIALS AND STRUCTURES FOUND ON THE WORK

16.01 All salvable materials, including topsoil, gravel, fill materials, etc. and structures, including drainage pipes, catch basins and manhole frames and covers, guide railing, etc. that are not to remain in place or that are not designated for use in the work, shall be carefully removed by the Contractor and stored at such places as directed by the Engineer. All salvable materials removed and stored shall remain the property of the Town. The Engineer shall determine the materials or structures to be salvaged.

17.00 PROSECUTION AND PROGRESS

17.01 The Contractor shall give the Engineer a seven-day advance written notice of construction activities that will alter traffic patterns that result in lane shifts, detours, temporary closures of lane(s), permanent closure of lane(s), or lane reductions. This advance notification will allow the Town to publish news releases and/or provide public radio announcements to inform the public of revised traffic patterns or possible traffic delays. Failure of the Contractor to provide such timely notice shall be considered a breach of Contract and will subject the Contractor to stop work orders until such time as the seven-day notice has been satisfied.

18.00 COMPLIANCE WITH ENVIRONMENTAL PERMITS

18.01 A Town of Glastonbury Inland Wetland Permit, Town Plan and Zoning Commission Flood Zone Permit, Department of the Army Permit, and Connecticut Department of Environmental Protection Flood Management Certification and 401 Water Quality Certification Permits were required for this project. These permits with associated conditions of approval are included as part of these bid documents. By submitting a bid, the Contractor confirms that they have read and are familiar with all of the required conditions of these permits and will conduct the work in a manner consistent with these requirements.

19.00 SUBMITTALS AND MATERIALS TESTING

19.01 The Contractor shall provide source and supply information, sieve analysis, and material samples for gravel subbase, process stone base, riprap, and other granular materials to the Town for review and approval. The Town shall retain a lab for testing of these materials as required and shall perform in place compaction testing at no expense to the Contractor.

- 19.02 Shop drawings / catalog cuts shall be provided by the Contractor for all pre-cast concrete structures, pipes and fittings, erosion control products, seed mixes, and other items to be supplied for review and approval by the Engineer as described in the specifications and the Form 816.
- 19.03 Mix designs for all bituminous and portland cement concrete materials shall be provided by the Contractor to the Engineer for review and approval.
- 19.04 Certified Materials Test Reports and Materials Certificates shall be provided for all other products and materials to be provided under this contract as described in these specifications and the Form 816.
- 19.05 The following additional plans are required to be submitted to the Engineer for approval as described in the specifications: Water Handling Plan per Section 003.0; Construction Plans, Specifications, and Calculations for Segmental Retaining Walls as per Section 240.0; Construction Plans, Specifications, and Calculations for the Pre-Cast Concrete Boardwalk as per Section 600.0.
- 20.00 EXTRA AND COST PLUS WORK**
- 20.01 Extra and cost plus work shall be governed by Article 1.04.05 and Article 1.09.04 of the Form 816.
- 21.00 RETAINAGE**
- 21.01 Retainage shall be governed by Article 1.09.06 of the Form 816, except that the retainage amount shall be equal to five (5) percent.

TABLE OF CONTENTS

SECTION	DESCRIPTION	PAGE
002.0	PREPARATION OF SITE	2
003.0	HANDLING WATER.....	4
004.0	TEST PITS	6
103.0	ROCK EXCAVATION AND DISPOSAL.....	7
106.0	EARTH EXCAVATION.....	12
107.0	FORMATION OF SUBGRADE	13
108.0	SUBBASE	14
109.0	PROCESSED STONE BASE	15
110.0	STONE DUST	16
112.0	BITUMINOUS CONCRETE CLASS 2 (30% RAP)	17
113.0	BITUMINOUS CONCRETE LIP CURBING	18
201.0	CONCRETE SIDEWALKS.....	19
204.0	GRADING AND TOPSOILING.....	21
205.0	TURF ESTABLISHMENT	22
206.0	MULCH	25
208.0	SEDIMENTATION BARRIER	26
210.0	TEMPORARY CONSTRUCTION ENTRANCE	27
228.0	TREE PROTECTION TRENCH AND ROOT BARRIER INSTALLATION.....	28
240.0	SEGMENTAL RETAINING WALL (SITE NO. 1, SITE NO. 2).....	29
250.0	THREE RAIL FENCE.....	36
260.0	TIMBER GUIDE RAIL AND TIMBER POSTS	38
270.0	REMOVABLE BOLLARDS	40
301.0	MAINTENANCE AND PROTECTION OF TRAFFIC	41
302.0	TRAFFICPERSON.....	43
310.0	TRAFFIC SIGNS.....	44
403.0	EARTH TRENCH EXCAVATION.....	45
404.0	TRENCH DEWATERING.....	51
405.0	BACKFILLING AND CONSOLIDATION	52
406.0	PIPES AND CULVERTS.....	56
407.0	CATCH BASINS AND DROP INLETS.....	57
409.0	CULVERT ENDS	58
410.0	UNDERDRAIN	59
420.0	RIPRAP	60
509.0	RESET MANHOLE	61
510.0	ADJUST GATE BOX.....	62
600.0	PRE-CAST CONCRETE BOARDWALK.....	63
700.0	TREES, SHRUBS, AND GROUND COVER PLANTS	70
702.0	INVASIVE PLANT ERADICATION	71

002.0 PREPARATION OF SITE

002.1 General: The Contractor shall furnish all labor, materials, tools, and equipment necessary and shall do all work to prepare the site as indicated on the drawings and as herein specified.

002.2 Tree Removal: Removal of trees as indicated on the plans shall be performed by workman skilled in the area of tree removal under the supervision of a Connecticut Licensed Arborist. The Contractor shall mark all trees, shrubs, and plants to be removed in accordance with the plans and these specifications. The Engineer shall have 7 days to field review the markings and make any adjustments prior to the start of the clearing operation.

Trees and shrubs within the right-of-way or within any property owned by the Town of Glastonbury that are designated for removal must be posted as such by the Glastonbury Tree Warden (Mr. Greg Foran of the Parks and Recreation Department, 652-7686) for a period of 10 days prior to removal. **No trees or shrubs within the Town of Glastonbury property shall be cut or removed until such posting has been completed and subsequent approval given by the Tree Warden.**

In general, no trees, etc. in public streets and highways are to be cut or damaged in any way except as noted on the plans. Trees, bushes, and growing crops on other lands may be cut, removed, or trimmed only to the extent provided in the terms of the rights-of-way or access rights possessed by the Town, and also only within the limits and in the manner, if any, indicated by the Engineer or by the drawings or Special Conditions.

002.3 Tree Trimming: Trimming of trees by a Connecticut Licensed Arborist is included under this item as required for clearance of construction equipment below the tree canopy, and to provide proper sight line for future users of the multi-use path to the limits shown on the plans. When the canopy of a tree must be elevated for clearance above the proposed improvements or to provide line of sight, trimming shall be done around the entire circumference of the tree.

002.4 Tree Protection and Care of Property: **The Contractor shall install high visibility construction fence at the drip line of the tree canopy and around other sensitive areas as shown on the plans and as directed by the Engineer. Temporary chain-link construction fence shall be installed by the Contractor in the rear parking lot of Smith Middle School to separate Construction Staging Area 1 from the remainder of the parking lot.**

The Engineer, at his sole discretion, may also direct the Contractor to enclose the trunks of trees adjacent to his work that are not to be cut with substantial wooden boxes of such height as may be necessary to protect them from injury from piled material, from equipment, from his operations, or otherwise due to his work. Excavating machinery and cranes shall be of suitable type and be operated with care to prevent injury to trees not to be cut, and particularly to overhanging branches and limbs.

Branches, limbs, and roots shall not be cut except by permission of the Engineer. All cutting shall be smoothly and neatly done without splitting or crushing. In case of cutting or unavoidable injury to branches, limbs, and trunks of trees, the cut or injured portions shall be neatly trimmed and covered with an application of grafting wax or tree-healing paint, as directed.

Cultivated hedges, shrubs, and plant that might be injured by the Contractor's operations shall be protected by suitable means or shall be dug up and temporarily replanted and

maintained. After the construction operations have been substantially completed, they shall be replanted in their original positions and cared for until growth is re-established. If cultivated hedges, shrubs, and plants are injured to such a degree as to affect their growth or diminish their beauty or usefulness, they shall be replaced by items of kind and quality at least equal to the kind and quality existing at the start of the work.

On paved surfaces, the Contractor shall not use or operate tractors, bulldozers, or other power-operated equipment, the treads of wheels that are so shaped as to cut or otherwise injure such surfaces.

- 002.5 Clearing: From areas to be cleared, the Contractor shall cut or otherwise remove all trees, saplings, brush, vines, and other vegetable matter such as snags, sawdust, bark, etc., and refuse. The area to be cleared shall be confined to the width shown on the plans or as stipulated in the Proposal. Vines, brush, and similar undergrowth shall be cut as close to the ground as practicable. Trees may be cut leaving a longer stump to facilitate their removal by power-operated equipment. No trees shall be cut or trimmed unless they are so indicated on the drawings.

Clearing shall also include removal and disposal of all items shown on the plans to be removed, or directed by the Engineer to be removed as part of the project, including, but not limited to, removal and disposal of existing concrete sidewalk, concrete steps, drainage structures, fences, and any and all other structures or materials not specifically listed in the Bid Proposal but required to be removed to accomplish the work.

All road signs, mail boxes, etc., shall be removed and reset as directed.

- 002.6 Grubbing: Grubbing shall consist of the complete removal of all tree stumps and roots larger than two inches in diameter to a minimum depth of 12-inches below the subgrade surface. All excavations made below the finished surface by the removal of trees, stumps, etc. shall be filled with suitable material and thoroughly compacted in such a manner that its surface will conform to the surrounding surface.

Stump grinding shall be used for stump removal where the potential for damage to adjacent improvements or underground utilities exists due to the excavation of stumps, or as directed by the Engineer. The requirements for grubbing noted above shall also apply to stump grinding operations.

- 002.7 Disposal: All materials removed during trimming, tree removal, and clearing and grubbing operations shall be disposed of by the Contractor in a manner satisfactory to the Engineer.

- 002.8 Payment: Except as provided otherwise in the Bid Proposal or Special Conditions, this work shall be paid for at the Contract Lump Sum Price for "Preparation of Site" which price shall include installation of high-visibility construction fence, temporary chain-link construction fence, protection of existing trees and vegetation, tree removal and tree trimming under the supervision of a Connecticut Licensed Arborist for equipment clearance and sight line, clearing and grubbing within the limits of the work, stump grinding, removal and disposal of trees, roots, stumps, brush, concrete steps, and other objects, leveling of areas to accommodate the work, and all labor, materials, tools, and equipment necessary thereto.

003.0 HANDLING WATER

003.1 Description: Work under this item shall consist of the construction of such temporary cofferdams, piping, flow diversions, barriers or other such protective facilities and methods as are necessary for redirecting, conducting, or controlling stream flow as may be necessary to perform all work within the vicinity of stream or wetland areas, the dewatering of the site on which the permanent work is to be constructed, and the removal of all such temporary structures and facilities upon the completion of the permanent work or as required.

The handling of water shall be in accordance with the requirements of Section 1.10 of the Form 816. For the purposes of this specification, such work shall be understood to mean any temporary type of protective facility which the Contractor elects to build or use to satisfy, and which does satisfy, the condition that the permanent structures be placed and built in the dry. The handling of flood flows and the protection of existing structures and any or all of the finished construction during high water, and protection of the stream from sedimentation are included in the scope of the work under this term.

003.2 Construction Methods: The Contractor shall investigate and verify existing stream conditions, and evaluate the need for, and the type of protection and facilities required. All facilities shall be in accordance with the local Inland Wetlands Permit, Department of the Army Permit, Department of Environmental Protection 401 Water Quality Certification and Flood Management Certification, and any other applicable permits. Before commencing construction, the Contractor shall furnish the Engineer with details of the plan and the methods he proposes to use for handling water and accomplishing the work, including computations to show that the proposed methods are capable of handling the required temporary design discharge. The furnishing of such plans, computations, and methods shall not relieve the Contractor of any of his responsibility for the safety of the work, effectiveness of the temporary protective structures and temporary dewatering facilities, and for the successful completion of the project.

The Contractor shall be aware that the approximate drainage basin area for Salmon Brook east of Bell Street is 5.90 square miles. The drainage basin area for the proposed culvert to be constructed at Station 49+66 is approximately 0.32 sq. miles. The required temporary design discharge for handling water at the location of the culvert is equal to the Average Spring Flow of 1.2 cubic feet per second.

The Contractor is warned that headwaters of these watercourses may quickly rise a substantial amount during a storm event. The Contractor shall monitor the weather forecast and plan his work accordingly.

The height of any cofferdams, flow diversions and barriers shall as shown on the plans or as elected by the Contractor to provide reasonable protection from flooding. The temporary cofferdams should be constructed in such a manner that they can easily be removed to allow for unimpeded stream flow, before any predicted major storm event, when it is anticipated that the resulting stream flow would exceed the capacity of pumps. All such temporary structures or facilities shall be safely designed, extended to sufficient depth and be of such dimensions and water-tightness so as to assure construction of the permanent work in the dry. However, if the stream flow during a storm event is unable to be conveyed by temporary systems before the permanent work is complete or as directed by the Engineer, the stream flow shall be allowed to pass through the work area. Work areas shall be sufficiently lined, cleaned, and sealed to protect against sedimentation of the stream, erosion, and damage to the permanent work. Water handling appurtenances shall not interfere with proper performance of the work. Their

construction shall be such as to allow excavation for the permanent work to the limits shown on the plans. Interior dimensions shall give sufficient clearance for construction and inspection forms.

Movements or failures of the temporary protection facilities, or any portions thereof, which prevents proper completion of the permanent work shall be corrected at the sole expense of the Contractor.

Any pumping from within the areas of construction shall be done in such a manner as to prevent the possibility of movement of water through any fresh concrete. No pumping will be permitted during the placing of concrete or for a period of 24 hours thereafter, unless it be done from a suitable sump properly located and with sufficient pumping capacity to protect against damage from sudden rising of water. Any pumped water must be discharged in accordance with the requirements of Section 1.10. Temporary facilities required for treatment of water in accordance with Section 1.10, including dewatering basins or sediment basins, shall be included in the contract unit price for handling water.

Unless otherwise provided, or directed, all such temporary protective work shall be removed and disposed of in an approved manner when no longer required.

The Contractor shall be responsible for the scheduling of work under this item so as not to interfere with any sequence of operations developed for this project. Delays as a result of work required under this item shall not constitute a claim for an extension of contract time.

003.3 Method of Measurement: This item, being paid on a lump sum basis, will not be measured for payment.

003.4 Basis of Payment: Payment for this item will be made at the contract lump sum price for "Handling Water", complete and accepted, which price shall include all tools, material, equipment, labor and work incidental to the construction; reconstruction; if required; dewatering, including pumping, handling stream flow during construction; the removal and disposal of all protective works or facilities; treatment and disposal of water removed from the construction in accordance with Section 1.10; damages incurred by the Contractor; and any damages to existing facilities and to the work in progress, damage to the stream environment and wildlife habitat, and damage to public or private property, materials or equipment from flows or high stages of the stream.

If no separate pay item is included, payment shall also include de-watering of the various work areas during construction operations as necessary for the disposal of water pumped or otherwise removed from the various construction areas and release of this water into wetland areas including pumping and any related environmental controls used in de-watering or handling water operations. If no separate pay item is provided, this item shall also include the construction, installation, and maintenance of temporary sedimentation basins or devices to be used for treatment and discharge of pumped water, as well as adequate discharge areas for these basins or devices.

004.0 TEST PITS

004.1 General: The work covered under this item includes furnishing of all plant, labor, equipment, appliances, materials and incidentals and performing all operations in connection with excavating and backfilling by machine and/or by hand, exploratory test pits at locations indicated or directed. The purpose of the test pits is for locating and examining soils, ground water, drains, pipes, rocks, utilities, structure foundations or any other obstacles.

004.2 Execution:

- A. Test pit excavations shall have neat, clean-cut and vertical sides. Upon completion of the test pit excavation, the Engineer shall be notified so that he can make the necessary location measurements. Excavation and backfilling shall conform to the applicable requirements of the Section entitled, "Trench Excavation - earth and backfill". Hand digging shall be employed when required by the Engineer.
- B. It shall be agreed that the Contractor entered into this contract with full knowledge that in any work involving excavation, operation in public highways or adjacent to other developments, some unforeseen utility relocations, obstacles, difficulties, unforeseen soil or groundwater conditions, etc., may be encountered, and that the Contractor has included in his bid and contract obligations the assumptions of the risks and costs to which such obstacles, etc., may subject him.

004.3 Method of Measurement: Excavation for test pits will be measured for payment per each complete, within the limits ordered by the Engineer.

004.4 Basis of Payment: Payment for Test Pits shall be made at the contract bid price for each "Test Pit" as listed in the bid proposal, which price shall include the excavation and backfill of all materials, all labor, equipment and incidentals and the restoration of property including temporary pavement replacement. If permanent pavement is necessary it shall be paid under the appropriate bid item.

103.0 ROCK EXCAVATION AND DISPOSAL

103.1 General: The Contractor shall excavate rock (as defined below), if encountered, to the lines and grades indicated on the drawings or as directed, shall dispose of the excavated material, and shall furnish acceptable material for backfill in place of the excavated rock.

In general, rock in pipe trenches shall be excavated so as to be not less than 6 inches from the pipe after it has been laid. Before the pipe is laid, the trench shall be backfilled to the correct subgrade with thoroughly compacted, suitable material or, when so specified or indicated on the drawings, with the same material as that required for bedding the pipe, furnished and placed at the expense of the Contractor.

Definition of Rock: The work "rock", whenever used as the name of an excavated material or material to be excavated, shall mean only boulders and pieces of concrete or masonry exceeding one (1) cubic yard in volume, or solid ledge which, in the opinion of the Engineer, requires for its removal drilling, and blasting, wedging, sledging, barring, or breaking up with a power-operated tool. No soft or disintegrated rock that can be removed with a hand pick or power-operated excavator or shovel, no loose, shaken, or previously blasted rock or broken stone in rock filings or elsewhere, and no rock exterior to the maximum limits of measurement allowed that may fall into the excavation will be measured or allowed as "rock".

103.2 Excess Rock Excavation: If rock is excavated beyond the limits of payment indicated on the drawings, specified, or authorized in writing by the Engineer, the excess excavation, whether resulting from overbreakage or other causes, shall be backfilled by and at the expense of the Contractor as specified before in this Section.

