



**Purchasing Department
City Hall, 73 Harlow Street
Bangor, Maine 04401
Tel. 207-992-4282**

March 21, 2016

**Request for Proposals
Maine Avenue Property Sewer Reconstruction
Proposal No.: P16-026**

Introduction:

The City of Bangor, Maine invites sealed proposals from qualified applicants to provide assistance with replacement of approximately 900 linear feet of sewer located on a parcel owned by the City at 700 Maine Avenue, including new manholes, two sewer service laterals, resetting site features, restroom modifications, and surface restoration in disturbed areas. Refer to "Scope of Services" and "Duration of Services" for additional information.

All interior work must be completed by June 3, 2016. All work must be completed on or before June 17, 2016.

Submission of Proposals:

Please submit one (1) original copy of the proposal.

To be considered, return the Proposal, including the Proposal Form and **the items listed on page 3** in an envelope **clearly** marked "**Proposal No. P16-026: Maine Avenue Property Sewer Reconstruction**" by **2:00 PM, Wednesday, April 6, 2016** to City of Bangor, Purchasing Department, 73 Harlow Street, Bangor, Maine 04401.

Pre-bid Meeting:

An informational **pre-bid meeting** will be held at 2:15 PM on Wednesday, March 30, 2016 in City Council Chambers on the third floor of Bangor City Hall, 73 Harlow St., Bangor, ME. The deadline for submission of proposals shall be at **2:00 p.m., Wednesday, April 6, 2016** at which time they will be publicly opened.

General Information:

General information is available on the City's website at the following web address: www.bangormaine.gov/bids/proposals. By submitting a response to this solicitation, the bidder accepts the responsibility for downloading, reading and bidding by the terms and conditions set forth in the City's "General Information for Vendors".

Questions:

All questions must be directed in writing to bids@bangormaine.gov no later than close of business on March 31, 2016. The City will issue addenda as necessary in response to any questions or inquiries raised at the pre-bid meeting or submitted in writing. All addenda will be made available on the City's website.

Background:

The City is seeking a CONTRACTOR to repair, replace and/or install new 10" diameter sewer pipe and manholes at 700 Maine Avenue. The existing sewer is underneath a building and the sewer lateral exits the concrete slab on grade through the floor in a bathroom and connects to the existing sewer main underneath the building. The intent is to relocate the sewer main around the building and reconstruct the existing lateral. Interior plumbing work will also be required to construct a new service for a second set of bathrooms and connect it to the new sewer main.

Scope of Services:

A bid form is included as Appendix A. Specifications are attached as Appendix B. Plan and Detail Sheets are attached as Appendix C.

The CONTRACTOR may visit the project site with City personnel to confirm the locations of proposed work and to discuss the specific scope of work. In addition, the scope of services includes, but is not limited to, the following:

- Provide a designated project manager
- Provide adequate erosion control measures to protect adjacent natural resources in accordance with all state and local regulations
- Obtain all necessary permits
- Confirm the location of all existing utilities in the field
- Replace site features after completion of installation as noted on plans
- Provide and install 900 feet of new 10-inch diameter PVC sewer main as shown on attached plan, and other associated work
- Coordinate with other contractors working onsite inside and outside of the building, as necessary.

All interior work must be completed by June 3, 2016. All work must be completed by June 17, 2016.

Instructions and Information for Proposers

The following provides a general description of information required in the proposals and the format to be followed. Proposers must furnish all information requested and follow the instructions as noted herein.

Proposers shall ensure that all information required herein be submitted with the proposal. Additional useful information pertaining to the Scope of Services, Contract Terms and Conditions, or Evaluation Criteria is appreciated and should be included in the proposal.

Proposal Organization:

1. Work Schedule:

The proposal shall include a work schedule and a brief description of the methods and resources the Proposer will employ to accomplish the proposed work.

2. Additional Items:

In addition to the General Qualifications, the following items must be provided:

- a. Performance and Payment Bond: Contractor shall furnish a performance bond and a payment bond, each in an amount at least equal to the Contract Price, as security for the faithful performance and payment of all of the Contractor's obligations under the Contract. Contractor shall obtain the required bonds from the surety companies that are duly licensed or authorized in the jurisdiction in which the Project is located in issue bonds in the required amounts.
- b. Bid Security: Each bidder must submit with bid a certified check, bid bond or cash in the amount of 5% of his total bid price as his guarantee that the bidder will enter into the Contract, if awarded. Said check, bid bond, or cash will be returned to all except the two (2) lowest bidders immediately following the opening of bids, and the remaining sureties will be returned after the Owner and Contractor have executed the Contract. If the Contract has not been awarded within thirty (30) days of the bid opening the surety will be returned at any time thereafter to any bidder who so requests, so long as they have not been notified of the acceptance of the bid.

Incurring Costs:

All costs incurred in the preparation and submission of a proposal will be borne by the Proposer.

Preparation:

Before submitting a proposal, all prospective Proposers are encouraged to carefully examine the proposal documents, specifications, visit the City, and fully inform themselves as to the existing conditions and limitations under which the work will be performed.

Each Proposer shall make his/her proposal from his/her own examinations and estimates and shall not hold the City, its agents or employees responsible for any information received from them.

Proposals should be prepared providing a straight forward, concise delineation of the capabilities proposed to satisfy the requirements of the City. Completeness and clarity of content are requested. All brochures, presentations, and items submitted in support of proposals will become part of the contract.

All questions about the proposal must be directed to bids@bangormaine.gov before close of business on Thursday, March 31, 2016. Responses will be issued in the form of an addendum and published on the City's website.

Modification or Withdrawal of Proposals:

Proposals may be modified or withdrawn in person or by written notice received at any time prior to the closing date and time specified. Proposals may be withdrawn in person only by an authorized representative of the Proposer.

Amendments:

In the event that an amendment to this solicitation is issued, all solicitation terms and conditions will remain in effect unless they are specifically changed by the amendment. Proposals shall include acknowledgment of all amendments or be subject to rejection.

If a Proposer desires to change a proposal that has already been submitted, the change may be made by a signed letter that refers to the solicitation and amendment numbers, and which is received at the place designated, and prior to the hour and date specified in the solicitation (as amended) for receipt of proposals.

All signatures on proposals, amendments, or related correspondence must be by persons who are authorized to contractually bind the Proposer.

Proposal Acceptance:

The City will select the proposal deemed most advantageous, appropriate and beneficial to the City.

The evaluation of proposals and determination of the award will be at the discretion of the City and its judgment shall be final and without right of recourse by any Proposer.

Selection:

Selection Criteria:

Each proposal will be evaluated according to the following criteria:

1. The qualifications and experience of the individual(s) who will perform the work.
2. The availability and capacity of the Proposer to perform the services required.
3. The cost of the services offered.
4. The ability to meet the schedule.

Rejection of Proposals:

The City of Bangor reserves the right to reject any and all proposals received and to waive any informality, technical defect, or clerical error in any proposal as the interest of the City may require.

Rejection of any proposal shall be construed as meaning simply that the City does not deem the proposal to be acceptable or that another proposal is deemed to be more advantageous to the City for the particular services proposed.

Award of Contract:

The contract will be awarded by the City to the Proposer best able to provide the services required. All proposals shall remain firm for sixty (60) calendar days after receipt of the proposals.

Warranty Period:

All work will be guaranteed by the CONTRACTOR for a period of one year from the date the work reaches substantial completion, or the date that the utilities are placed in service.

Consent Decree:

All contractors and subcontractors are hereby notified that the City of Bangor has entered into a Consent Decree with the United States and the State of Maine. For the purposes of the Consent Decree, contractors and subcontractors are deemed agents of the City. Any and all work performed by contractors and subcontractors must conform

with the terms of the Consent Decree. Contractors must familiarize themselves with the contents of the document and must make the document available to all subcontractors.

This document is available electronically at http://www.bangormaine.gov/filestorage/318/350/7758/ENV_ENFORCEMENT.PDF or in hard-copy in the City of Bangor's Engineering Department.

Sample Contract



Contract for Professional Services

This AGREEMENT made this _____ day of _____, 2016 by and between City of Bangor, a body politic in the State of Maine (hereinafter the "CITY"), and _____, (hereinafter the "CONTRACTOR").