In pipe trenches, excess excavation below the elevation of the top of the bedding cradle or envelope shall be filled with material of the same type, placed and compacted in the same manner as specified for the bedding, cradle, or envelope.

In excavations for structures, excess excavation in the rock beneath foundations shall be filled with concrete which shall be Class A or Class B, at the option of the Contractor. Other excess excavation shall be filled with earth as specified in the Section entitled "Backfilling Around Structures" under BACKFILLING AND CONSOLIDATION.

103.3 Blasting: If explosives are used, all requirements for transportation, use and storage of Local, State, and Federal laws and regulations must be complied with and all necessary permits and licenses obtained by the Contractor at his expense. Permits and licenses must be shown to the Engineer upon request. Permits are issued through the Town of Glastonbury Fire Marshalls Office, and may require a pre / post blast survey.

Explosives must be carefully transported, stored, handled, and used. The Contractor will keep on the job only such quantities of explosives as may be needed for the work underway and only during such time as they are being used. Explosives shall be stored in a secure manner in locked containers and separate from all tools. Caps and detonators shall be stored separately from other explosives. When the need for explosives is ended, all such material remaining on the job shall be promptly removed from the premises. Care must be taken that no explosives, caps, or detonators are stolen or get into the hands of unauthorized persons, or left unguarded where they may cause accidents.

Explosives shall be of such power and placed and used in such quantities as will not make the excavation unduly large or shatter unnecessarily the rock upon or against

which the main or structure is to be built, or injure adjacent persons or property, those portions of the new work or structure as may already be in place, or other adjacent pipes, ducts, or other structures. The quantity of explosives fired at one blast must be small enough and the tie for blasting selected to avoid undue annoyance to persons owning or occupying the premises near the work.

The rock must be completely matted when blasts are fired to prevent damage or injury to persons or property or the scattering of broken fragments on the adjacent ground. Adequate warning shall be given to all persons in the vicinity before any blast is discharged.

When blasting is required, the operation shall be conducted with such care as not to cause damage to any of the existing underground utilities. Should such occur, the cost of repairs shall be the sole responsibility of the Contractor.

The Contractor shall notify each public utility or others having structures in proximity to the site, and others who may be affected, of his intention to use explosives. Said notice shall be given in accordance with the applicable regulations therefore, and sufficiently in advance to enable the involved agencies/companies/persons and the Contractor to take such steps as may be necessary to protect life and property. Such notice shall not, in any way, relieve the Contractor of responsibility for any damage resulting from his blasting operations.

When in sufficiently close proximity to existing gas, water, sanitary, storm, or other utilities and structures, and all services connected thereto, the Contractor shall remove the rock by methods other than blasting, if necessary, in order to protect said utilities and their services from damage. Approved methods other than blasting are barring and wedging, jackhammer, drilling, rock jacks, or other such hand or machinery methods that will not damage the adjacent utility.

No explosives shall be brought into, stored, or used on the site of any job by the Contractor unless and until he shall have furnished the Engineer with a satisfactory Certificate of Insurance showing that the risks arising from the presence of and use of explosives, and from blasting, are included within the insurance provided by the Contractor to secure his obligations to the Town. Insurance should also cover damage to underground utilities or other underground facilities.

When blasting for trench excavation, each shot sequence shall begin sufficiently ahead of completed work to prevent damage to the completed work, which must be properly protected prior to each shot.

The provisions herein shall apply where soil formation resembles rock, whether in trench, structure, or general excavation, even if it is of such nature that it is not classified and paid for as rock excavation and, if so ordered by the Engineer, will apply to openings cut through masonry, nested boulders, or other materials not herein classified as rock.

103.4 Blasting Records: An accurate blasting log must be maintained continuously for the duration of the Contract. The log shall record, for each shot, the location, amount of holes, depth, spacing, exact date and time of the blast, amount of explosives per hole, and the number of caps used. In addition, a sketch showing displacement of direct and delay caps for each shot shall be recorded.

103.5 Test Blasting and Monitoring Program: The Contractor shall employ an acceptable, independent vibration/blasting consultant to conduct test blasting prior to production blasting to devise suitable blasting procedures for production blasting, and to monitor

production blasting. The vibration/blasting consultant shall be a Registered Professional Engineer in the State of Connecticut and shall have a minimum of ten years experience as a vibration/blasting consultant. The Contractor shall submit the name of the vibration/blasting consultant to the Engineer prior to starting the work.

The purpose of the test blasting is to develop control procedures for production blasting so that no disturbance or damage shall be done to utilities, equipment, buildings, structures, groundwater wells, or the aquifer.

Based on the results of the test blasting, the vibration/blasting consultant shall develop a suitable blasting program and distance-quantity of explosive tables of the production blasting. The blasting program and the distance-quantity tables shall be submitted to the Engineer 21 days prior to the commencement of production blasting. All production blasting operations shall be in accordance with the blasting program.

The vibration/blasting consultant shall also perform continuous monitoring of all initial blasting operations and intermittent monitoring of subsequent blasting, as deemed necessary by the vibration/blasting consultant. Blasts shall be monitored with a minimum of two 3-component seismometers that record the entire particle velocity wave train and not just peak velocities. Accurate, legible seismometer records of all monitored blasts shall be obtained, and one copy of all blast records shall be submitted to the Engineer within seven days after blasting.

103.6

Wells: The Contractor's attention is directed to the existence of active groundwater supply wells near the area of construction. The Contractor shall locate all wells within or near the project area that could be affected by his operations.

The Contractor shall conduct his operations so that no disturbance or damage shall be done to the groundwater supply wells or to the aquifer from which they draw water. The aquifer is herein defined as underlying soil and rock formations within a distance of 1,500 feet from the wells and the groundwater within those formations.

The Contractor shall be fully responsible for determining the methods and controls necessary so that his construction operations do not disturb groundwater wells or the aquifer, and do not change the quality or quantity of water reaching the well.

If evidence of a change in well water quality or well yield, or disturbance or damage to any utility, equipment, building, or structure is observed or reported to the Contractor, he shall immediately notify the Engineer and all blasting operations shall be discontinued and the Contractor's vibration/blasting consultant shall recommend revised blasting procedures. The Contractor shall initiate the revised procedures, once approved by the Engineer, before blasting is continued.

The Contractor shall furnish potable water to any home where the well is disrupted or the water is declared unfit for human consumption. The water shall be supplied in such quantity as necessary to allow the homeowner to function on a normal day-to-day basis without any significant inconvenience or expense. The water shall be delivered as frequently as necessary to assure its freshness. The Contractor shall continue to furnish water until the problem is resolved.

The Contractor shall be fully responsible for the restoration or replacement of all water supply wells, utilities, equipment, buildings, or structures damaged by his operations at no cost to the Town.

- 103.7 Shattered Rock: If the rock below normal depth is shattered due to drilling or blasting operations of the Contractor and the Engineer considers such shattered rock to be unfit for foundations, the shattered rock shall be removed and the excavation shall be backfilled with concrete as required, except that in pipe trenches, screened gravel may be used for backfill, if approved. All such removal and backfilling shall be done by and at the expense of the Contractor.
- 103.8 Preparation of Rock Surfaces: Whenever so directed during the progress of the work, the Contractor shall remove all dirt and loose rock from designated areas and shall clean the surface of the rock thoroughly using steam to melt snow and ice, if necessary. Water in depressions shall then be removed, as required, so that the whole surface of the designated area can be inspected to determine whether seams or other defects exist.
- The surfaces of rock foundations shall be left sufficiently rough to bond well with the masonry and embankments to be built thereon and, if required, shall be cut to rough benches or steps.
- Before any masonry or embankment is built on or against the rock, the rock shall be scrupulously freed from all vegetation, fragments, ice, snow, and other objectionable substances. Picking, barring, wedging, streams of water under sufficient pressure, stiff brushes, hammers, steam jets, and other effective means shall be used to accomplish this cleaning. All free water left on the surface of the rock shall be removed.
- 103.9 Removal of Boulders: Piles of boulders or loose rock encountered within the limits of earth embankments shall be removed to a suitable place of disposal.
- 103.10 Disposal of Excavated Rock: Excavated rock may be used in backfilling trenches subject to the following limitations:
- a. Pieces of rock larger than permitted under the section entitled "Backfilling Pipe Trenches" shall not be used for this purpose.
 - b. The quantity of rock used as backfill in any location shall not be so great as to result in the formation of voids.
 - c. Rock backfill shall not be placed within 18 inches of the surface of the finished grade.
 - d. Surplus excavated rock shall be disposed of as specified for surplus excavated earth.
- 103.11 Backfilling Rock Excavations: Where the rock has been excavated and the excavation is to be backfilled, the backfilling above normal depth shall be done as specified under EARTH EXCAVATION BACKFILL. If material suitable for backfilling is not available in sufficient quantity from other excavations, the Contractor shall, at his own expense, furnish suitable material from outside sources.
- 103.12 Compaction of Backfill Material: Consolidation of backfill material in a trench where rock has been blasted shall be obtained through the use of a water-jetting method, or as approved by the Engineer.
- 103.13 Measurement and Payment: Where rock (as defined in this Section) is encountered, it shall be stripped of the overlying material and the Engineer will measure the same. All rock excavated before the Engineer shall have examined it shall be estimated by the Engineer based on obvious evidence of rock.

The quantity of rock excavation to be paid for shall be the number of cubic yards of rock in place, as if measured before excavation, that would have been removed if the excavation had been made everywhere exactly to the lines of payment shown in the Section entitled "Earth Trench Excavation", Table 3-1.

At manholes, catch basins, or other structures, rock excavation will be paid for on lines 12 inches beyond the outermost dimension of the structure.

106.0 EARTH EXCAVATION

106.1 General: This item shall conform to Section 2.02 ROADWAY EXCAVATION, FORMATION OF EMBANKMENT AND DISPOSAL OF SURPLUS MATERIAL, of the Form 816 amended as follows:

Section 2.02.05 of the Form 816 shall be amended to read as follows:

"The work of cutting concrete pavement or bituminous concrete pavement shall be paid for at the contract unit price per linear foot for "Sawcut Pavement" as contained in the bid proposal. The work of removal of all pavement structures and pavement bases, including bituminous, concrete, and bituminous covered concrete, shall be paid for at the contract unit price per square yard for "Removal of Pavement" as contained in the bid proposal."

Section 2.02.05 shall be removed and replaced with the following:

"Surplus Excavated Material: Any surplus topsoil that is excavated from within the project limits and not needed for restoration of disturbed areas as required by the contract shall be trucked by the contractor to the Town of Glastonbury Highway Garage located at 2380 New London Turnpike and stockpiled as directed by the Town. Other surplus excavated earth materials from the project that are not needed for formation of embankment as described by the contract shall be trucked by the contractor to the Town of Glastonbury Bulky Waste Facility location at 1145 Tryon Street and stockpiled as directed by the Town.

Any material determined by the Engineer to be unsuitable for re-use by the Town shall be disposed of in accordance with Subarticle 2.02.03-10."

106.2 Measurement & Payment: The lump sum price for "Earth Excavation" as contained in the bid proposal shall include all labor equipment, materials, transportation, fuel, disposal, etc., for excavation of earth, on site relocation of earth products and transportation of surplus earth materials to the various Town facilities as described above.

Excavation, removal, and disposal of existing bituminous or concrete pavement or sidewalk sections shall be paid for at the contract unit price per square yard for "Removal of Pavement", which price shall include all labor, material, tools, and equipment incidental thereto.

NOTE: All surplus earth materials shall be hauled by the contractor to the designated Town facility and shall become the property of the Town. There shall be no separate payment for transportation of surplus earth materials or disposal of unsuitable materials."

107.0 FORMATION OF SUBGRADE

107.1 General: This item shall conform to Section 2.09 SUBGRADE, of the Form 816, amended as follows:

107.2 Method of Measurement: Payment lines for formation of subgrade shall be coincident with the outside edges of the pavement or where stone dust shoulders are constructed, with the outside edges of the shoulder. Payment for formation of subgrade will not be allowed for work at private drives, in areas where traffic bound gravel is constructed or in areas where existing pavement is used as a base for resurfacing with bituminous concrete.

The area computed for payment shall not include the area of any bridge floor where the type of construction is such as to eliminate any necessity for the work described herein.

107.3 Basis of Payment: Formation and protection of subgrade, including all work provided for hereinbefore, will be paid for at the contract unit price per square yard for "Formation of Subgrade," as listed in the bid proposal which price shall include all materials, equipment, tools and labor necessary thereto.

108.0 SUBBASE

108.1 General: This item shall conform to Section 2.12 SUBBASE, of the Form 816, amended as follows:

108.2 Materials: The material for this item shall conform to the requirements of Article M.02.01- Granular Fill, except that reclaimed miscellaneous aggregate shall not be used.

108.3 Method of Measurement: Subbase will be measured in place after final grading and compaction at the thickness indicated on the plans. Horizontal payment limits for subbase shall extend a maximum of 6 inches beyond the outside edges of the pavement. Additional subbase installed by the Contractor outside of these limits will not be measured for payment.

If deficient thicknesses are found, the Engineer will make such additional measurements as he considers necessary to determine the longitudinal limits of the deficiency. Areas not within allowable tolerances shall be corrected, as ordered by the Engineer, without additional compensation to the Contractor.

108.4 Basis of Payment: This work will be paid at the contract unit price per cubic yard for "Subbase" as listed in the bid proposal which price shall include all materials, equipment, tools and labor incidental thereto.

109.0 PROCESSED STONE BASE

109.1 General: This item shall conform to Section 3.04 PROCESSED AGGREGATE BASE, of the Form 816, amended as follows:

109.2 Materials: The material for this item shall conform to the requirements of Article M.05.01, except that coarse aggregate shall be broken stone, and fine aggregate shall be stone sand, screenings, or a combination thereof.

109.3 Method of Measurement: Process stone base will be measured horizontally in place after final grading and compaction at the thickness indicated on the plans. The horizontal payment limits shall extend a maximum of 6 inches beyond the outside edges of the pavement or stone dust shoulder. Additional processed stone base installed by the Contractor outside of these limits will not be measured for payment.

If deficient thicknesses are found, the Engineer will make such additional measurements as he considers necessary to determine the longitudinal limits of the deficiency. Areas not within allowable tolerances shall be corrected, as ordered by the Engineer, without additional compensation to the Contractor.

109.4 Basis of Payment: This work will be paid at the contract unit price per cubic yard for "Process Stone Base" as listed in the bid proposal which price shall include all materials, equipment, tools and labor incidental thereto.

NOTE: Basis of payment for this item shall include fine grading prior to paving. No separate payment shall be provided for such work.

110.0 STONE DUST

110.1 General: The work under this item shall consist of furnishing, placing, shaping, and compacting a stone dust surface for the jogging shoulder of the proposed multi-use path to the lines, grades, and depth as shown on the plans and as directed by the Engineer.

110.2 Materials:
Stone dust shall be native blue-grey crushed traprock conforming to Form 816, Article M.01.01 Gradation: "dust".

110.3 Construction Methods: Verify that the subgrade is true to line and grade, and compacted to the required density. Subgrade surface shall be smooth and free of irregularities, depressions, or unsuitable material.

Spread and compact stone dust to achieve the depth as detailed after final compaction. The material shall be wetted and rolled to a firm, even surface, level with the adjacent bituminous pavement.

Provide additional material, recompact, and sprinkle with water on subsequent days as necessary to thoroughly bond the surface.

Maintain proper drainage to prevent washouts and flooding. Protect from damage and make repairs as required.

110.4 Basis of Payment: Work completed under this item shall be measured and paid for at the contact unit price per square yard of "Stone Dust" as listed in the bid proposal, which price shall include all materials, equipment, tools, labor, and work incidental thereto.

112.0 BITUMINOUS CONCRETE CLASS 2 (30% RAP)

112.1 General: This item shall conform to Section 4.06 BITUMINOUS CONCRETE, of the Form 816, modified as follows:

The percentage of recycled asphalt pavement (RAP) used in the proposed bituminous pavement mix shall be 30%. No other recycling options shall be included in the mix design. The Contractor shall submit a job mix formula (JMF) as described below for review and approval by the Engineer.

The following information shall be included in the JMF submittal:

- Gradation and asphalt content of the RAP.
- Percentage of RAP to be used.
- Virgin aggregate source(s).
- Total binder content based on total mixture weight.
- Production pull percentage of added virgin binder based on total mixture weight.
- Gradation of combined bituminous concrete mixture (including RAP).
- Grade of virgin added, if greater than 15% of total mix weight.

112.2

Materials:

RAP shall consist of asphalt pavement constructed with asphalt and aggregate reclaimed by cold milling or other removal techniques approved by the Engineer.

ACCEPTANCE OF RAP: The RAP material will be accepted on the basis of one of the following criteria:

1. When the source of all RAP material is from pavements previously constructed on Connecticut Department of Transportation projects, the Contractor shall provide a materials certificate listing the detailed locations and lengths of those pavements and that the RAP is only from those locations listed.
2. When the RAP material source or quality is not known, the Contractor shall test the material and provide the following information along with a request for approval to the Engineer at least 30 calendar days prior to the start of the paving operation. The request shall include a material certificate stating that the RAP consists of aggregates that meet the specification requirements of M.04.01-1 through 3 and that the binder in the RAP is substantially free of solvents, tars and other contaminants. The Contractor is prohibited from using unapproved material and shall take necessary action to prevent contamination of approved RAP stockpiles. Stockpiles of unapproved material shall remain separate from all other RAP materials at all times. The request for approval shall include the following:
 - After recovery of binder from the RAP by AASHTO T 170(M), the viscosity test results shall be reported when tested at 140°F by AASHTO T 202 or T 316.
 - A statement that RAP material has been crushed to 100% passing the ½ inch sieve and remains free from contaminants such as joint compound, wood, plastic, and metals.

MARSHALL MIXTURES WITH RAP: In addition to M.04.02 – 1a through c of the Form 816, RAP in bituminous concrete shall comply with requirements stated in M.04.01, and as stated herein.

113.0 BITUMINOUS CONCRETE LIP CURBING

113.1 General: This item shall conform to Section 8.15 BITUMINOUS CONCRETE LIP CURBING, of the Form 816.

201.0 CONCRETE SIDEWALKS

201.1 General: The Contractor is to construct sidewalks to lines and grades as shown on the drawings or at locations as directed by the Engineer. The sidewalks shall be of monolithic construction and five inches thick, except at industrial and commercial driveways where it shall be eight inches thick and reinforced with 6" x 6" 10/10 steel mesh. Sidewalk construction shall include the removal of existing and construction of new house lateral walks where new sidewalk grades make it necessary. At street corners where the intersection is rounded with a radius of less than 25 feet to the curb, the sidewalk slabs will be a minimum of five feet in length and constructed of five-inch thick concrete. The sidewalk shall pitch to the street at a slope of ¼-inch per foot or as directed by the Engineer.