The parties do hereby agree as follows:

Article 1: Services:

CONTRACTOR agrees to provide the personnel, supplies, equipment, labor, and all incidentals necessary for the following:

Complete the Maine Avenue Property Sewer Reconstruction in accordance with proposal dated March 21, 2016, attached hereto.

Article 2: CONTRACTOR's Performance:

CONTRACTOR accepts the relationship of trust and confidence established between itself and the CITY by this AGREEMENT and agrees to perform the services hereunder in the best and most expeditious and economical manner consistent with the interests of the CITY. The CONTRACTOR shall be, and remain, fully responsible to the CITY for the technical completeness, sufficiency and accuracy of all services furnished by or under this AGREEMENT and shall, without additional cost or fee to the CITY, correct and repair any errors or deficiencies in its performance including payment of attorney's fees.

Article 3: Quality of Service:

CONTRACTOR shall perform its services with care, skill, and diligence, in accordance with the applicable standards currently recognized by such trade, and shall be responsible for the quality, completeness, and thoroughness of all work furnished under this AGREEMENT. CONTRACTOR shall comply with applicable Federal, State and local laws, ordinances, codes and regulations effective as of the date of this CONTRACT in performing its services. If CONTRACTOR fails to meet applicable standards, CONTRACTOR shall without additional compensation repair any errors or deficiencies in its work or other services.

Article 4: Project Team; Personnel; Independent CONTRACTOR:

CONTRACTOR represents that it has, or will secure at its own expense, all personnel required in performing its services under this AGREEMENT. Such personnel shall not be officers or employees of the CITY, or have any contractual relationship with the CITY.

The CONTRACTOR further agrees that consistent with its status as an Independent CONTRACTOR, its personnel will not hold themselves out to be, or claim to be, officers or employees of the CITY by reason of this AGREEMENT.

Article 5: City Representative:

The CITY shall assign an authorized representative, who shall act as the CITY's representative in all dealings with the CONTRACTOR for the project. CONTRACTOR's performance hereunder shall be subject to said representative's review and approval.

Article 6: City Responsibility:

CITY agrees to furnish or provide access to CONTRACTOR any information or material in its possession which is relevant to CONTRACTOR's performance hereunder and CITY staff will cooperate with CONTRACTOR. CONTRACTOR will not, without the CITY's written consent, disclose, or permit disclosure, by any officer, employee, agent, or subcontractor any information or material furnished or generated under this AGREEMENT.

Article 7: Performance:

CONTRACTOR agrees to perform in accordance with all reasonable requirements of the CITY. CITY agrees to cooperate in helping to implement any timeframe established. In the event of delay for reasons beyond its control and not its fault, CONTRACTOR may request necessary adjustments to said timeframe. The CITY representative may approve any adjustments and said approval will not be unreasonably withheld.

Article 8: Compensation:

Upon completion and acceptance of the tasks described in Appendix A, the amounts due the CONTRACTOR shall be paid upon the receipt of a properly supported invoice.

Article 9: Payment Terms:

Upon completion and acceptance of all work by the CITY, the amount due the CONTRACTOR under this AGREEMENT shall be paid upon the receipt of a properly supported invoice. Prior to receiving final payment, the CONTRACTOR shall certify and furnish lien waivers as satisfactory proof that all material and labor costs incurred herein have been fully paid and discharged. The CITY will retain five (5) percent of the payment as part security for fulfillment of this AGREEMENT by the CONTRACTOR and shall deduct from the balance all previous payments and all sums to be retained under

the provisions of this AGREEMENT. Upon substantial completion, the CONTRACTOR may request partial drawdown of retainage. The CITY will retain two (2) percent of the payment for the duration of the one year warranty period.

Article 10: Ownership of Documents:

All reports, memoranda, plans, specifications, and documents or other material to be developed by CONTRACTOR under this AGREEMENT shall be the property of the CITY and be promptly delivered to the CITY upon request. All data, internal reports, memoranda, notes, calculation estimates and any other internal documents used to prepare the documents and memoranda submitted to the CITY shall be deemed the CONTRACTOR's "work papers", and as such the "work papers" will remain the property of the CONTRACTOR generating that material.