Pedestrian sidewalk ramps are to be constructed to the lines and grades shown on the plans at locations directed by the Engineer, and shall be a minimum of five inches thick. This work shall also include furnishing and installing Detectable Warning Strips in the locations and to the dimensions and details shown on the plans or as ordered by the Engineer.

201.2 Forms: The forms used shall be five-inch steel or 2" x 6" wood firmly supported and staked to the line and grade given by the Engineer. The forms shall be free from warp and shall be of sufficient strength to resist springing out of shape. All forms shall be cleaned and oiled before use.

201.3 Concrete: The concrete furnished shall conform with respect to composition, transportation, mixing and placing, to Class F Cement Concrete 4,000 PSI, as specified by the State of Connecticut Department of Transportation in its latest specification and revisions. An approved air-entraining admixture shall be used to entrain 5% to 7% air in the concrete.

201.4 Detectable Warning Strips: The Detectable Warning Strip shall be a prefabricated detectable warning surface tile as manufactured from Engineered Plastics Inc. 300 International Drive, Suite 100 Williamsville, NY 14221, telephone number (800) 682-2525 or the approved equal from ADA Fabricators, INC. P.O Box 179 North Billerica, MA 01862 telephone number (978) 262-9900. The tile shall conform to the dimensions shown on the plans and have a brick red homogeneous color throughout in compliance with Federal Standard 595A Color #22144 or approved equal.

The Detectable Warning Strip shall be set directly in poured concrete according to the plans and the manufacturer's specifications or as directed by the Engineer. The Contractor shall place two 11.34 Kg concrete blocks or sandbags on each tile to prevent the tile from floating after installation in wet concrete.

201.5 Dowels: Smooth dowels, 5/8-inch in diameter, measuring 24 inches in length shall be installed within all expansion and contraction joints, concrete driveway aprons and the last end section of each sidewalk slab poured at the end of each working day.

Dowels are also to be installed between new and existing concrete slabs. Where new or repaired walks abut up against existing concrete sidewalks, the Contractor shall drill two holes measuring ¾-inches in diameter and 12 inches in depth into the existing concrete slab. The dowels, dipped in a liquid asphalt or grease and wrapped in aluminum foil, shall be set into the existing sidewalk slab prior to the placement of concrete. The dowels are to be level with the latitude pitch of the sidewalk and shall conform to details of these specifications.

Smooth metal dowels shall be 5/8-inch in diameter and 24 inches in length. All metal dowels shall conform to the requirements of ASTM A615 Grade 60.

201.6 Expansion Joints: At maximum intervals of 15 feet, an expansion joint shall be placed. The material for expansion joints shall be either 1/4-inch thick cork asphalt or 3/8-inch thick asphalt impregnated bonded cellular fiber, or approved equal. Expansion joints of the same material shall also be placed at points abutting existing structures.

201.7 Surface Finish: The surface finish shall be struck off, forcing coarse aggregate below mortar surface. After strike-off, the surface shall be worked and floated with a wooded, aluminum, or magnesium float followed by steel troweling. The slab shall then be broomed cross-wise with a fine hair broom. The outside edges of the slab shall be edged with a 1/4-inch radius tool. All edging lines shall be removed.

201.8 Curing: The Contractor shall use a liquid membrane-forming curing compound. The curing compound shall be similar or equal to Demicon "Cure Hard" with fugitive dye and shall meet the latest ASTM Specification C-156. Waterproof paper or plastic membrane are acceptable alternatives.

Newly constructed sidewalk surfaces shall be protected from all foot or vehicular traffic for a period of seven days. The Contractor shall have on the job, at all times, sufficient polyethylene film or waterproof paper to provide complete coverage in the event of rain.

201.9 Temperature: No concrete is to be placed when air temperature is below 40°F, or at 45°F and falling, unless prior approval is given by the Engineer. In the event weather conditions may be such that concrete that is not completely cured is subject to freezing, the Contractor shall provide a minimum of a six-inch layer of hay, straw, or thermal blankets for protection. Any concrete laid during cold weather that is damaged by freezing shall be the responsibility of the Contractor and shall be replaced at his expense.

201.10 Basis of Payment: Concrete Sidewalk shall be measured and paid for at the Contract unit price per square foot as contained in the Bid Proposal, which price shall include the Base Course Underneath Sidewalks, excavation, and all other materials and all labor, tools, and equipment necessary for completion of the work.

Pedestrian Ramps shall be measured and paid for as a unit at the Contract unit price for each Pedestrian Ramp as contained in the Bid Proposal, which price shall include the Base Course Underneath Sidewalks, Excavation, Detectable Warning Strip, and all other materials and all labor, tools, and equipment necessary for completion of the work.

204.0 GRADING AND TOPSOILING

204.1 Description: This work shall consist of furnishing, placing, and shaping topsoil or wetland topsoil in areas shown on the plans where directed by the Engineer. The topsoil shall be placed to the depth stated in the Contract or specifications.

204.2 Material:
Topsoil shall conform to the requirements of Article M.13.01.1 of the Form 816.

Wetland Topsoil shall be that topsoil that is stripped by the Contractor from designated on-site wetland sources that will be disturbed as part of the project, as approved by the Engineer. This material shall be stockpiled separately on-site in a location approved by the Engineer for re-use in the restoration of flood storage compensation areas as shown on the plans.

204.3 Construction Methods: The areas on which topsoil or wetland topsoil is to be placed shall be graded to a reasonably true surface and cleaned of all stones, brickbats, and other unsuitable materials. After areas have been brought to proper subgrade and approved by the Engineer or his agent, loam shall be spread to a depth noted below, with due allowance made for settlement.

- Topsoil in Turf Establishment Areas shall be placed in a 4-inch thick layer
- Topsoil in Mulched Areas shall be placed in a 2-inch thick layer
- Wetland Topsoil shall be placed in a 4-inch thick layer

All stones, roots, debris, sod, weeds, and other undesirable material shall be removed from the topsoil. After shaping and grading, all trucks and other equipment shall be excluded from the topsoiled area to prevent excessive compaction. The Contractor shall perform such work as required to provide a friable surface for seed germination and plant growth prior to seeding.

During hauling and spreading operations, the Contractor shall immediately remove any material dumped or spilled on the shoulders or pavement.

It shall be the Contractor's responsibility to restore to line, grade, and surface all eroded areas with approved material and to keep topsoiled areas in acceptable condition until the completion of the construction work.

204.4 Payment: This work will be measured for payment by the number of square yards of area on which the placing of the topsoil or wetland topsoil has been completed and the work accepted.

The limits of payment shall be to the slope limits as shown on the plans. No payment shall be made outside of these limits unless the disturbance was directed or approved by the Engineer. No payment shall be made for areas disturbed for staging, storage of materials, or other area disturbed for the convenience of the Contractor.

This work will be paid for at the Contract unit price per square yard for "Topsoil (4-inch Layer)", "Topsoil (2-inch Layer)", or "Wetland Topsoil (4-inch Layer)" as listed in the bid proposal. This price shall include all stripping, stockpiling, hauling, re-handling, raking, and other processing of topsoil from off-site or on-site sources and all materials, equipment, tools, and labor incidental thereto.

205.0 TURF ESTABLISHMENT

205.1 General: The work included in this item shall consist of providing an accepted uniform stand of established perennial turf grasses or wetland vegetation by furnishing and placing fertilizer, seed, and mulch on all areas to be treated as shown on the plans or where designated by the Engineer.

The work will also include the installation of erosion control matting of the type indicated where shown on the plans or as directed by the Engineer.

205.2 Materials: The materials for this work shall conform to the requirements of Section M.13 of the Form 816, except as noted below.

Seed mix for lawn areas shall consist of 70% Red Fescue, 20% Kentucky Blue Grass, and 10% Perennial Rye Grass or other mix for high maintenance lawn areas as approved by the Engineer.

The wetland seed mix to be used shall be 25% New England Roadside Matrix Wet Meadow Seed Mix and 75% New England Erosion Control / Restoration Mix, as listed within New England Wetland Plants, Inc.'s catalog or approved equal.

Erosion Control Matting of the type indicated on the plans shall be a product approved by the Connecticut Department of Transportation for the intended application as described in the "Qualified Products List" publication, latest edition.

Material certificates shall be provided for all materials supplied under this item.

205.3 Construction Methods: Construction Methods shall be those established as agronomically acceptable and feasible and which are approved by the Engineer.

1. Preparation of the Seedbed:

(a) Level areas, medians, interchanges and lawns: These areas shall be made friable and receptive for seeding by disking or by other approved methods to the satisfaction of the Engineer. In all cases the final prepared and seeded soil surface shall meet the lines and grades for such surface as shown in the plans, or as directed by the Engineer.

(b) Slope and Embankment Areas: These areas shall be made friable and receptive to seeding by approved methods which will not disrupt the line and grade of the slope surface. In no event will seeding be permitted on hard or crusted soil surface.

(c) All areas to be seeded shall be reasonably free from weeds taller than 3 inches. Removal of weed growth from the slope areas shall be by approved methods, including hand-mowing, which do not rut or scar the slope surface, or cause excessive disruption of the slope line or grade. Seeding on level areas shall not be permitted until substantially all weed growth is removed. Seeding on slope areas shall not be permitted without removal or cutting of weed growth except by written permission of the Engineer.

2. Seeding Season: The calendar dates for seeding shall be:

Spring—March 15 to June 15

Fall—August 15 to October 15

All disturbed soil areas shall be treated during the seeding seasons as follows:

(a) Areas at final grade: Seeding will be accomplished.

(b) "Out-of-season" seedings shall be performed in the same manner as "in-season" seedings. Since acceptable turf establishment is less likely, the Contractor shall be responsible for "in-season" reseeding until the turf stand conforms to this specification.

(c) During "out-of-season" periods unseeded areas shall be treated in accordance with Section 2.10, Water Pollution Control of the Form 816.

3. Seeding Methods: The seed mixture shall be applied by any agronomically acceptable procedure. The rate of application shall be no less than 175 pounds per acre or according to manufacturer instructions. Fertilizer conforming to M.13.03 shall be initially applied at a rate of 320 pounds per acre during or preceding seeding. When wood fiber mulch is used, it shall be applied in a water slurry at a rate of 2,000 pounds per acre with or immediately after the application of seed, fertilizer and limestone. When the grass seeding growth has attained a height of 6 inches, the specified areas designated herein shall be mowed to a height of 3 inches. Following mowing, all seeding grass areas (mowed and un-mowed) shall receive a uniform application of fertilizer hydraulically placed at the rate of 320 pounds per acre.

4. Compaction: The Contractor shall keep all equipment and vehicular and pedestrian traffic off areas that have been seeded to prevent excessive compaction and damage to young plants. Where such compaction has occurred, the Contractor shall rework the soil to make a suitable seedbed; then re-seed and mulch such areas with the full amounts of the specified materials, at no extra expense to the State.

5. Stand of Perennial Turf Grasses: The Contractor shall provide and maintain a uniform stand of established turf grass or wetland vegetation having attained a height of 6 inches consisting of no less than 100 plants per square foot throughout the seeded areas until the entire project has been accepted.

6. Establishment: The Contractor shall keep all seeded areas free from weeds and debris, such as stones, cables, baling wire, and he shall mow at his own expense, on a one-time-only basis, all slopes 4:1 or less (flatter) and level turf established (seeded) areas to a height of 3 inches when the grass growth attains a height of 6 inches. Clean-up shall include, but not be limited to, the removal of all debris from the turf establishment operations on the shoulders, pavement, and/or elsewhere on adjacent properties publicly and privately owned.

7. Erosion Control Matting: Erosion control matting shall be installed following seeding where called for on the plans or as directed by the Engineer. Staples shall be installed as per Manufacturer's recommendations. Where two lengths of matting are joined, the end of the up-grade strip shall overlap the down-grade strip. The Contractor shall maintain and protect the areas with erosion control matting until such time as the turf grass is established. The Contractor shall replace or repair at his own expense any and all erosion control matting areas damaged by fire, water or other causes including the operation of construction equipment. No mowing will be required in the locations where erosion control matting is installed.

205.4 Method of Measurement: This work will be measured for payment by the number of square yards of surface area of accepted established perennial turf grass or wetland vegetation as specified or by the number of square yards surface area of seeding actually covered and as specified.

Restoration of areas disturbed for staging, storage of materials, or other area disturbed for the convenience of the Contractor will not be measured for payment.

Erosion control matting will be measured by the number of square of surface area of erosion control matting installed and accepted.

205.5

Basis of Payment: This work will be paid for at the contract unit price per square yard for "Turf Establishment" or "Wetland Seeding" which price shall include all materials, mowing, maintenance, equipment, tools, labor, and work incidental thereto. Partial payment of up to 60% may be made for work completed, but not accepted.

Erosion Control Matting of the type indicated in the Bid Proposal will be paid for at the contract unit price per square yard for "Erosion Control Matting – Type" complete in place and accepted, which price shall include the hay mulch, netting, staples, maintenance, equipment, tools, labor, and work incidental thereto.

206.0 MULCH

206.1 Description: This work shall consist of furnishing, placing, and shaping a layer of mulch consisting of wood chips, bark chips, or shredded bark for restoration of disturbed woodland areas of the project as shown on the plans and where directed by the Engineer. The mulch shall be placed to a minimum depth of 4 inches.

206.2 Material:
Wood chips for mulch shall be chipped material from logs, stumps, brush, or trimmings including bark, stems, and leaves having a general maximum size of 0.5 inches by 2 inches. Wood chips shall be free of excessively fine or log stringy particles and should be free of stones, soil, or other debris.

Bark chips or shredded bark shall be tree bark shredded as a by-product of timber processing having a general maximum size of 4 inches and free of excessively fine or long stringy particles as well as stones or other debris.

All mulch shall be free of contaminants that pollute the air or water, free of foreign materials, and free of any substance that is toxic to plant growth.

206.3 Construction Methods: The areas on which mulch is to be placed shall be graded to a reasonably true surface and cleaned of all stones, brickbats, and other unsuitable materials. After areas have been brought to proper subgrade and approved by the Engineer or his agent, a 2-inch thick layer of topsoil shall be spread as a base for the mulch. Mulch shall then be spread to a depth of no less than four inches, with due allowance made for settlement. After shaping and grading, all trucks and other equipment shall be excluded from the mulched area to prevent excessive compaction.

During hauling and spreading operations, the Contractor shall immediately remove any material dumped or spilled on the shoulders or pavement.

It shall be the Contractor's responsibility to restore to line, grade, and surface all eroded areas with approved material and to keep mulched areas in acceptable condition until the completion of the construction work.

206.4 Payment: This work will be measured for payment by the number of square yards of area on which the placing of the mulch has been completed and the work accepted.

The limits of payment shall be to the slope limits or limits of disturbance as shown on the plans. No payment shall be made outside of these limits unless the disturbance was directed or approved by the Engineer. No payment shall be made for areas disturbed for staging, storage of materials, or other area disturbed for the convenience of the Contractor.

This work will be paid for at the Contract unit price per square yard for "Mulch", which price shall include all materials, equipment, tools, labor, and work incidental thereto.

208.0 SEDIMENTATION BARRIER

208.1 General: This item shall conform to Section 2.19 Sedimentation Control System of the Form 816, modified as follows:

Mulch filter berms made of wood chips, bark chips, or shredded bark may also be used as a sedimentation barrier. These filter berms shall consist of the following:

208.2 Materials:

Wood chips for mulch filter berms shall be chipped material from logs, stumps, brush, or trimmings including bark, stems, and leaves having a general maximum size of 0.5 inches by 2 inches. Wood chips shall be free of excessively fine or log stringy particles and should be free of stones, soil, or other debris.

Bark chips or shredded bark for mulch filter berms shall be tree bark shredded as a by-product of timber processing having a general maximum size of 4 inches and free of excessively fine or long stringy particles as well as stones or other debris.

All mulch shall be free of contaminants that pollute the air or water, free of foreign materials, and free of any substance that is toxic to plant growth.

208.3 Construction Methods:

The mulch filter berm must be placed along a relatively level contour. It may be necessary to cut tall grasses or woody vegetation to avoid creating voids and bridges that would enable fines to wash under the barrier through the grass blades or plant stems.

On slopes less than 5 % or at the bottom of steeper slopes (<2:1) up to 20 feet long, the barrier must be a minimum of 24-inches high, as measured on the uphill side of the barrier, and a minimum of four feet wide. On longer or steeper slopes, the barrier should be wider to accommodate the additional runoff as directed by the Engineer.

Other sediment barriers should be used at low points of concentrated runoff, below culvert outlet aprons, around catch basins and closed storm systems, and at the bottom of steep perimeter slopes that are more than 50 feet from top to bottom (i.e., a large up gradient contributing watershed) as directed by the Engineer.

208.4 Method of Measurement: Mulch Filter Berms meeting the dimensions and materials described above and accepted by the Engineer will be measured along the center line of the filter berm and will be paid for at the contract unit price per linear foot listed in the bid proposal for "Sedimentation Barrier".

208.5 Basis of Payment (Section 2.19.05): Payment for this work will be made at the contract unit price per linear foot for "Sedimentation Barrier" complete in place, which price shall include all materials, equipment, tools and labor incidental to the installation, maintenance, replacement, removal and disposal of the system and surplus material. No payment shall be made for the clean out of accumulated sediment.

210.0 TEMPORARY CONSTRUCTION ENTRANCE

210.1 General: Work of this item shall generally consist of the installation and maintenance of stone construction entrances as located and detailed on the contract drawings. Work shall include base preparation and excavation as necessary.

210.2 Materials: Stone shall consist of No. 3. stone as per section Section M01.01 of the Form 816.

210.3 Measurement and Payment: The work under this item shall be paid at the contract unit price as listed in the bid proposal for each "Temporary Construction Entrance" completed and in place as per the contract drawings. The unit price shall include all materials, equipment, labor, excavation, and tools incidental to the construction and maintenance of this item.

228.0 TREE PROTECTION TRENCH AND ROOT BARRIER INSTALLATION

228.1

Description:

This work includes excavation of a tree protection trench adjacent to the proposed multi-use path by means of a chain-driven trenching machine. This is performed within the drip line of an existing tree to cleanly sever roots prior to earth excavation.

Also included in this item when shown on the plans or directed by the Engineer is the installation of a tree root barrier system. This work includes use of a chain-driven trenching machine to sever tree roots and excavate the soil within the limits of the root barrier system, hand pruning of the roots using pruning shears, lopping shears, hand saws, and chain saws, as appropriate, and installation of an 18-inch deep tree root barrier.

228.2

Material:

Tree root barrier shall be 18-inch deep polypropylene panels with integral molded stiffening ribs, root deflecting ribs, and panel joining system as manufactured by Deep Root Partners LP, Model UB 18-2, or approved equal.

228.3

Construction Methods:

Tree protection trench or tree root barriers shall be installed in advance of the intended sidewalk construction during time periods where damage to trees will be minimized, as directed by the Engineer. The work area shall generally include the length of sidewalk within the drip line of the canopy of the tree of concern. Extreme care shall be taken by the Contractor to identify and protect underground utilities within the work area, and any conflicts shall be immediately brought to the attention of the Engineer.

Where tree protection trench is called for on the plans, the Contractor shall use a chain-driven trenching apparatus to sever tree roots adjacent to the sidewalk to the full depth of the sidewalk excavation as directed by the Engineer.

Where tree root barrier is called for on the plans, the contractor shall use the chain-driven trenching apparatus to sever tree roots and excavate the trench to a depth suitable for installation of the root barrier. Additional cutting of roots using hand methods may also be required, as directed by the Engineer. The tree root barrier shall then be installed according to the manufacturer's recommendations, including backfilling of the excavated trench. The disturbed area shall be restored to existing grades and shall be seeded per Section 205.00 of the specifications.

228.4

Payment:

Tree protection trench shall be measured for payment at the contract unit price per linear foot of "Tree Protection Trench" installed and accepted as listed in the Bid Proposal, which price shall include all materials, equipment, tools, labor, and work incidental thereto.

Tree root barrier shall be measured for payment for at the Contract unit price per linear foot for "Tree Protection Trench with Root Barrier" as listed in the Bid Proposal, which price shall include materials, equipment, tools, labor, and work incidental thereto.

240.0 SEGMENTAL RETAINING WALL (SITE NO. 1, SITE NO. 2)

240.1 Description: This item will consist of designing, furnishing and constructing segmental retaining walls in the location, grades, and to the dimensions and details shown on the contract drawings and in accordance with these specifications.

Segmental retaining wall (SRW) units shall be machine formed, Portland Cement concrete blocks specifically designed for retaining wall applications as manufactured by VERSA-LOK Retaining Wall of New England (603-883-3042) or approved equal.

240.2 Design:

1 - Design Computations: It is the Contractor's responsibility for the design, detailing and additional construction specifications required to construct the wall. The actual designer of the retaining wall shall be a qualified Professional Engineer licensed in the State of Connecticut and experienced in the design of SRW walls.

2 - Designer's Liability Insurance: The Designer shall secure and maintain at no direct cost to the Town, a Professional Liability Insurance Policy for errors and omissions in the minimum amount of Five Hundred Thousand Dollars (\$500,000). The designer may, at his election, obtain a policy containing a maximum One Hundred Twenty Five Thousand Dollars (\$125,000) deductible clause, but if he should obtain a policy containing such a clause, the designer shall be liable to the extent of the deductible amount. The Designer shall obtain the appropriate and proper endorsement to its Professional Liability Policy to cover the indemnification clause in this contract as the same relates to negligent acts, errors or omissions in the work performed by the Designer. The Designer shall continue this liability insurance coverage for a period of three years from the date of the acceptance of the work by the Town or for three years after the termination of the contract, whichever is earlier, subject to the continued commercial availability of such insurance.

The designer shall supply the certificate of this insurance to the Engineer prior to the start of construction of the wall. The designer's insurance company shall be licensed in the State of Connecticut.

3 - Preliminary Submissions: Prior to the start of fabrication or construction, the Contractor shall submit to the Engineer a design package, which shall include, but not be limited to the following:

a. Detailed Plans:

Plan sheets shall be approximately 24" x 36"

Stamped by a licensed Professional Engineer (Connecticut).

Full plan view of the wall drawn to scale. The plan view must reflect the horizontal alignment and offset from the horizontal control line to the face of the wall. Beginning and ending stations, all utilities, signs, lights, etc. that affect the construction along with all property lines and easement lines adjacent to the wall shall be shown.

Full elevation view of the wall drawn to scale. Elevation views should indicate the elevation at the top and bottom of walls, horizontal and vertical break points, and the location of finished grade.

Typical cross sections drawn to scale including all appurtenances. Detailed cross section should be provided at significant reinforcement transitions such as wall ends.

Details of all wall components and their connections such as the length, size and type of soil reinforcement and where any changes occur; facing details; connections; etc.

Certified test reports indicating the connection strength versus normal load relationship for the block-soil reinforcement connection to be used.

Drainage details for embankment backfill including connection to outlets shown on contract drawings.

Design parameters used along with AASHTO references.

Material designations for all materials to be used.

Detailed construction methods including a quality control plan. Construction quality control plans should include monitoring and testing frequencies (e.g, for setting batter and maintaining horizontal and vertical control). Construction restraints should also be listed in the details. Specific requirements for construction around obstructions should be included.

Details of Temporary Earth Retaining System(s) where required.

Treatment at underground utilities where required.

b. Design Computations:

Stamped by a licensed Professional Engineer (Connecticut).

Computations shall clearly refer to the applicable AASHTO provisions as stated in the Notes on the Contract Drawings.

Documentation of computer programs including all design parameters.

c. Construction Specifications:

Construction methods specific to the proprietary retaining wall chosen. These specifications should include construction limitations including vertical clearance, right-of-way limits, etc. Submittal requirements for materials such as certification, quality, and acceptance/rejection criteria should be included. Details on connection of modular units and connection of reinforcements such that assurance of uniform stress transfer should be included.

Any requirements not stated herein.

The submissions for proprietary retaining walls shall be treated as working drawings according to Section 1.05 of the Form 816 amended as follows:

a. Two sets of each submission shall be supplied to the Town

b. The Contractor shall allow 21 days for the review of each submission. If subsequent submissions are required as a result of the review process, 21 days shall be allowed for review of these submissions. No extensions in contract time will be allowed for the review of these submissions.

4 - Final Submissions: Once a proprietary retaining wall design has been reviewed and accepted by the Town, the Contractor shall submit the final plans. The final submission shall include one set of full size (approximately 24" x 36") mylar sheets and one set of full size copies.

The final submission shall be made within 14 days of acceptance by the Town. No work shall be performed on the retaining wall until the final submission has been received by the Engineer

Acceptance of the final design shall not relieve the Contractor of his responsibility under the contract for the successful completion of the work.

The actual designer of the proprietary retaining wall is responsible for the review of any shop drawings prepared for the fabrication of the wall. One set of full size copy of all approved shop drawings shall be submitted to the Engineer's permanent records.

5 - General Design Requirements:

a. All designs for proprietary walls and temporary earth retaining systems shall conform to the latest edition of the American Association of State Highway and Transportation Officials (AASHTO) Standard Specifications for Highway Bridges and later interims published except as noted otherwise herein:

b. The wall design shall follow the general dimensions of the wall envelope shown in the contract plans.

c. The top of the concrete leveling pad shall be located at or below the theoretical leveling pad elevation. The minimum wall embedment shall be two feet as measured to the top of the leveling pad or as shown on the plans.

d. If footing steps are required, they shall be kept below the minimum embedment depth. Footing steps in addition to those shown on the plans will be permitted at no additional cost to the Town.

e. The wall shall be designed to be within all property lines and easement lines shown on the contract drawings. If additional work areas are necessary for the construction of the proprietary retaining wall, the Contractor shall be responsible for obtaining the rights from the affected property owners. Copies of these rights shall be forwarded to the Town.

f. The top of the wall shall be at or above the top of the wall elevations shown on the plans. The top of the wall may be level or sloped to meet the top of the wall line noted.

g. Cast-in-place concrete will not be an acceptable replacement for areas noted by the wall envelope, except for minor grouting of pipe penetrations.

h. The mechanical wall height for the purposes of design calculations shall be from the top of the leveling pad to the top of the potential failure surface where the failure surface intercepts the ground surface.

i. The minimum length of internal soil reinforcement shall be as specified in AASHTO 5.8.1, except for the minimum eight (8.0') foot length requirement.

i. If there are specific surcharges acting on the wall, they shall also be accounted for. The minimum equivalent fluid pressure used to design the wall shall be 33 lbs./ft² per linear foot of wall.

j. The maximum allowable bearing capacity of the soil shall be assumed to be 4 ksf unless otherwise shown on the plans. If additional soils information is required by the designer, it must be obtained by the Contractor and will not be reimbursed by the Town.

k. For limit state allowable stress computations of extensible reinforcements, the combined factor of safety for construction damage and environmental/aging effects shall not be less than 1.75.

240.3

Materials: Materials shall conform to the following requirements and those not listed below shall be as prescribed within the Standard Specifications for Roads, Bridges and Incidental Construction, including supplemental specifications and applicable special provisions.

Contractor shall provide three representative samples of the SRW units for color selection by the Town.

1 – Facing Block: The facing block can be precast or drycast concrete and shall be the color specified on the plans. The block shall meet the following requirements:

a. Drycast Concrete:

The minimum compressive strength of the block shall be 4000 psi measured at 28 days. The maximum water absorption shall be less than five percent.

b. Precast Concrete: Shall conform to the requirements of Section M.03 and as follows:

The minimum compressive strength of the block shall be 4000 psi measured at 28 days.

All precast concrete components shall be air-entrained composed of portland cement, fine and coarse aggregates, admixtures and water. The air-entraining feature may be obtained by the use of either air-entraining portland cement or an approved air-entraining admixture. The entrained-air content shall be not less than four percent or more than seven percent.

2 - Geosynthetic Soil Reinforcement: The minimum strength of the geosynthetic soil reinforcement shall be based on experimental data. The Contractor shall submit to the Engineer a certified test report confirming the strength of the material when tested according to the methods specified in ASTM D5262 and extrapolated according to ASTM D2837 as outlined in AASHTO Article 5.8.7.2 of the Form 816.

3 – Metallic Soil Reinforcement: All soil reinforcement and structural connectors shall be hot dipped galvanized according to the requirements of ASTM A123 (AASHTO M 111). The minimum thickness of the galvanizing shall be based on the service life requirements as previously stated.

Steel strip reinforcement shall be hot rolled to the required shape and dimensions. The steel shall conform to AASHTO M223 (ASTM A572) Grade 65 unless otherwise specified.

Welded wire fabric reinforcement shall be shop fabricated from cold-drawn wire of the sizes and spacings shown on the plans. The wire shall conform to the requirements of ASTM A82, fabricated fabric shall conform to the requirements of ASTM A185.

4 - Metal Connectors: All metal hardware shall be hot dipped galvanized according to the requirements of ASTM A123 (AASHTO M-111). The minimum thickness of the galvanizing shall be based on the service life requirements in the AASHTO Specifications.

5 - Backfill Material: The material for backfill shall be Pervious Structure Backfill conforming to the requirements of Articles M.02.05 and M.02.06 of the Form 816.

6 - Facing Sealer: The face of all exposed drycast block shall be coated with clear Penetrating Sealer Protective Compound conforming to the requirements of Article M.03.02 of the Form 816.

240.4

Construction Methods: All construction methods for items not listed below shall be in accordance with the detailed requirements prescribed for the construction of the several contract items entering into the completed structure as specified in the Standard Specifications for Roads, Bridges, and Incidental Construction.

1 - Installation: The foundation for the structure shall be graded level for a width equal to or exceeding the length of the soil reinforcements, or as shown on the plans. If rock is encountered in the excavation, it shall be removed to provide a level area equal to or exceeding the length of the soil reinforcements, but not greater than the pay limits shown on the plans.

Prior to wall construction, the foundation, if not in rock, shall be compacted as directed by the Engineer. Any foundation soils found to be unsuitable shall be removed and replaced.

At each foundation level, an unreinforced concrete leveling pad shall be provided as shown on the plans. The leveling pad shall have nominal dimensions of 6 inch thickness and 24 inch width, and shall be cast using minimum 2,000 psi 28-day compressive strength concrete. The leveling pad shall be cast to the design elevations as shown on the plans. Allowable elevation tolerances are +0.01 foot (1/8 inch), and -0.02 foot (1/4 inch), from the design elevation.

The materials for the wall shall be handled carefully and installed in accordance with manufacturer's recommendations and specifications. Special care shall be taken in setting the bottom course of blocks to true line and grade.

All blocks above the first course shall interlock with the lower courses by means of connecting pins. Vertical joints shall be staggered with each successive course as shown on the working drawings. Vertical tolerances and horizontal alignment tolerances measured from the face line shown on the plans shall not exceed 1/2 inch when measured along a 8 foot straightedge. The overall tolerance of the wall from top to bottom shall not exceed 1/2 inch per eight feet of wall height or one inch total, whichever is the lesser, measured from the face line shown on the plans. A bond breaker shall be placed between the blocks and any adjacent cast-in-place concrete.

2 - Backfilling: Backfill placement shall closely follow erection of each course of panels. Backfill shall be placed in such a manner as to avoid any damage or disturbance to the wall materials or misalignment of the facing panels. Any wall materials which become damaged or disturbed during backfill placement shall be either removed and replaced at

the Contractor's expense or corrected, as directed by the Engineer. Any backfill material placed within the reinforced soil mass which does not meet the requirements of this specification shall be corrected or removed and replaced at the Contractor's expense.

Backfill shall be compacted to 95 percent of the maximum density as determined by AASHTO T-99, Method C or D (with oversize correction, as outlined in Note 7).

The moisture content of the backfill material prior to and during compaction shall be uniform throughout each layer. Backfill material shall have a placement moisture content less than or equal to the optimum moisture content. Backfill material with a placement moisture content in excess of the optimum moisture content shall be removed and reworked until the moisture content is uniform and acceptable throughout the entire lift. The optimum moisture content shall be determined in accordance with AASHTO T-99, Method C or D (with oversize correction, as outlined in Note 7).

If 30 percent or more of the backfill material is greater than 19 mm in size, AASHTO T-99 is not applicable. For such a material, the acceptance criterion for control of compaction shall be either a minimum of 70 percent of the relative density of the material as determined by a method specification provided by the wall supplier, based on a test compaction section, which defines the type of equipment, lift thickness, number of passes of the specified equipment, and placement moisture content.

The maximum lift thickness after compaction shall not exceed 10 inches, regardless of the vertical spacing between layers of soil reinforcements. The Contractor shall decrease this lift thickness, if necessary, to obtain the specified density. Prior to placement of the soil reinforcements, the backfill elevation at the face shall be level with the connection after compaction. From a point approximately three feet behind the back face of the panels to the free end of the soil reinforcements the backfill shall be two inches above the attachment device elevation unless otherwise shown on the plans.

Compaction within three feet of the back face of the panels shall be achieved by at least three passes of a lightweight mechanical tamper, roller or vibratory system. The specified lift thickness shall be adjusted as warranted by the type of compaction equipment actually used. Care shall be exercised in the compaction process to avoid misalignment of the panels or damage to the attachment devices. Heavy compaction equipment shall not be used to compact backfill within three feet of the wall face.

At the end of each day's operation, the Contractor shall slope the last level of backfill away from the wall facing to direct runoff of rainwater away from the wall face. The Contractor shall control and divert runoff at the ends of the wall such that erosion or washout of the wall section does not occur. In addition, the Contractor shall not allow surface runoff from adjacent areas to enter the wall construction site.

3 - Face Sealer: After the wall has been erected, the entire exposed face of the wall shall be coated with Penetrating Sealer Protective Compound. The application of the sealer shall conform to the requirements Article 8.19.03 of the Form 816.

Several samples of the dry cast block shall be sealed prior to sealing the actual wall to ensure that the sealer will not discolor the block. If the sealer does discolor the block, the Contractor shall change to another approved supplier of sealer.

240.5

Method of Measurement: This work will be paid for on a lump sum basis and will not be measured for payment.

240.6 Basis of Payment: This work will be paid for at the contract lump sum listed in the bid proposal for "SEGMENTAL RETAINING WALL SITE NO. 1" and "SEGMENTAL RETAINING WALL SITE NO. 2" complete in place, which price shall include all work shown within the pay limits shown on the plans for the retaining walls including but not limited to the following:

1. Design, detailing, and specifications for the wall.
2. Excavation for the wall.
3. Design and Construction of temporary earth retaining systems for the support of the slope during construction.
4. Construction of the wall, including the unreinforced concrete leveling pad.
5. The furnishing, placing and compacting of pervious structure backfill within the maximum payment lines.
6. The furnishing and placing of backfill drainage systems for the wall, including underdrain piping, excavation, and modifications of existing drainage structures as required for connection of the underdrain to the existing drainage system.
7. Any other work and materials shown on the plans for the construction of the wall.

The price shall also include all materials, equipment, tools and labor incidental thereto.

If bedrock or large boulders (greater than one cubic yard) are encountered in the excavation, the payment for it's removal will be made under the item "Rock Excavation".

250.0 THREE RAIL FENCE

250.1 General: The work under this item shall consist of furnishing and installing a 48-inch tall cedar fence with round posts and three round rails, including associated concrete footings to be used as a safety fence along the edge of the proposed multi-use path as shown on the plans.

250.2 Materials:
CONCRETE: Concrete for footings shall conform to CDOT Form 816, Article M.03.01 – Class “C”.

Fence shall comply with ASTM F537 Standard Specification for Design, Fabrication and Installation of Fences Constructed of Wood and Related Materials.

SPECIES OF WOOD: Northern White Cedar or other approved durable, decay resistant species.

STRUCTURAL FRAME: (All round members)

1. Nominal post size: 5 inch diameter
2. Nominal rail size: 4 inch diameter
3. Above ground height of fence top rail: 48 inches
4. Post spacing: 8 feet
5. Total number of rails per section: 3

QUALITY STANDARDS FOR SPLIT POSTS AND RAILS: Posts and rails shall be graded on the basis of strength and appearance. Tolerances for dimensional variation are also provided since it is impossible for each post or rail to be exactly alike due to its hand-crafted method of manufacture; therefore the dimensions are average and approximate within tolerances shown.