CONTRACTOR shall be responsible for the protection and/or replacement of any work or material in its possession, including materials provided to CONTRACTOR by the CITY. The CONTRACTOR understands and agrees that all documents and materials provided to the CITY hereunder are or may be public documents and as such will be available generally to the public. Reasonable use of any such documents by the CITY or the general public shall not be subject to a claim for infringement of any copyrights claimed by the CONTRACTOR in such documents. The CITY has no responsibility for any use which may be made of them by any third party and the CITY may use them for any lawful purpose.

CONTRACTOR and SUBCONTRACTORS disclaim any liability to any party other than the CITY for any reliance on the documents and further, the CONTRACTOR and SUBCONTRACTORS disclaim any liability to the CITY if the reports and documents are relied upon or used for any purpose for which they are not intended.

Article 11: Confidentiality of Assignment:

CONTRACTOR will use its discretion where specific identification of any project or the CITY might be involved in obtaining research data. CONTRACTOR, however, will retain working papers, related data and analysis, and copies of the reports.

Article 12: Indemnification:

The CONTRACTOR shall indemnify, defend and hold harmless the CITY from and against all claims and actions, and all expenses incidental to such claims or actions, based upon or arising out of damage to property or injuries to persons or other tortious acts caused or contributed to by the CONTRACTOR or anyone acting under its direction or control or in its behalf in the course of its performance under this AGREEMENT, provided the CONTRACTOR's aforesaid indemnity and hold harmless agreement shall not be applicable to any liability based upon the sole negligence of the CITY.

The CONTRACTOR hereby expressly agrees that it will defend, indemnify and hold the CITY harmless from any and all claims made or asserted by CONTRACTOR's agents, servants or

employees arising out of CONTRACTOR's activities under this AGREEMENT. For this purpose, CONTRACTOR hereby expressly waives any and all immunity it may have under Maine's Workers Compensation Act in regard to such claims made or asserted by CONTRACTOR's agents, servants or employees. The indemnification provided under this paragraph shall extend to and include any and all costs incurred by the CITY to answer, investigate, defend and settle all such claims, including but not limited to the CITY's costs for attorney's fees, expert and other witness fees, the cost of investigators, and payment in full of any and all judgments rendered in favor of CONTRACTOR's agents, servants or employees against the CITY in regard to claims made or asserted by such agents, servants or employees.

Article 13: Insurance:

CONTRACTOR will procure and maintain Public Liability Insurance coverage and Automobile Insurance coverage in amounts not less than Four Hundred Thousand Dollars (\$400,000) combined single limit for bodily injury, death, and property damage, and also Worker's Compensation Insurance coverage in the statutory amount. The CITY shall be named as an additional insured, to the extent its interest may appear, on all such policies of insurance. CONTRACTOR shall furnish and thereafter maintain certificates evidencing such coverage which certificates shall guarantee thirty (30) days notice to CITY of termination of insurance from insurance company or agent.

CONTRACTOR will procure and maintain Professional Liability Insurance coverage in amounts not less than One Hundred Thousand Dollars (\$100,000) for any CONTRACTOR negligence, error or omissions in its performance under this Contract. CONTRACTOR shall furnish and thereafter maintain certificates evidencing such coverage which certificates shall guarantee thirty (30) days notice to CITY of termination of insurance from insurance company or agent.

Article 14: Subcontractors:

If specialists or SUBCONTRACTORS are required to complete the services thereunder, CONTRACTOR shall propose such utilization for review and approval of the CITY. CONTRACTOR is and shall remain fully responsible for performance of all services hereunder.

Article 15: Termination:

Termination for Convenience: The CITY may terminate this AGREEMENT, in whole or in part, whenever the CITY determines that such termination is in the best interest of the CITY, without showing cause, upon giving 30 days written notice to the CONTRACTOR. The CONTRACTOR will not be reimbursed for any profits that may have been anticipated but have not been earned up to the date of termination.

Termination for Default: When the CONTRACTOR has not performed or has unsatisfactorily performed the AGREEMENT, the CITY may terminate this AGREEMENT for default. Upon termination for default, payment may be withheld at the discretion of the CITY. Failure on the part of a CONTRACTOR to fulfill contractual obligations shall be considered just cause for termination of the AGREEMENT.

Article 16: No Assignment:

CONTRACTOR shall not assign, sublet, sell, transfer or otherwise dispose of its interest in this AGREEMENT without the prior written approval of the CITY which shall not be unreasonably withheld.