1. A – ½” tolerance in girth shall be allowed for variation in the finished product.
2. All longitudinal shaping shall be developed by splitting with axe, froe, wedge, or machine. Cut, torn, or rough grain shall not be classified as defects.
3. Knots shall not exceed one half of the narrowest dimension in size.
4. Spiral grain shall not exceed a one-quarter twist within the length of the piece.
5. Kinks, bends, crooks, or sweep shall not be greater than the equivalent of the narrowest dimension, measured as a deviation from a straight line drawn along the center from end to end.
6. No outer bark, sap rot, char, or unsightly discolorations shall be permitted. Limited heart rot or peck in streaks or pockets shall be permitted. Rustic colorations due to normal weathering and seasoning shall be permitted.
7. Scars, wounds, or splits shall not exceed one fourth the depth of the member at the area affected.

250.3 Construction Methods: Drill post holes into firm undisturbed or compacted earth as detailed. Align each post both vertically and laterally. Secure in position and fill with concrete up to within 3" of ground surface.

Install rails in accordance with the manufacturer's installation instructions, accurately to required lines and levels, true, plumb and level.

Clean up during installation and upon completion of fencing work. Remove from site all waste and excess materials, debris, tools, and equipment. Repair any damage resulting from fence installation.

250.4 Basis of Payment: Work completed under this item shall be measured and paid for at the contact unit price per linear foot of "Three Rail Fence" as listed in the bid proposal, completed in place and accepted by the Engineer. Said unit price shall include all materials, equipment, tools, labor, and work incidental thereto.

260.0 TIMBER GUIDE RAIL AND TIMBER POSTS

260.1 General: The work under this item shall consist of furnishing and installing a timber guide rail system or timber posts with associated concrete footings to the dimensions and layout as shown on the plans and as directed by the Engineer.

Contractor shall submit shop drawings with details of materials, layout, fabrication and attachment for review and approval by the Engineer.

260.2 Materials:
CONCRETE: Concrete for footings shall conform to CDOT Form 816, Article M.03.01 – Class “C”.

WOOD TREATMENT: Shall comply with American Wood Preservers Association (AWPA) standards for wood preservative treatment scheduled, FS TT-W-550 Wood Preservative – Chromated Copper Arsenate, and FS TT-W-571 Wood Preservative – Treating Practices. The treating plant shall imprint legible symbols in the end of all timber treated, indicating the name of the treating company and the type and year of treatment in accordance with AWPA Standards M1 and M6.

TIMBERS: Shall be Rough Sawn, No. 2 or better Southern Yellow Pine timbers. Pressure impregnated with waterborne CCA preservative. Treat to a minimum retention of .40 lbs per cubic foot. Timbers shall be properly seasoned when dressed and at time of treatment to 20% maximum moisture content. Air or kiln dry after treatment.

CARRIAGE BOLTS AND HOOK BOLTS: Shall meet the requirements of ASTM A307, with ASTM A563 nuts and washers. Galvanized, ASTM A153.

REFLECTIVE MARKER: Shall be #19405 reflective marker manufactured by Seton Nameplate, Branford, CT (800-243-6624). Size: 8” x 24”. Fabricate with mounting holes in upper corners. Provide with galvanized s-hooks.

260.3 Construction Methods: Do not begin installation before completion of final grading. Guiderail shall not deviate more than ½” in alignment to grade in each section.

Post holes shall be dug using hand methods in the vicinity of the existing 14-inch cast iron water main. Extreme care shall be taken to locate the water main and ensure that post locations do not conflict with the water main.

In areas where no existing underground utilities are present, post holes shall be drilled into firm undisturbed or thoroughly compacted soil. The bottoms of dug holes shall be thoroughly rammed so that the posts have a stable foundation. Backfill for all dug holes shall be approved material and is to be machine-tamped in 4-inch layers in such a way as not to shift the posts from the correct alignment. Gate posts shall be set in concrete as detailed.

Align each post both vertically and laterally. Secure in position during backfilling operations. Posts shall be set at a constant vertical alignment above finished grade. Posts shall be set at a constant distance from edges of pavements.

Where Timber Guide Rail is called for on the plans, rails shall be installed as described in the approved shop drawings. Posts shall be notched to produce tightly fitted joints.

Exposed edges of all timbers shall be chamfered $\frac{1}{2}$ " and lightly sanded to produce eased edges.

Clean up during installation and upon completion of work. Remove from site all waste and excess materials, debris, tools, and equipment. Repair any damage resulting from guide rail installation.

260.4

Basis of Payment: Timber Guide Rail shall be measured and paid for at the contract unit price per linear foot of "Timber Guide Rail" as listed in the bid proposal, completed in place and accepted by the Engineer. Said unit price shall include all materials, equipment, tools, labor, and work incidental thereto, including excavation using hand methods as required.

Timber Posts shall be measured and paid for at the contract unit price for each "Timber Post" as listed in the bid proposal, completed in place and accepted by the Engineer. Said unit price shall include all materials, equipment, tools, labor, and work incidental thereto including excavation using hand methods as required.

270.0 REMOVABLE BOLLARDS

270.1 Description: Work under this item includes providing and installing removable steel bollards with a cast-in-place concrete footing at the locations shown on the plans. Bollard will remove completely from the base unit by applying torque to a fire hydrant type nut releasing the locking mechanism. The bollard shall be able to be returned to its original locked position without the use of any tools or other devices.

270.2 Materials: Removable Bollards shall be Maxiforce Removable Bollard MR-RW-RS1-R. Round Wrench, Round Style 1 Head with removable base as manufactured by: Blue Ember Technologies, LLC, Sykesville, MD 21784, Tel 410-552-9888, Fax 410-552-9939, or approved equal.

Concrete for Footing: Shall be Class A Concrete as per the Form 816.

Steel Plate: A36 ASTM A36/A36M-05 Standard Specification for Steel, Carbon, Cold-Rolled Sheet, Commercial Quality.

Steel Tube: ASTM A53/A53M-04a Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated and Welded and Seamless. ASTM A500 Standard Specification for Cold-Formed Welded and Seamless Carbon Tubing in Rounds and Shapes.

Fasteners: Series 300 Stainless Steel

Provide material free from surface blemishes and defects where exposed to view in the finished installation. Materials not specified shall be of good commercial quality, suitable in all respects for the purpose intended.

Cleaning: After fabrication of units, all tool marks and surface imperfections shall be removed and exposed faces of all welded joints dressed smooth.

Priming and Painting: Coat with a standard rust-inhibitive primer per manufacturer standard application instructions. Powder Coat with factory applied TIGER Drylac or equivalent. Custom color to be selected by the Town.

270.3 Construction Methods:

Comply with manufacturer provided instructions and drawings.

Base units shall be installed with the top plate flush with the finished surface. Keep any holes in the base unit top clear of taking on any debris that would limit the bollard unit from seating properly per instructions.

Bollard shall be secured to base unit after it is leveled and fully cured. Attach bollard per manufacturer instructions.

270.4 Basis of Payment: The work under this item shall be paid for at the unit contract price for each "Removable Bollard" as listed in the Bid Proposal, complete in place, which price shall include all materials, tools, equipment, and labor necessary to complete the excavation and installation of the Removable Bollard units in conformity with the plans, or as specified.

301.0 MAINTENANCE AND PROTECTION OF TRAFFIC

301.1 Description: Unless other provisions are made on the plans or in the Special Conditions, the Contractor shall keep the roadway open to traffic for the full length of the project and shall provide a sufficient number of travel lanes and pedestrian pathways to move that traffic ordinarily using the roadway. The travel lanes and pedestrian pathways shall be drained and kept reasonably smooth and in suitable condition at all times in order to provide minimum interference with traffic and consistent with proper execution of the work.

Suitable ingress and egress shall be provided at all times where required for all intersecting roads and for all abutting properties have legal access.

301.2 Construction Methods: When a scheme for maintenance of traffic that may include detours is shown on the plans or approved by the Legal Traffic Authority, this shall govern unless an alternate scheme acceptable to the Engineer is offered by the Contractor at no additional cost. If no scheme is shown on the plans or described in the Special Conditions of the Contract and the Contractor wishes to deviate from the provisions of maintaining traffic as described in this Section, the Contractor must submit, and the Engineer may approve, a schedule showing a proposed sequence of operations and a compatible method of maintaining traffic.

301.3 Traffic Signs and Barricades: The Contractor will furnish signs, barricades, traffic cones, and traffic delineators to forewarn traffic of the construction. The Contractor will also provide such safety measures, pavement markings, warning devices, and signs as deemed necessary to safeguard and guide the traveling public through detours ordered by the Engineer or included in the approved scheme for maintenance of traffic. Signs and barricades will be delivered adjacent to the project and traffic cones and delineators will be provided when required, at no cost to the Town. The Contractor shall erect, maintain, move, adjust, relocate and store these signs, barricades, traffic cones, and delineators when, where, and in accordance with the "Manual on Uniform Traffic Control Devices", or as directed by the Engineer.

The use of unauthorized or unapproved signs, barricades, traffic cones, or traffic delineators will not be permitted.

The Contractor shall keep all signs in proper position and clean and legible at all times. Care shall be taken so that weeds, shrubbery, construction materials or equipment, and soil are not allowed to obscure any sign, light, or barricade. Signs that do not apply to existing conditions shall be removed or adjusted so that the legend is not visible to approaching traffic.

301.4 Snow Removal: The Contractor, when order by the Engineer, shall remove snow and take care of icy conditions on temporary, new, and existing sidewalks on any part of the right-of-way within the limits of the project.

Snow removal and correction of icy conditions other than those resulting from the Contractor's operations, and snow removal on uncompleted contracts under traffic, will remain the obligation of the Town.

301.5 Failure to Provide: Should the Contractor fail to perform any of the work required under this Section, the Town may perform, or arrange for others to perform, such work. In such cases, the Town will deduct from monies due or to become due the Contractor, all expenses connected therewith.

301.7 Basis of Payment: Maintenance and Protection of Traffic will be paid for at the Contract Lump Sum price for "Maintenance and Protection of Traffic". This price shall include all costs for labor, equipment, and services involved in the erection, maintenance, moving, adjusting, relocating and storing of signs, barricades, traffic cones, and traffic delineators furnished by the Contractor, as well as all cost of labor and equipment involved in the maintenance of traffic lanes and detours ordered or included in the approved scheme for maintenance of traffic.

NOTE: The Town of Glastonbury CHIEF OF POLICE, acting in the capacity of the LEGAL TRAFFIC AUTHORITY, shall be the sole and final authority for the Maintenance and Protection of Traffic.

302.0 TRAFFICPERSON

302.1 General: This item shall conform to Section 9.70 TRAFFICPERSON, of the Form 816.

302.3 Description: Add the following to the first paragraph of Section 9.70.01

“Trafficpersons shall consist of uniformed flaggers meeting acceptable criteria or extra duty officers of the Glastonbury Police Department. The Contractor shall provide Uniformed Flaggers meeting the requirements of this specification as required for safe traffic operations in the project area. Extra-duty police officers will be used only when specifically required by the Police Chief, as the Legal Traffic Authority, who will make this determination based on the Contractor’s proposed operations, traffic volumes, and traffic conditions.”

“All work under this item shall be paid only for the duration of the Contract as contained in the Special Conditions under ‘Time for Completion/Notice to Proceed’ and for any time extensions granted in writing by the Town. Payment for police officers required after the duration of the Contract and approved time extensions shall be made directly by the Town and such costs deducted from future payments due the Contractor.”

303.3 Basis of Payment: Replace Section 9.70.05 with the following:

“There will be no direct payment for safety garments or STOP/SLOW paddles. All costs associated with furnishing safety garments and STOP/SLOW paddles shall be considered included in the general cost of the item.

1. Uniformed Flagger: Uniformed flaggers will be paid for at the contract unit price per hour for “Trafficperson (Uniformed Flagger)” as listed in the bid proposal, which price shall include all compensation, insurance benefits, and any other cost or liability incidental to the furnishing of the trafficpersons ordered.”

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

When the trafficperson consists of Town of Glastonbury Police Officers, the Contractor shall provide the invoices from such work to the Engineer and the Town will pay these invoices directly. Under these circumstances, the Contractor will be reimbursed only for the 5% markup on the actual cost of police services under this line item.

310.0 TRAFFIC SIGNS

310.1 General: This item shall conform to Section 12.08 SIGN FACE - SHEET ALUMINUM, of the Form 816, amended as noted below.

All traffic and parking signs shall conform to the latest revision of the "Manual on Uniform Traffic Control Devices" conventional road size, the "Standard Highway Signs" book and the "Connecticut Department of Transportation Catalog of Signs".

All signs shall be sheet aluminum, 0.08 inches thick.

All signs except shall be retroreflective sheeting, high intensity grade, ASTM Type III.

Sign posts shall meet the requirements of the Connecticut Department of Transportation galvanized Type II, 3 lbs/ft breakaway channel posts.

310.2 Method of Measurement: This work will be measured for payment by the number of each sign of the type specified, installed and accepted.

310.3 Basis of Payment: This work will be paid for at the Contract unit price for each of the type of sign specified complete in place, which price shall include the completed sign, metal sign post(s), break-away base, and all materials, equipment, labor and work incidental thereto.

403.0 EARTH TRENCH EXCAVATION

403.01 General: The Contractor shall make excavations of normal depth in earth for trenches and structures; shall backfill such excavations to the extent necessary; shall furnish the necessary material and construct embankments and fills; and shall make miscellaneous earth excavations and do miscellaneous grading. All such work shall be done as indicated on the drawings and as herein specified.

The program of excavation, dewatering, sheeting and bracing shall be carried out in such manner as to eliminate all possibility of undermining or disturbing the foundations of existing structures or of work previously completed under this contract.

Excavation in general shall be in open trenches. Tunneling shall be done only to pass under obstructions such as pipes or duct or only as indicated on contract drawings, or in Special Provisions, or on written permission of the Engineer, and then only in accordance with those sections hereof which describe tunnel excavation, and subject to such further conditions as may have been described by drawings, Special Provisions, or as the Engineer may specify.

The Contractor shall make excavations in such manner and to such widths as will give suitable room for building the structures or laying and jointing the piping; shall furnish and place all sheeting, bracing, and supports; shall do all coffer damming, pumping and draining; and shall render the bottom of the excavations firm and dry and acceptable in all respects.

403.02 Trench Excavation: Where pipe is to be laid in gravel bedding or concrete cradle, the trench may be excavated by machinery to or to just below, the designated subgrade, provided that the material remaining at the bottom of the trench is no more than slightly disturbed.

Where pipe is to be laid directly on the trench bottom, the lower part of trenches in earth shall not be excavated to subgrade by machinery, but, just before the pipe is to be placed, the last of the material to be excavated shall be removed by means of hand tools to form a flat or shaped bottom, true to grade, so that the pipe will have a uniform and continuous bearing and support on firm and undisturbed material between joints except for limited areas where the use of pipe slings may have disturbed the bottom.

403.03 Depth of Trench: Trenches shall be excavated to such depths as will permit the pipe to be laid at the elevations, slopes or depths of cover indicated on the drawings, and at uniform slopes between indicated elevations.

403.04 Width of Trench: The methods and equipment used for excavation must be adapted to the conditions at the site and the dimensions of the required trench. The width of ground or street surfaces cut or disturbed shall, in general, be kept as small as practicable to accommodate the work and shall not be widened by scraping or loosening materials from the sides. Every effort shall be made to keep the sides of the trenches firm and undisturbed until backfilling has been completed and consolidated.

Width of pipe trenches shall be wide enough to provide sufficient space for shoring, for foundations, for drainage, for laying, jointing, inspecting, and backfilling of sides of pipe, or for building the required structures, and as near as feasible to the above described minimums, in order to reduce the load of backfill upon the top of the sewer; to provide lateral support for the fill and haunching on the sides of the pipe, and to insure that the pipe will not be pushed out of line while placing backfill.

The maximum permissible trench width to be paid by the Town varies with the diameter of the pipe (see table 403-1). Where the Contractor chooses not to use trench supports, the Contractor will still be paid as per maximum trench widths or actual trench width, whichever is the least.

- 403.05 Excavation for Special Foundations: Where concrete, stone or underdrain is required or ordered, excavation shall be carried down to the depth and lines required for such foundation or underdrain. If required by contract drawings or Special Provisions as part of the structure and included in the price, no additional payment for this additional excavation, as excavation, will be made. If the foundation is paid by the cubic yard or other specific item of proposal, such price for foundation shall include excavation therefore. Excavation for underdrain is included in price for underdrain.

Where the plans, Proposal or Special Provisions indicate certain foundations, they will be constructed and paid for as indicated.

Where the soil in subgrade is found to be soft, loose or freshly-filled earth, or unstable or unsuitable as a base for the proposed sewer or structure, the Engineer may, in his discretion, order it excavated to such depth and width as he may deem proper and replaced with gravel, crushed stone, concrete, plank or similar materials as he may direct.

If the excavation for foundation is made wider or deeper than required or ordered, or if excavation for concrete on sides of pipe is made wider than required or ordered, then no additional payment for the additional quantities of excavation or for additional foundation or side filling materials will be made, if being assumed that the added space was excavated for the convenience of, or by error of, the contractor.

- 403.06 Length of Trench and Space Occupied: Trenches must be constructed with a minimum of inconvenience and danger to the public and all other parties. To that end, the length of trench opened at any time, from point where ground is being broken to completed backfill and temporary surfacing, and also the amount of space in streets or public and private lands occupied by trench soil banks, equipment and supplies, shall to exceed the space or spaces considered reasonably necessary and expedient by the Engineer. In determining the length of open trench, the space for equipment, materials, supplies, etc. needed, the Engineer will consider the nature of the street or land where work is being done, depth and width of trench, types and methods of construction and equipment being used, inconvenience to the public or to private parties, possible dangers, limits or rights-of-way and other proper matters.

The Contractor must keep streets and premises near the work free from unnecessary obstructions, debris, etc. The Engineer may, at any time order all equipment, materials, surplus from excavations, debris, etc., lying outside reasonable limits of space, promptly removed; and should the Contractor fail to remove such materials within three days after notice to remove same, the Engineer may cause any part or all of such materials to be removed by such persons as he may employ, at the Contractor's expense, and may deduct the costs thereof from payment which may be or may become due to the contractor under this Contract. In any cases when public safety urgently demands it, the Engineer may cause such materials to be removed without prior notice.

Trenches shall be excavated with approximately vertical sides between the elevation of the center of the pipe and an elevation one foot above the top of the pipe.

403.07 Dimensions of Trenches: Trenches shall be excavated to the lines indicated on contract drawings or as described for any particular structure by any contract document. In general, room shall be allowed for installing the pipe or other structure, for making and inspecting joints in pipe, for placing and compacting fill around and on both sides of pipe, for draining and pumping as needed, for removal of unsuitable materials, and for any other purpose incidental to the fulfillment of the Contract and these specifications.

Care must be taken to excavate to correct line, grade and width at all points.

In general, sides of trenches must be not less than four inches from outside of barrel of all pipe eight inches or less in size, six inches from outside of barrel of pipe ten inches or larger in size, or as shown by contract drawings. Except as otherwise provided, excavation shall conform closely to the form and grade of the bottom of the pipe or foundation required. To accomplish this, the Engineer may require that no earth shall be excavated by machinery nearer than six inches to the finished subgrade, and the last six inches of excavation in earth shall be carefully removed by hand labor to the exact lines and grade required, immediately prior to laying pipe or underdrain or building bottom of structure.

403.08 Extent of Open Excavation: The extent of excavation open at any one time will be controlled by the conditions, but shall always be confined to the limits prescribed by the Engineer. At no time shall the extend of the open excavation go beyond two structures.

403.09 Trench Excavation in Fill: If pipe is to be laid in embankments or other recently filled material, the material shall first be placed to the top of the fill or to a height of at least one foot above the top of the pipe, whichever is the lesser. Particular care shall be taken to ensure maximum consolidation of material under the pipe location. The pipe trench shall be excavated as though in undisturbed material.

403.10 Unauthorized Excavation: If the bottom of any excavation is taken out beyond the limits indicated or prescribed, the resulting void shall be backfilled at the Contractor's expense with $\frac{3}{4}$ " crushed stone if the excavation was for a pipeline not having a concrete cradle or encasement, or with Class B concrete if the excavation was for a masonry structure.

403.11 Cutting of Pavement: When the trench lies within a paved area, the trench shall be cut with an approved tool. All cuts shall be made to straight lines and shall be parallel and/or perpendicular to the center line of the trench.

403.12 Bridging Trenches: The Contractor shall, at no cost, provide suitable and safe bridges and other crossings where required for the accommodation of travel, and to provide access to private property during construction, and shall remove said structures thereafter.

403.13 Obstacles: Some obstructions, obstacles, or difficulties in the path of the work anticipated, or in the performance of the work, may have been indicated by drawings, Special Provisions, or in other contract documents. The omission of any indication or mention of any obstruction, obstacle or difficulty which a reasonable and careful contractor, bidder, or estimator might have anticipated, or any question as to adequacy of such indication as given, shall not entitle the Contractor to any extra or additional compensation for any loss or expense occasioned directly or indirectly by such obstruction, etc., not to any extension of time or waiver of any requirement of the Contract and Specifications. The Contractor shall be understood to have entered into the Contract with full knowledge that in any work involving excavation, operation in public highways or adjacent to other developments, some unforeseen obstacle, difficulties, unforeseen soil or ground water conditions, etc., may be encountered, and that the

Contractor has included in the bid and contract obligations the assumptions of the risks and cost to which such obstacles, etc. may subject the bid.

The Town will make arrangements for clearance or avoidance of permanent obstruction by pipes and structures of public utilities and of public bodies, except as otherwise indicated on drawings or contract documents, where such obstruction is found in the space to be occupied by the pipe or structure to be built under the Contract. The Town will not assume the cost of temporary removal, support, protection, etc. of pipes, poles, and other structures which do not occupy the space to be occupied by the pipe or structure to be built for the Town, where removal, support, protection, etc. of such pipes, poles or structures is desired for the convenience of, or to save expense to, or to accommodate the equipment of the Contractor.

403.14 Ends of Certain Pipes to be Sealed: If any pipe, drain, culvert, connection or similar conduit is encountered and cut off or cut through incidental to the construction of the work, and if the said drain, etc. is not to continue to function or be used, the open end or ends of such pipes shall be securely and tightly closed by an adequate cover or bulkhead as directed by the Engineer. Except as a specific price for such closings was fixed in the Proposal, the cost of such covers, bulkheads, and the setting of them shall have been included in the price of prices bid for various other portions of the work in the Proposal and no additional payment will be made therefore.

In removing existing pipes or other structures, the Contractor shall use care to avoid damage to materials, and the Engineer shall include for payment only those new materials which are necessary to replace those unavoidably damaged.

The structures to which the provisions of the preceding three paragraphs shall apply include pipes, wires, and other structures which (a) are not indicated on the drawings or otherwise provided for, (b) encroach upon or are encountered near the substantially parallel to the edge of the excavation, and (c) in the opinion of the Engineer will impede progress to such an extent that satisfactory construction cannot proceed until they have been changed in location, removed (to be later restored), or replaced.

When fences interfere with the Contractor's operations, the Contractor shall remove and (unless otherwise specified) later restore them to at least as good condition as that in which they were found immediately before the work was begun, all without additional compensation. The restoration of fences shall be done as promptly as possible and not left until the end of the construction period.

403.15 Excavation Near Existing Structures: Attention is directed to the fact that there are pipes, drains, and other utilities in certain locations. Some of these have been indicated on the drawings, but no attempt has been made to show all of the services, and the completeness or accuracy of the information given is not guaranteed.

As the excavation approaches pipes, conduits, or other underground structures, digging by machinery shall be discontinued and the excavation shall be done by means of hand tools, as directed. Such manual excavation, when incidental to normal excavation, shall be included in the work to be done under items involving normal excavation.

Where determination of the exact location of a pipe or other underground structure is necessary for doing the work properly, the Contractor may be required to excavate test pits to determine such locations. When such test pits may be properly considered as incidental to other excavation, the Contractor shall receive no additional compensation, the work being understood to be included as a part of the excavation. When the

Engineer orders test pits beyond the limits of excavation considered as part of the work, such test pits shall be paid for as specified under MEASUREMENT AND PAYMENT.

- 403.16 Protection of Existing Structures: All existing pipes, poles, wires, fences, curbing, property-line markers, and other structures which the Engineer decides must be preserved in place without being temporarily or permanently relocated shall be carefully supported and protected from injury by the Contractor. Should such items be injured, they shall be restored by the Contractor, without compensation therefore, to at least as good condition as that in which they were found immediately before the work was begun.
- 403.17 Relocation and Replacement of Existing Structures: Whenever the Contractor encounters certain existing structures as described below and is so ordered in writing, the Contractor shall do the whole or such portions of the work as he may be directed, to change the location of, remove and later restore, replace such structures, or to assist the owner thereof in so doing. For all such work, the Contractor shall be paid under such items of work as may be applicable, otherwise as Extra Work.
- 403.18 Payment: This item will not be paid for separately. Rather, payment for earth trench excavation and the disposal of surplus excavated material shall be included in the unit price or lump sum price of the item associated therewith.

TABLE 403-1
TRENCH WIDTHS

Maximum pay limits for trench widths are as follows:

Where the Contractor chooses not to use trench supports the Contractor will still be paid as per maximum trench widths.

Size Pipe Nominal Inside Diameter	Maximum Width of Trench
6"	2.5 Feet
8"	4.0 Feet
10"	4.0 Feet
12"	4.0 Feet
15"	4.0 Feet
18"	4.0 Feet
21"	4.3 Feet
24"	4.5 Feet
27"	4.8 Feet
30"	5.1 Feet
33"	5.4 Feet
36"	5.7 Feet
39"	5.9 Feet
42"	6.3 Feet

404.0 TRENCH DEWATERING

404.01 General: To ensure proper conditions at all time during construction, the Contractor shall provide and maintain ample means and devices (including spare units kept ready for immediate use in case of breakdown) with which to intercept and/or remove promptly and dispose properly of all water entering trenches and other excavations. Such excavations shall be kept dry until the structures, pipes, and appurtenances to be built therein have been completed to such extent that they will not be floated or otherwise damaged.

All water pumped or drained from the work shall be disposed of in a suitable manner without undue interference with other work, damage to pavements, other surfaces, or property. Suitable temporary pipes, flumes, or channels shall be provided for water that may flow along or across the site of the work.

404.02 Temporary Underdrains: Temporary Underdrains, if used, shall be laid in trenches beneath the grade of the structure. Trenches shall be of suitable dimensions to provide room for the chosen size of underdrain and its surrounding gravel. Underdrain pipe shall be acceptable PVC or ADS pipe of standard thickness. Sewer pipe of the quality known as "seconds" will be acceptable.

Underdrains, if used, shall be laid at an approved distance below the bottom of the normal excavation wrapped in Mirafi 140 or equal as outlined in Section 409.05 of these specifications, and entirely surrounded by graded gravel or crushed stone to prevent the admission of sand or other soil into the underdrains. The distance between the top of the bell of the underdrain pipe shall be at least three (3) inches unless otherwise permitted. The space between the underdrain and the pipe or structure shall be filled and crushed stone which shall be rammed, if necessary, and left with a surface suitable for laying the pipe or building the structure.

404.03 Drainage Wellpoint System: If required, the Contractor shall dewater the excavations by means of an efficient drainage system which will drain the soil and prevent saturated soil from flowing into the excavation. The wellpoints shall be designed especially for this type of service. The pumping unit shall be designed for use with the wellpoints and shall be capable of maintaining a high vacuum and of handling large volumes of air and water at the same time.

If required, the installation of the wellpoints and pump shall be done under the supervision of a competent representative of the manufacturer. The Contractor shall do all special work such as surrounding the wellpoints with sand or gravel or other work which is necessary for the wellpoint system to operate for the successful dewatering of the excavations.

404.04 Payment: This item will not be paid for separately. Rather, payment for trench dewatering shall be included in the unit price of the item associated therewith.

405.0 BACKFILLING AND CONSOLIDATION

405.1 General: In general, and unless other material is indicated on the drawings or specified, material used for backfilling trenches and excavations around structures shall be suitable material which was removed in the course of making the construction excavations.

Frozen materials shall not be placed in the backfill nor shall backfill be placed upon frozen material. Previously frozen material shall be removed, or shall be otherwise treated as required before new backfill is placed.

405.2 Backfilling around Structures: The Contractor shall not place backfill against or on structures until they have attained sufficient strength to support the loads (including construction loads) to which they will be subjected without distortion, cracking, or other damage. As soon as practical after the structures are structurally adequate and other necessary work has been done, special leakage tests, if required, shall be made. Promptly after the completion of such tests, the backfilling shall be started and then shall proceed until its completion. The best of the excavated materials shall be used in backfilling within two feet of the structure. Unequal soil pressures shall be avoided by depositing the material evenly around the structure.

405.3 Backfilling Pipe Trenches: As soon as practicable after the pipes have been laid and the joints have acquired a suitable degree of hardness, if applicable, or the structures have been built and are structurally adequate to support the loads, including construction loads to which they will be subjected, the backfilling shall be started, and thereafter it shall proceed until its completion in accordance with pipe manufacturer recommendations.

With the exception mentioned below in this paragraph, trenches shall not be backfilled at pipe joints until after that section of the pipeline has successfully passed any specified tests required. Should the contractor wish to minimize the maintenance of lights and barricades and the obstruction of traffic, the contractor may, at his own risk, backfill the entire trench, omitting or including backfill at joints as soon as practicable after the joints have acquired a suitable degree of hardness, if applicable, and the related structures have acquired a suitable degree of strength. The contractor shall, however, be responsible for removing and later replacing such backfill at no cost should the contractor be ordered to do so in order to locate and repair or replace leaking or defective joints or pipe.

a. Materials: The nature of the materials will govern both their acceptability for backfill and the methods best suited for their placement and compaction in the backfill. The materials and methods shall both be subject to the approval and direction of the Engineer. No stone or rock fragment larger than 12 inches in greatest dimension shall be placed in the backfill nor shall large masses of backfill material be dropped into the trench in such a manner as to endanger the pipeline. If necessary, a timber grillage shall be used to break the fall of material dropped from a height of more than five feet. Pieces of bituminous pavement shall be excluded from the backfill unless their use is expressly permitted, in which case they shall be broken up as directed.

b. Ho Pac Trench Consolidation: Where the trench backfill is consolidated by the "Ho Pac" method and the depth of the trench from the road or ground surface to the top of the pipe exceeds ten feet, the trench backfill shall be placed and consolidated in two lifts of equal depth.

The approved backfill material shall be placed and compacted at a moisture content between four and eight percent (based on dry density, by weight), or with two percent of the optimum moisture content as determined by the moisture density relationship test specified in ASTM D 1557, at the option of the Engineer. Compaction shall be by a "Ho Pac" vibratory compactor or approved equal, operating at a frequency between ten and 40 Hertz, placed directly on the backfill surface, and applied with the maximum practical force applicable by the backhoe to which it is attached. Compaction effort shall be continued until no further visible settlement occurs.

c. Miscellaneous Requirements: Whatever method of compacting backfill is used, care shall be taken that stones and lumps shall not become nested and that all voids between stones shall be completely filled with fine material. Only approved quantities of stone and rock fragments shall be used in the backfill. The Contractor shall, as part of the work done under the items involving earth excavation and rock excavation as appropriate, furnish and place all other necessary backfill material.

All voids left by the removal of sheeting shall be completely backfilled with suitable materials, thoroughly compacted.

Where required, excavated material which is acceptable to the Engineer for surfacing or pavement sub base shall be placed at the top of the backfill to such depths as may be specified elsewhere or as directed. The surface shall be brought to the required grade and stones raked out and removed.

405.4

Embankments Over Pipe: Where the top of the pipe is less than three feet below the surface of the ground, additional fill shall be placed to form an embankment to cover and protect the pipe. The top of such embankment shall not be less than three feet above the top of the pipe and not less than one foot wider than the outside diameter of the pipe, with side slopes no steeper than one and one half horizontal to vertical, or of such section as may have been indicated by drawings. Such embankments shall be made of suitable dry earth, well compacted. Embankments must be maintained to the full required dimensions during the maintenance period of the Contract, and any settlement, washout, or deficiency occurring or found during that time shall be rectified and embankments brought up to the required height, width and slopes.

In general, such embankments may be made with materials excavated on the job and not used for backfill elsewhere. Should there not be sufficient surplus material for embankments, or should it be unsuitable or inconveniently located, the Contractor shall secure and provide sufficient suitable material. In any case, where the Town has provided borrow pits from which the Contractor may obtain filling material, the Contractor must conform to the conditions for excavating and moving such material as established by acts of the Town in obtaining such rights, and by indications on drawings or in other contract documents.

Openings through embankments for the passage of water and other purposes will be provided as indicated on drawings or elsewhere, or as ordered.

Grass shall be seeded or turf placed on embankments if, where, and as provided in contract documents. In general, if grassing is not required, the Contractor may, at his option, grass embankments to facilitate his maintenance. The Engineer may order grassing where not otherwise required under the general provisions for additional work if he deems proper.

Care shall be taken that sewer and appurtenances are not damaged by equipment or methods used for making and maintaining embankments.

Except as specific provisions may have been made in the Proposal for a particular contract, no payment other than prices bid for pipe will be paid for building and maintaining embankments or securing material therefore.

If, however, a price per cubic yard was established by the Proposal for filling material placed in embankments and/or in fills at side of embankment to avoid the formation of depressions there, the quantity of such filling material will be estimated and paid as the actual quantity placed, up to, but not exceeding the lines or sections required, measured after the embankment or fill has been made.

- 405.5 Material for Filling and Embankments: Approved selected materials available from the excavations and not required for backfill around pipes or against structures may be used for filling and building embankments, except as otherwise specified. Material needed in addition to that available from construction operations shall be obtained from approved gravel banks or other approved deposits. The Contractor shall furnish, at no cost, all borrowed material needed on the work.

All material, whether from the excavations or from borrow, shall be of such nature that after it has been placed and properly compacted it will make a dense, stable fill. It shall not contain vegetation, masses of roots, individual roots more than 18 inches long or more than one half inch in diameter, stones over six inches in diameter, or porous matter. Organic matter shall not exceed minor quantities and shall be well distributed.

- 405.6 Preparation of Subgrade: The Contractor shall remove loam and topsoil, loose vegetable matter, stumps, large roots, etc. from areas upon which embankments will be built or material will be placed for grading. The subgrade shall be shaped as indicated on the drawings and shall be so prepared by forking, furrowing, or plowing so that the first layer of the new material placed thereon will be well bonded to it.

- 405.7 Placing and Compacting Material: After the subgrade has been prepared as hereinbefore specified, the material shall be placed thereon and built up in successive layers until it has reached the required elevation.

Layers shall not exceed 12 inches in thickness before compaction. In embankments at structures, the layers shall have a slight downward slope away from the structure. In other embankments, the layers shall be slightly dished toward the center. In general, the finer and less pervious materials shall be placed against the structures or in the center, and the coarser and more pervious materials, upon the outer parts of embankments.

Each layer of material shall be compacted by the use of approved rollers or other approved means so as to secure a dense, stable and thoroughly compacted mass. At such points as cannot be reached by mobile mechanical equipment, the materials shall be thoroughly compacted by the use of suitable power driven tampers.

Previously placed or new materials shall be moistened by sprinkling, if required, to ensure proper bond and compaction. No compacting shall be done when the material is too wet, from either rain or too great an application of water, to compact it properly. At such times, the work shall be suspended until the previously placed and new materials have dried out sufficiently to permit proper compaction.

405.8 Compaction Test: When, in the opinion of the Engineer, such tests are necessary, the Contractor shall have compaction density tests taken by an approved independent laboratory. Ninety five percent of the maximum density determined in accordance with AA SHOT 180 Method D shall be achieved.

405.9 Payment: This item will not be paid for separately. Rather, payment for backfilling and consolidation shall be included in the unit price or lump sum price of the item associated therewith.

406.0 PIPES AND CULVERTS

406.1 General: These items shall conform to Section 6.51 CULVERTS of the Form 816, modified as follows.

Trench excavation, dewatering, and backfill for these items shall be according to Section 403.0 EARTH TRENCH EXCAVATION, Section 404.0 TRENCH DEWATERING, Section 405.0 BACKFILLING AND CONSOLIDATION, and Section 003.0 HANDLING WATER of these specifications.

406.2 Method of Measurement: There will be no direct measurement for trench excavation and there will be no measurement for payment for gravel fill, bedding material, or for the cost of connecting proposed drainage systems with existing systems, but the cost thereof shall be included in the contract unit price per linear foot for the size and type of pipe being installed.

406.3 Basis for Payment: The work under these items will be paid for at the contract unit price per linear foot of pipe and size specified, complete in place including trench excavation, gravel fill, bedding material and all other materials, equipment, tools, and labor incidental thereto.

407.0 CATCH BASINS AND DROP INLETS

407.1 General: These items shall conform to Section 5.07 CATCH BASINS, MANHOLES, AND DROP INLETS of the Form 816, modified as follows.