This AGREEMENT shall be binding upon and inure to the benefit of the parties hereto, their successors and permitted assigns.

Article 17: Separate Contracts:

The CITY may let other agreements in connection with the work. CONTRACTOR shall cooperate, schedule and coordinate performance of the work with the work of any separate CONTRACTORS or contractors so as not to delay or interfere with their work, or the timely completion of their services.

Article 18: Nonwaiver:

Except as expressly provided in this AGREEMENT, the failure or waiver, or successive failures or waivers on the part of either party hereto, in the enforcement of any Condition, Covenant, or Section shall not render the same invalid, nor impair the right of either party hereto, their successors or permitted assigns, to enforce the same in the event of any subsequent breach thereof.

Article 19: Notices:

All notices required or permitted to be given under this CONTRACT or the specifications shall be in writing and shall be deemed to be properly and sufficiently given when deposited in the mail, postage prepaid, registered or certified, and addressed to the party entitled to receive such notice as set forth below or to such other address as that party shall subsequently designate to the other party by notice given in accordance with this section.

To CITY:

Deborah A. Cyr, Finance Director
City of Bangor
73 Harlow Street
Bangor, Maine 04401

To CONTRACTOR:

Notice given in any other manner shall be deemed effective only when the written notice is actually received.

Article 20: Disputes:

Any disputes arising out of or in the course of this AGREEMENT which are not settled by mutual agreement of the parties must be settled by mediation or submitted to arbitration in accordance with the rules of the American Arbitration Association. This AGREEMENT shall be governed by and construed in accordance with the laws of the State of Maine.

Article 21: Compliance with Law:

CONTRACTOR shall comply with all applicable Federal, State and local statutes, ordinances and regulations in its performance hereunder. CONTRACTOR agrees to amend this AGREEMENT, if necessary, to comply with such law or regulations.

Article 22: Extent of Agreement:

This AGREEMENT, with its attachments, represents the entire and integrated AGREEMENT between the CITY and CONTRACTOR and supersedes and replaces all terms and conditions of any prior agreements, arrangements, negotiations, or representatives, written or oral with respect to this AGREEMENT. This AGREEMENT may only be modified by written agreement of both parties.

Article 23: Changes:

The CITY may order changes in writing to the specifications within the general Scope of Work. If the changes involve an increase or decrease in the cost of or time required for performing the work, the CONTRACTOR shall so advise the CITY in writing and an equitable adjustment in costs or schedule will be negotiated.

As a condition to any increase in the cost of the work, the CONTRACTOR shall submit in writing adequately documented costs incurred for any authorized change for review, evaluation and approval by the CITY.

Article 24: Liquidated Damages

In case the CONTRACTOR fails to satisfactorily complete the entire work, or any phase of the work, contemplated and provided for under this AGREEMENT on or before the date of completion determined as described elsewhere herein, the City shall deduct from the payments otherwise due the CONTRACTOR each month the sum of one thousand dollars (\$1000.00) for each calendar day, excluding only Sundays and legal holidays, of delay, which sum is agreed upon not as penalty but as fixed and liquidated damages for each day of such delay to be paid in full and subject to no deduction. If the payments otherwise due the CONTRACTOR are less than the amount of such liquidated damages, said damages shall be deducted from any other moneys due or to become due the CONTRACTOR, and in case such damages shall exceed the amount of all moneys due or become due the CONTRACTOR, then the CONTRACTOR or his/her surety shall pay the balance to the CITY as appropriate.

Article 25: Cost Records and Accounting for Additional Services:

CONTRACTOR shall keep accounts, books and other records of all its billable charges incurred in performing services to the CITY and shall itemize and submit its billings to the CITY in such a manner as the CITY may reasonably direct. If no such direction is given, CONTRACTOR shall maintain books and accounts of chargeable costs in accordance with generally accepted accounting practices consistently applied, and in such a manner as to permit verification of all entries made.

For three (3) years from final payment under this AGREEMENT, CONTRACTOR shall preserve all such books and records, and shall upon three (3) day's written notice make such records available to the CITY for purposes of verifying the costs chargeable under the AGREEMENT.