Trench excavation, dewatering, and backfill for these items shall be according to Section 403.0 EARTH TRENCH EXCAVATION, Section 404.0 TRENCH DEWATERING, and Section 405.0 BACKFILLING AND CONSOLIDATION of these specifications.

407.2 Method of Measurement: There will be no direct measurement for trench excavation in the installation of the various drainage appurtenances.

407.3 Basis of Payment: The work under these items shall be paid for at the unit contract price each for type of catch basins and drop inlets complete in place and shall include all materials, tools, equipment, and labor necessary to complete the excavation and installation of units in conformity with the plans, or as specified.

409.0 CULVERT ENDS

409.1 General: These items shall conform to Section 6.52 CULVERT ENDS of the Form 816, modified as follows:

409.2 Construction Methods: Trench excavation, dewatering, and backfill for these items shall be according to Section 403.0 EARTH TRENCH EXCAVATION, Section 404.0 TRENCH DEWATERING, and Section 405.0 BACKFILLING AND CONSOLIDATION of these specifications.

409.2 Method of Measurement: There will be no direct measurement for trench excavation and there will be no measurement for payment for gravel fill, bedding material, or for the cost of connecting proposed drainage systems with existing systems, but the cost thereof shall be included in the contract unit price per linear foot for the size and type of pipe being installed.

Concrete footings for culvert ends as shown in the construction details will also not be measured for payment, but rather included in the contract unit price for each culvert end.

409.3 Basis for Payment: The work under these items will be paid for at the contract unit price per each size specified, complete in place, including trench excavation, gravel fill, bedding material, concrete footing, and all other materials, equipment, tools, and labor incidental thereto.

410.0 UNDERDRAIN

410.1 General: These items shall conform to Section 7.51 UNDERDRAINS AND OUTLETS of the Form 816, modified as follows:

410.2 Construction Methods: Trench excavation, dewatering, and backfill for these items shall be according to Section 403.0 EARTH TRENCH EXCAVATION, Section 404.0 TRENCH DEWATERING, and Section 405.0 BACKFILLING AND CONSOLIDATION of these specifications.

420.0 RIPRAP

420.1 General: This item shall conform to Section 7.03 RIPRAP, of the Form 816.

420.2 Method of Measurement: The quantity of riprap measured for payment shall be the number of square yards of riprap apron, splash pad, or scour hole whose length and width are measured in place as accepted and thickness as shown on the plans.

There will be no direct measurement for trench excavation in the installation of the riprap.

420.3 Basis of Payment: This work will be paid for at the contract unit price per square yard for the type of riprap indicated, complete in place, including all materials, excavation, equipment, tools, and labor incidental thereto.

509.0 RESET MANHOLE

509.1 General: Under this item shall be included the alteration or reconstruction of existing manholes in conformity with the lines, grades, dimensions, and details shown on the plans, or as ordered, and in accordance with the provisions of these specifications for the various materials and work which constitute the completed structure.

509.2 Construction Methods: Frames, covers and tops which are to be reset shall be removed from their present beds, the walls or sides shall be rebuilt to conform to the requirements of the new construction and the tops, frames and covers reset, or the grates or covers may be raised by extensions of suitable height approved by the Engineer.

Resetting tops, frames and covers will be measured as units. When resetting tops, frames and covers, there will be no measurement for excavation; cutting, removal and replacement of pavement; pervious material and backfill.

509.3 Payment: Reset Units will be paid for at the contract unit price each for "Reset Manhole," of the type specified, respectively, complete in place, which price shall include excavation, pervious material, backfill, cutting of pavement, removal and replacement of pavement structure, extensions, concrete masonry units, mortar, and all materials, equipment, tools and labor incidental thereto.

510.0 ADJUST GATE BOX

510.1 Description: Reference to the "District" in this item refers to "The Metropolitan District".

The Contractor shall adjust to final grade, the gate boxes and covers appurtenant to the water mains as required and furnish and install extension rings, extension stems, air valve extensions, covers, and additional top or bottom sections if necessary, as shown on the Contract Drawings or as directed by the Engineer in accordance with these specifications.

510.2 Materials: The Contractor shall furnish standard District cast iron Dwyer type gate box sections as required and extension stems if necessary.

All additional materials, including any resurfacing materials and any additional fill required, shall be furnished and placed by the Contractor. Gravel shall conform to Article M.02.01.

510.3 Construction Methods: The Contractor shall carefully excavate around the gate boxes, remove the boxes, install extension stems and air valve extensions, if necessary, reinstall the present gate box if reusable, adjust the box to final grade using extension rings if applicable, and refill the excavation. Care shall be taken to prevent material from filling the inside of the gate box.

Extension stems will be required if the gate box is raised 24-inches or more. Extension stems shall be fabricated according to the detail shown on sheet WS-25 of the District's "Developers Manual."

Any damage done to District facilities by the Contractor shall be repaired or replaced by the Contractor at his expense.

510.4 Method of Measurement: The number of adjust gate boxes, complete with extension stems, air valve extensions, gate box extension rings, covers, and additional top or bottom sections, if necessary, measured for payment shall be the actual number of each box reset.

510.5 Basis of Payment: This work will be paid for at the contract unit price listed in the bid proposal for "Adjust Gate Box" complete in place, which price shall include the cost of furnishing material, including labor and equipment to incorporate them into the work. It shall also include the clearing, trenching and disposal of excavated materials, refilling trenches, furnishing the additional material for refilling, grading, sheeting, bracing, and pumping.

600.0 PRE-CAST CONCRETE BOARDWALK

600.1 General: These specifications are for a fully engineered pre-cast concrete boardwalk with railing system and shall be regarded as minimum standards for design and construction, as manufactured by Permatrak North America of 2058 Hedge Gate Boulevard, Beavercreek Ohio 45431 or approved equal. This item shall also include the design, specification, and construction of a drilled shaft foundation system suitable for the support of the proposed boardwalk.

Boardwalk color shall be "smoke" and surface finish shall be "sandblasted". A sample of the concrete color and surface finish shall be provided to the Engineer for approval.

Width: Inside clear width of boardwalk shall be a minimum of 10 feet 0 inches.

Alignment: Boardwalk shall follow the horizontal and vertical alignment as shown on the construction plans.

Construction of the boardwalk and drilled shaft foundation system is to take place within environmentally sensitive wetland areas. **As such, the timing of construction shall be limited to time periods of dry soil conditions as determined by the Engineer in order to minimize rutting and damage to these areas.** Careful consideration of the equipment and materials used to construct the foundation system is also required. All equipment used within the wetland areas shall be the smallest and lightest equipment that is capable of completing the work required as determined by the Engineer, and shall be track mounted in order to minimize damage to the wetland areas.

The Contractor or Subcontractor performing the installation of the drilled shaft foundation system shall have a minimum of three years of experience in the installation of drilled shafts of both diameter and length similar to those shown on the plans. The Contractor shall submit a list containing at least one (1) project completed in the last three (3) years on which the Contractor has installed drilled shafts of a diameter and length similar to those shown on the plans. The list of projects shall contain names and phone numbers of owner's representatives who can verify the Contractors' participation on those projects.

600.2

Design:

1 - Design Computations: It is the Contractor's responsibility for the design, detailing and additional construction specifications required to construct the boardwalk and drilled shaft foundation system. The designer of the boardwalk and foundation system (Designer) shall be a qualified Professional Engineer licensed in the State of Connecticut and experienced in the design of concrete structures and substructures.

2 - Designer's Liability Insurance: The Designer shall secure and maintain at no direct cost to the Town, a Professional Liability Insurance Policy for errors and omissions in the minimum amount of Five Hundred Thousand Dollars (\$500,000). The Designer may, at his election, obtain a policy containing a maximum One Hundred Twenty Five Thousand Dollars (\$125,000) deductible clause, but if he should obtain a policy containing such a clause, the Designer shall be liable to the extent of the deductible amount. The Designer shall obtain the appropriate and proper endorsement to its Professional Liability Policy to cover the indemnification clause in this contract as the same relates to negligent acts, errors or omissions in the work performed by the Designer. The Designer shall continue this liability insurance coverage for a period of three years from the date of the acceptance of the work by the Town or for three years after the termination of the contract, whichever is earlier, subject to the continued commercial availability of such insurance.

The Designer shall supply the certificate of this insurance to the Town prior to the start of construction of the boardwalk. The Designer's insurance company shall be licensed in the State of Connecticut.

3 – Soils Information: A geotechnical investigation was performed by Dr. Clarence Welti, P.E. P.C. and the related report is included as Attachment F to the contract documents. Two soil borings were completed to a depth of approximately 15 feet in the area of the boardwalk with continuous sampling to a depth of 6 feet. Gradation tests were performed on 8 soil samples from the borings and a summary of design parameters and soil properties is included on page 4 of this report. The Town believes that the information provided in this report is adequate for purposes of the design of the boardwalk foundations. If additional soils information is required by the Designer it must be obtained by the Contractor and will not be reimbursed by the Town.

4 - Preliminary Submissions: Prior to the start of fabrication or construction, the Contractor shall submit to the Engineer a design package, which shall include, but not be limited to the following:

(a) Detailed Plans:

Plan sheets shall be approximately 24" x 36".

Stamped by a licensed Professional Engineer (Connecticut).

Full plan view of the boardwalk and foundation system drawn to scale. The plan view must reflect the proposed horizontal alignment as shown on the design plans. Beginning and ending stations, the existing watercourse crossing, and all other factors that affect the construction along with all property lines and easement lines adjacent to the boardwalk shall be shown.

Full elevation view of the boardwalk, railing, and foundation system drawn to scale which reflects the actual vertical alignment. Elevation views should indicate the elevation at the top and bottom of the boardwalk and foundation system components, horizontal and vertical break points, and the location of finished grade.

Detailed grading plan around each of the proposed abutments using a one-foot contour interval. Grading plan shall demonstrate compliance with limits of grading included in the contract drawings and integration of the boardwalk with the proposed path and surrounding terrain.

Typical cross sections drawn to scale including all appurtenances.

Details of all boardwalk, railing, and foundation system components and their connections such as the length, size and where any changes occur; connections; etc.

Detailed layout plans for location of all foundation system components, including working points with coordinates for survey stakeout.

Design parameters used along with AASHTO references.

Material designations for all materials to be used with references to appropriate sections of the Connecticut Department of Transportation Standard Specifications (Form 816).

Detailed construction methods including a quality control plan. Construction quality control plans should include monitoring and testing frequencies (e.g, for maintaining horizontal and vertical control and confirming foundation system load capacity).

(b) Design Computations:

Stamped by a licensed Professional Engineer (Connecticut).

Computations shall clearly refer to the applicable AASHTO provisions.

Documentation of computer programs including all design parameters.

(c) Construction Specifications:

Construction methods specific to the boardwalk vendor chosen. Submittal requirements for materials such as certification, quality, and acceptance/rejection criteria should be included. Details on connection of boardwalk units and foundation system such that assurance of uniform load transfer should be included.

Detailed construction specifications for the drilled shaft foundation system shall be prepared by the Designer, including any required load testing and/or soil testing as required to confirm that the drilled shafts meet the intended design capacity. Such testing shall be included in the various unit prices for the drilled shafts and shall be at no additional expense to the Town. The construction specifications for the drilled shaft foundations to be prepared by the Designer shall be in general conformance with the model specification provided in Attachment G.

The submissions for the boardwalk and foundation system shall be treated as working drawings according to Section 1.05 of the Form 816 amended as follows:

1. Two sets of each submission shall be supplied to the Town
2. The Contractor shall allow 21 days for the review of each submission. If subsequent submissions are required as a result of the review process, 21 days shall be allowed for review of these submissions. No extensions in contract time will be allowed for the review of these submissions.

5 - Final Submissions: Once a boardwalk and foundation system design has been reviewed and accepted by the Town, the Contractor shall submit the final plans. The final submission shall include one set of full size (approximately 24" x 36") mylar sheets and one set of full size copies.

The final submission shall be made within 14 days of acceptance by the Town. No work shall be performed on the boardwalk until the final submission has been received by the Engineer.

Acceptance of the final design shall not relieve the Contractor of his responsibility under the contract for the successful completion of the work.

The Designer of the boardwalk and foundation system is responsible for the review of any shop drawings prepared for the fabrication. One set of full size copy of all approved shop drawings shall be submitted to the Engineer's permanent records.

6 - Design Criteria:

The design of the boardwalk superstructure shall comply with the following guidelines:

- LRFD Guide Specifications for the Design of Pedestrian Bridges, 2nd Edition;
- AASHTO LRFD Bridge Design Specifications, 5th edition;
- American Concrete Institute 2005 – Building Code and Commentary.

The design of the drilled shaft foundation system for the boardwalk shall be in accordance with the above referenced documents and FHWA publication, IF-99-025, Drilled Shafts: Construction Procedures and Design Methods.

In addition to normal dead loads, the structure shall be designed for the following:

UNIFORM LIVE LOAD: The boardwalk shall be designed for an evenly distributed live load of 90 pounds per square foot.

VEHICLE LOAD: The boardwalk shall also be designed to withstand a moving vehicle load for the AASHTO H-5 Design Vehicles (10,000 lbs). The vehicle load shall be distributed such that 80% of the load is on the rear axle (per AASHTO).

WIND LOAD: The boardwalk shall be designed for a minimum wind load of 35 pounds per square foot (approximately 120 mph). The wind is calculated on the entire vertical surface of the bridge as if fully enclosed.

SEISMIC: The boardwalk shall be designed for seismic loads of the intensity required by local codes.

600.3

Materials:

PRECAST CONCRETE: Shall conform to the requirements of Sections 6.01 and M.03 of the Form 816 and as follows:

- (a) The minimum compressive strength of the concrete shall be 4000 psi measured at 28 days.
- (b) All precast concrete components shall be air-entrained composed of portland cement, fine and coarse aggregates, admixtures and water. The air-entraining feature may be obtained by the use of either air-entraining portland cement or an approved air-entraining admixture. The entrained-air content shall be not less than four percent or more than seven percent.

CONCRETE FOR DRILLED PIERS: Shall be Class "F" Concrete conforming to the requirements of Section 6.01 and M.03 of the Form 816.

Steel reinforcement for foundation elements shall be bar reinforcement conforming to the requirements of ASTM A615, Grade 60 (uncoated), and shall meet the requirements of Section 6.02 of the Form 816. In general, the spacing of bar reinforcement shall be limited to six-inch increments.

LUMBER FOR RAILINGS: All timber materials shall be Southern Yellow Pine graded under the Southern Pine Inspection Bureau (SPIB) rules, and pressure treated with an Alkaline Copper Quaternary (ACQ) based preservative and as follows:

- (a) All treatments must meet or exceed the standards for treated wood set by the AWWPA.

- (b) All field cuts & drilled holes in lumber shall be treated in the field with oil-based ready to use Copper Napthenate (Wolman Green Woodlife Copper Care or Copper Care Wood preservatives Tenino Copper Napthenate or equal) in accordance with AWWA specification M4.

OTHER: Other materials shall conform to applicable sections of the Form 816 or as described in the specifications prepared by the Designer and approved by the Town.

600.4

Construction Methods:

DRILLED SHAFT FOUNDATION SYSTEM:

No later than 30 days prior to constructing the drilled shaft foundation system, the Contractor shall submit an installation plan for review by the Engineer. This plan shall provide information on the following:

- (a) A list identifying the on-site supervisor(s) and drill operator(s) for approval by the Engineer. The on-site supervisor(s) shall have a minimum two years experience in supervising the construction of drilled shafts of a diameter and length similar to those shown on the plans. The drill operator(s) shall have a minimum one-year experience in drilling for the construction of drilled shafts of a diameter and length similar to those shown on the plans. The list shall contain a summary of each individual's experience. Should the Contractor elect to change personnel during construction of the shaft, the same approval process will need to be completed for the new personnel prior to them starting work on the project. The Contractor shall not be compensated for any delays resulting from their changing of personnel.

- (b) List of proposed equipment to be used, including cranes, drills, augers, bailing buckets, final cleaning equipment, desanding equipment, slurry pumps, core sampling equipment, tremies or concrete pumps, casing, etc. **Drilling equipment shall be track mounted in order to minimize disturbance to environmentally sensitive wetland areas.**

- (c) Details of overall construction operation sequence and the sequence of shaft construction.

- (d) Details of shaft excavation methods, **including methods of handling and disposal of excavated material within the environmentally sensitive wetland areas.**

- (e) When the use of slurry is anticipated, details of the mix design and its suitability for the subsurface conditions at the construction site, mixing and storage methods, maintenance methods, and disposal procedures.

- (f) Details of methods to clean the shaft excavation.

- (g) Details of reinforcement placement, including support and centralization methods.

- (h) Details of concrete mix design and test results of both a trial mix and a slump loss test. The tests shall be conducted by an approved testing laboratory using approved methods to demonstrate that the concrete meets slump loss requirements.

- (i) Details of concrete placement, including proposed operational procedures for free fall, tremie or pumping methods.

- (j) Details of casing installation and removal methods.

(k)Details of methods for removal of obstructions. Obstructions the Contractor shall provide details of methods for removal including, but are not necessarily be limited to, boulders, concrete, riprap, steel, timber, etc.

The Engineer will evaluate the drilled shaft installation plan for conformance with the plans, specifications and special provisions and will then notify the Contractor of any additional information required and/or changes necessary to meet the contract requirements. All procedural approvals given by the Engineer shall be subject to trial in the field and shall not relieve the Contractor of the responsibility to satisfactorily complete the work as detailed in the plans and specifications. The Contractor shall not commence construction of the drilled shafts until the Engineer has approved the installation plans.

If integrity and/or load testing of the drilled shafts are called for, this submittal shall be developed in coordination with and submitted concurrently working drawing submittals as required in the testing specifications.

All submittals shall comply with the working drawing submittal requirements as outlined in Article 1.05.02 of the Form 816.

PRE-CAST CONCRETE BOARDWALK

Installation of the pre-cast concrete boardwalk, railings, and abutments shall be performed according to the approved plans and manufacturers installation instructions. Boardwalk manufacturer shall provide a field representative to review installation instructions with Contractor and Engineer and to certify that installation has been performed according to the approved drawings and manufacturer instructions.

600.5

Railings & Accessories:

Railing design shall meet the requirements of the ASHTO LRFD Bridge Design Specifications, 5th edition. Railings shall be suitable for bicycle use and shall be a minimum height of 48 inches above the floor deck.

Railing materials shall be No. 2 Southern Yellow Pine, and pressure treated with an ACQ based preservative according to AWPA standards. All exposed edges of the railing cap shall be routed with a .75" bit.

Railing shall be designed to withstand a lateral force of 50 PLF, applied at the top of the rail. Boardwalk designer to provide structural calculations for guiderail loading and components.

600.6

Warranty: The Contractor will be responsible for installation defects associated with the boardwalk and abutment components, foundation system, and railings for a period of 12 calendar months from the date of final acceptance by the Town.

The boardwalk manufacturer shall warranty the boardwalk against defects in material and workmanship for a period of ten years.

600.7

Measurement and Payment:

Pre-cast Concrete Boardwalk, Railings, and Abutments: The pre-cast concrete boardwalk, railings, and abutments will be paid for at the contract lump sum price as listed in the bid proposal for "Pre-cast Concrete Boardwalk", which price shall include all materials, equipment, labor, and work necessary for and incidental to the design, construction, delivery, unloading, assembly, and placement of the boardwalk and abutments as shown in the contract plans, including all railings on the superstructure.

Drilled Shaft Foundation: The quantities to be paid for shall be the length in feet of the completed and accepted concrete drilled shafts of the diameter and containing the reinforcement shown on the plans. The length shall be determined as the difference between the plan top of shaft elevation (excluding the pre-cast concrete pedestal cap provided by Permatrak) and the final bottom of shaft elevation. Drilled shafts shall be paid for at the contract unit price per linear foot listed in the bid proposal for "Drilled Shaft Foundation" of the size indicated on the plans. Such payment shall include the cost of design and construction of the drilled shaft foundations including concrete and reinforcing steel, temporary casings, slurry, blasting, earth excavation, water control, disposal of excavated material, protection of existing facilities/utilities, removal of shaft obstructions, testing and quality control, all labor, materials, equipment, and incidentals necessary to complete the drilled shafts according to the approved plans or to additional depth directed by the Engineer in the field as conditions warrant.

700.0 TREES, SHRUBS, AND GROUND COVER PLANTS

700.1 General: This item shall conform to Section 9.49 FURNISHING, PLANTING and MULCHING TREES, SHRUBS, VINES and GROUND COVER PLANTS of the Form 816.

702.0 INVASIVE PLANT ERADICATION

702.1 Description: This work shall include all materials, labor and equipment as required for the eradication and removal of unwanted vegetation along the proposed multi-use path, generally located between stations 39+50 and 56+00. **Such work shall extend a minimum distance of 25 feet measured perpendicular to the project baseline on both sides of the path or to the limits of disturbance for the project, whichever is greater.** All vegetation designated for removal shall be flush cut, and remaining stubble chemically treated with herbicide, or with the roots completely removed to prevent resprouting. All cut vegetation shall be chipped and be disposed off-site. The plants to be removed include Multiflora Rose, Russian Autumn Olive, Morrowii Honeysuckle, Japanese Barberry, and Privet. There are also desirable species within these work area which shall remain. This work shall be initiated at the beginning of construction.

702.2 Materials: All herbicides shall be registered for the species being treated and shall be formulated for cut surface or injection applications. Broadcast or uncontrolled spray application will not be permitted.

702.3 Construction Methods: Conduct treatment and removal only at times and under conditions approved by the Engineer. All removal items shall be marked by the Contractor and approved by the Engineer prior to the start of work.

Recommended methods of removal for the designated invasive plants include the following: 1) Weed wrench 2) Spray plants with 3% solution of Round Up (or Rodeo if the plant is located in standing water) or 3) Cut larger plants with a chain saw and paint the stump with undiluted Round-up.

Flush cut all brush and trees not more than 2 inches above the ground line. Remove all twining vines in treetops to the extent possible without damaging branches of supporting desirable vegetation. Cut and remove vines overtopping tree canopies. Climbing spikes will not be permitted for aerial work.

Complete eradication of invasive plants is essential to the process. Chemically treat all live stems or completely remove root systems where planting will occur. Any re-sprouting of invasive plants within one year of removal shall be treated. Make all applications in strict conformance to the manufacturer's recommendation and per requirements of regulatory agencies. Report in writing the formulation, concentration, area treated, and date for each application.

Legally dispose of all cut trees, brush, cuttings and unchippable material off-site as designated by the Engineer. No equipment or vehicles other than that required to complete the work shall be permitted within the work area. Prune out any branches on non-treatment plants that are damaged during removal of vegetation. All corrective pruning shall conform to the National Arborists Association Pruning Standards.

702.4 Method of Measurement: The control and removal of invasive vegetation will not be measured by payment, being paid for on a lump sum basis.

702.5 Basis of Payment: This work will be paid for at the contract lump sum price for "Invasive Plant Eradication and Removal" as listed in the Bid Proposal. This payment shall include all labor, materials and equipment necessary to cut; remove and dispose of designated invasive plant material; and to kill any remaining parts left in the soil. Off-site disposal of residue shall include the loading, transport, dumping, and fees associated with legal off-site disposal.

Proposal of _____
(hereinafter called "Bidder"), organized and existing under the laws of the State of _____
_____, doing business as _____
_____.

To the Town of Glastonbury (hereinafter called "Town").

In compliance with your Invitation to Bid, the Bidder hereby proposed to furnish materials and/or services as per Bid Number GL-2011-20 in strict accordance with the Bid Documents, within the time set forth therein, and at the prices stated below.

By submission of this bid, the Bidder certifies, and in the case of a joint bid each party thereto certifies as to their own organization that this bid has been arrived at independently without consultation, communication, or agreement as to any matter relating to this bid with any other Bidder or with any competitor.

The Bidder acknowledges receipt of the following:

Addendum #1 _____

Addendum #2 _____

Addendum #3 _____

It is the responsibility of the Bidder to check the Town's website for any Addendum before submitting the bid.

**MULTI-USE PATH SMITH SCHOOL TO BELL STREET
 BID PROPOSAL**

BID #GL-2011-20

<u>ITEM NO.</u>	<u>DESCRIPTION</u>	<u>QTY.</u>	<u>UNIT PRICE</u>	<u>EXTENSION</u>
1.	Preparation of Site in accordance with Section 002.0 of the Detailed Construction Specifications	Lump Sum	\$ _____/L.S.	\$ _____
2.	Handling Water in accordance with Section 003.0 of the Detailed Construction Specifications	Lump Sum	\$ _____/L.S.	\$ _____
3.	Test Pits in accordance with Section 004.0 of the Detailed Construction Specifications	4 Each	\$ _____/EA.	\$ _____
4.	Rock Excavation in accordance with Section 103.0 of the Detailed Construction Specifications	10 C.Y.	\$ _____/C.Y.	\$ _____
5.	Earth Excavation in accordance with Section 106.0 of the Detailed Construction Specifications	Lump Sum	\$ _____/L.S.	\$ _____
6.	Removal of Pavement in accordance with Section 106.0 of the Detailed Construction Specifications	22 S.Y.	\$ _____/S.Y.	\$ _____
7.	Formation of Subgrade in accordance with Section 107.0 of the Detailed Construction Specifications	8,800 S.Y.	\$ _____/S.Y.	\$ _____
8.	Subbase in accordance with Section 108.0 of the Detailed Construction Specifications	2,400 C.Y.	\$ _____/C.Y.	\$ _____
9.	Processed Stone Base in accordance with Section 109.0 of the Detailed Construction Specifications	1,600 C.Y.	\$ _____/C.Y.	\$ _____
10.	Stone Dust in accordance with Section 110.0 of the Detailed Construction Specifications	1,660 S.Y.	\$ _____/S.Y.	\$ _____
11.	Bituminous Concrete Class 2 (30% RAP) in accordance with Section 112.0 of the Detailed Construction Specifications	800 Ton	\$ _____/Ton	\$ _____
12.	Saw Cut Pavement in accordance with Section 112.0 of the Detailed Construction Specifications	10 L.F.	\$ _____/L.F.	\$ _____
13.	Bituminous Concrete Curbing in accordance with Section 113.0 of the Detailed Construction Specifications	20 L.F.	\$ _____/L.F.	\$ _____

**MULTI-USE PATH SMITH SCHOOL TO BELL STREET
 BID PROPOSAL**

BID #GL-2011-20

ITEM NO.	DESCRIPTION	QTY.	UNIT PRICE	EXTENSION
14.	Concrete Sidewalks in accordance with Section 201.0 of the Detailed Construction Specifications	200 S.F.	\$ _____/S.F.	\$ _____
15.	Topsoil (4-inch Layer) in accordance with Section 204.0 of the Detailed Construction Specifications	1,000 S.Y.	\$ _____/S.Y.	\$ _____
16.	Topsoil (2-inch Layer) in accordance with Section 204.0 of the Detailed Construction Specifications	7,100 S.Y.	\$ _____/S.Y.	\$ _____
17.	Wetland Topsoil (4-inch Layer) in accordance with Section 204.0 of the Detailed Construction Specifications	1,300 S.Y.	\$ _____/S.Y.	\$ _____
18.	Turf Establishment in accordance with Section 205.0 of the Detailed Construction Specifications	1,000 S.Y.	\$ _____/S.Y.	\$ _____
19.	Wetland Seeding in accordance with Section 205.0 of the Detailed Construction Specifications	1,300 S.Y.	\$ _____/S.Y.	\$ _____
20.	Erosion Control Mat (Type H) in accordance with Section 205.0 of the Detailed Construction Specifications	400 S.Y.	\$ _____/S.Y.	\$ _____
21.	Mulch in accordance with Section 206.0 of the Detailed Construction Specifications	7,100 S.Y.	\$ _____/S.Y.	\$ _____
22.	Sedimentation Barrier in accordance with Section 208.0 of the Detailed Construction Specifications	6,500 L.F.	\$ _____/L.F.	\$ _____
23.	Temporary Construction Entrance in accordance with Section 210.0 of the Detailed Construction Specifications	2 EA.	\$ _____/EA.	\$ _____
24.	Tree Protection Trench in accordance with Section 228.0 of the Detailed Construction Specifications	100 L.F.	\$ _____/L.F.	\$ _____
25.	Tree Protection Trench with Root Barrier in accordance with Section 228.0 of the Detailed Construction Specifications	6,400 L.F.	\$ _____/L.F.	\$ _____
26.	Segmental Retaining Wall Site No. 1 in accordance with Section 240.0 of the Detailed Construction Specifications	Lump Sum	\$ _____/L.S.	\$ _____

**MULTI-USE PATH SMITH SCHOOL TO BELL STREET
 BID PROPOSAL**

BID #GL-2011-20

ITEM NO.	DESCRIPTION	QTY.	UNIT PRICE	EXTENSION
27.	Segmental Retaining Wall Site No. 2 in accordance with Section 240.0 of the Detailed Construction Specifications	Lump Sum	\$ _____/L.S.	\$ _____
28.	Three Rail Fence in accordance with Section 250.0 of the Detailed Construction Specifications	1,000 L.F.	\$ _____/L.F.	\$ _____
29.	Timber Guide Rail in accordance with Section 260.0 of the Detailed Construction Specifications	210 L.F.	\$ _____/L.F.	\$ _____
30.	Timber Posts in accordance with Section 260.0 of the Detailed Construction Specifications	90 EA.	\$ _____/EA.	\$ _____
31.	Removable Bollards in accordance with Section 270.0 of the Detailed Construction Specifications	2 EA.	\$ _____/EA.	\$ _____
32.	Maintenance and Protection of Traffic in accordance with Section 301.0 of the Detailed Construction Specifications	Lump Sum	\$ _____/L.S.	\$ _____
33.	Trafficperson (Uniformed Flagger) in accordance with Section 302.0 of the Detailed Construction Specifications	40 Hour	\$ _____/HR.	\$ _____
34.	Trafficperson (Police Officer) in accordance with Section 302.0 of the Detailed Construction Specifications	1 EST	\$ <u>2,000.00</u> /EST.	\$ <u>2,000.00</u>
35.	Traffic Signs in accordance with Section 320.0 of the Detailed Construction Specifications	10 Each	\$ _____/EA.	\$ _____
36.	12-inch HDPE Pipe in accordance with Section 406.0 of the Detailed Construction Specifications	56 L.F.	\$ _____/L.F.	\$ _____
37.	12-inch Reinforced Concrete Pipe in accordance with Section 406.0 of the Detailed Construction Specifications	25 L.F.	\$ _____/L.F.	\$ _____
38.	24-inch x 38-inch Elliptical Reinforced Concrete Pipe in accordance with Section 406.0 of the Detailed Construction Specifications	54 L.F.	\$ _____/L.F.	\$ _____
39.	Type 'C-G' Catch Basin in accordance with Section 407.0 of the Detailed Construction Specifications	1 Each	\$ _____/EA.	\$ _____

**MULTI-USE PATH SMITH SCHOOL TO BELL STREET
 BID PROPOSAL**

BID #GL-2011-20

<u>ITEM NO.</u>	<u>DESCRIPTION</u>	<u>QTY.</u>	<u>UNIT PRICE</u>	<u>EXTENSION</u>
40.	12-inch HDPE Culvert End in accordance with Section 409.0 of the Detailed Construction Specifications	3 Each	\$ _____/EA.	\$ _____
41.	12-inch Reinforced Concrete Culvert End in accordance with Section 409.0 of the Detailed Construction Specifications	2 Each	\$ _____/EA.	\$ _____
42.	24-inch x 38-inch Elliptical Reinforced Concrete Culvert End in accordance with Section 409.0 of the Detailed Construction Specifications	4 Each	\$ _____/EA.	\$ _____
43.	6-inch Underdrain in accordance with Section 410.0 of the Detailed Construction Specifications	50 L.F.	\$ _____/L.F.	\$ _____
44.	Modified Riprap in accordance with Section 420.0 of the Detailed Construction Specifications	70 S.Y.	\$ _____/S.Y.	\$ _____
45.	Reset Manhole Top in accordance with Section 509.0 of the Detailed Construction Specifications	5 Each	\$ _____/EA.	\$ _____
46.	Adjust Gate Valve in accordance with Section 510.0 of the Detailed Construction Specifications	1 Each	\$ _____/EA.	\$ _____
47.	Pre-Cast Concrete Boardwalk in accordance with Section 600.0 of the Detailed Construction Specifications	Lump Sum	\$ _____/LS.	\$ _____
48.	Drilled Shaft Foundation in accordance with Section 600.0 of the Detailed Construction Specifications	410 L.F.	\$ _____/L.F.	\$ _____
49.	Arborvitae 6-Foot Tall in accordance with Section 700.0 of the Detailed Construction Specifications	15 Each	\$ _____/EA.	\$ _____
50.	Arrowwood 3-Foot Tall in accordance with Section 700.0 of the Detailed Construction Specifications	26 Each	\$ _____/EA.	\$ _____
51.	Winterberry 3-Foot Tall in accordance with Section 700.0 of the Detailed Construction Specifications	19 Each	\$ _____/EA.	\$ _____
52.	Red-Osier Dogwood 3-Foot Tall in accordance with Section 700.0 of the Detailed Construction Specifications	28 Each	\$ _____/EA.	\$ _____

**MULTI-USE PATH SMITH SCHOOL TO BELL STREET
 BID PROPOSAL**

BID #GL-2011-20

ITEM NO.	DESCRIPTION	QTY.	UNIT PRICE	EXTENSION
53.	White Pine 3-Foot Tall in accordance with Section 700.0 of the Detailed Construction Specifications	4 Each	\$_____/EA.	\$_____
54.	Eastern Hemlock 3-Foot Tall in accordance with Section 700.0 of the Detailed Construction Specifications	8 Each	\$_____/EA.	\$_____
55.	Northern Red Oak 3-Foot Tall in accordance with Section 700.0 of the Detailed Construction Specifications	11 Each	\$_____/EA.	\$_____
56.	Invasive Plant Eradication in accordance with Section 702.0 of the Detailed Construction Specifications	Lump Sum	\$_____/L.S.	\$_____

TOTAL BID AMOUNT: \$_____

WRITTEN BID AMOUNT: _____

OTHER ITEMS REQUIRED WITH SUBMISSION OF BID PROPOSAL:

The following bid checklist describes items required for inclusion with the above-referenced bid proposal package. It is provided for the convenience of the bidders and, therefore, should not be assumed to be a complete list.

- _____ 1. Included Bid Bond as per Section 10 of the Information for Bidders.
- _____ 2. Included Disclosure of Past and Pending Mediation, Arbitration, and Litigation cases against the Bidder or its Principals as per Section 17 of the Information for Bidders.
- _____ 3. Included DAS Contractor Prequalification Certificate as per Section 22 of the Information for Bidders.
- _____ 4. Included DAS Update (Bid) Statement as per Section 22 of the Information for Bidders.
- _____ 5. Included Qualifications Statement as per Section 23 of the Information for Bidders.
- _____ 6. Checked Town web site for Addendums and acknowledged Addendums on page BP-1.
- _____ 7. Acknowledged Code of Ethics on page BP-3.
- _____ 8. Clearly marked envelope with Bid Number, Date, and Time of opening.

**MULTI-USE PATH SMITH SCHOOL TO BELL STREET
BID PROPOSAL**

BID #GL-2011-20

**TOWN OF GLASTONBURY
BID / PROPOSAL**

DATE ADVERTISED

12/28/2010

GL #

2011-20

DATE / TIME DUE

**1/18/2011 at 11:00
A.M.**

NAME OF PROJECT

Multi-Use Path Smith School to Bell Street

CODE OF ETHICS:

I/We have reviewed a copy of the Town of Glastonbury's Code of Ethics and agree to submit a Consultant Acknowledgement Form if I/We are selected. Yes_____ No_____*

***Bidder is advised that effective August 1, 2003, the Town of Glastonbury cannot consider any bid or proposal where the Bidder has not agreed to the above statement.**

Respectfully submitted:

Type or Print Name of Individual

Doing Business as (Trade Name)

Signature of Individual

Street Address

Title

City, State, Zip Code

Date

Telephone Number/Fax Number

E-Mail Address

SS# or TIN#

(Seal – If bid is by a Corporation)

Attest

ATTACHMENT A – PREVAILING WAGE RATE DOCUMENTATION

ATTACHMENT B – INLAND WETLANDS PERMIT

ATTACHMENT C – TOWN PLAN AND ZONING COMMISSION FLOOD ZONE PERMIT

ATTACHMENT D – DEPARTMENT OF THE ARMY PERMIT

ATTACHMENT E – 401 WATER QUALITY CERTIFICATION

ATTACHMENT F – GEOTECHNICAL INVESTIGATION REPORT

**ATTACHMENT G - MODEL DRILLED SHAFT SPECIFICATION
FOR FOUNDATION SYSTEM DESIGN**

ATTACHMENT H – CONSTRUCTION PLANS