Article 26: Authority to Execute:

This AGREEMENT contains all the terms, conditions and provisions pertaining to the work, there being no other understandings, agreements, warranties either express or implied, relative to the AGREEMENT that are not fully expressed herein.

IN WITNESS WHEREOF, the parties hereto have caused this AGREEMENT to be executed on the day and year first above written.

Witness:

City of Bangor (CITY)

Deborah A. Cyr, Finance Director

Witness:

(CONTRACTOR)

**Request for Proposals
Maine Avenue Property Sewer Reconstruction
Proposal No.: P16-026**

Appendix A

Bid Form

**Request for Proposals
Maine Avenue Property Sewer Reconstruction
Proposal No.: P16-026**

BID FORM

Note:

Proposal must include this form as well as items listed on page 3. Failure to comply may result in disqualification of proposal. The costs listed below will be used to calculate value for completed work. The deadline for submittal of proposals is 2:00 p.m., Wednesday, April 6, 2016.

Item No.	Estimated Quantity	Pay Item, Brief Description; Unit or Lump Sum Price Bid In Both Words and Figures	Total Price In Figures
1.	1 LS	Mobilization (not to exceed 3% of total project bid) the lump sum price of _____ Dollars per lump sum (\$_____/LS	\$ _____

Includes but not limited to the cost of initiating the contract, general contract administration, procuring insurance and bonds, moving equipment, supplies, and materials to the site, and all incidentals.

2.	10 CY	Rock Removal Unit Price per cubic yard of _____ Dollars per cubic yard (\$_____/CY	\$ _____
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Includes but not limited to all labor, materials, tools, and equipment necessary to excavate any rock larger than 2 cubic yards as necessary to install new work within the trench limits, and all incidentals.

3.	2 EA	Test Pits Unit Price per each of _____ Dollars per each (\$_____/EA	\$ _____
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Includes but not limited to excavation, shoring, dewatering, verification of utilities, backfilling, and all incidentals.

Item No.	Estimated Quantity	Pay Item, Brief Description; Unit or Lump Sum Price Bid In Both Words and Figures	Total Price In Figures
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4.	900 LF	10-inch Diameter Sewer Main Unit Price per linear foot of _____ Dollars per linear foot (\$_____) / LF	\$ _____
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Includes but not limited to excavation, removal and disposal of existing and waste materials, installation of new pipe, fittings, reconnection to existing pipes, backfill materials and their installation, pressure testing, compaction, grading, prepping trench for paving, and all incidentals.

5.	100 VF	4' Ø Standard Sanitary Sewer Manhole Unit Price per vertical foot of _____ Dollars per vertical foot (\$_____) / VF	\$ _____
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Includes but not limited to furnishing all materials, equipment and labor necessary to install the structure to the required grade, excavation, removal and disposal of existing and waste materials, testing, and all piping, fittings, and supports within the manholes as specified to form a complete unit, frame and cover, and adjusting to final grade prior to paving.

6.	220 LF	6" Ø Sewer Lateral Unit Price per linear foot of _____ Dollars per linear foot (\$_____) / LF	\$ _____
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Includes but not limited to, excavation, removal and disposal of waste materials, installation of new pipe, fittings, reconnection to existing pipes, connecting to new laterals from the building, coordination with internal plumbing modifications, backfill materials and their installation, pressure testing, compaction, grading, prepping trench for paving, and all incidentals.

7.	2 EA	External Cleanouts Unit Price per each of _____ Dollars per each (\$_____) / EA	\$ _____
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Includes but not limited to furnishing all materials, equipment, and labor to install the external clean out to the required grade, and all incidentals.

8.	1 LS	Abandon Existing Main Under Building with Flowable Fill the lump sum price of _____ Dollars per lump sum (\$_____) / LS	\$ _____
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Includes but not limited to furnishing all materials, equipment and labor necessary to completely fill abandoned main line underneath building with flowable fill, as directed by the Engineer, and all incidentals.

Item No.	Estimated Quantity	Pay Item, Brief Description; Unit or Lump Sum Price Bid In Both Words and Figures	Total Price In Figures
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9.	260 LF	Remove and Reset Concrete Curb Sections Unit Price per linear foot of _____ Dollars per linear foot (\$_____) / LF	\$ _____
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Includes but not limited to all labor, materials, and equipment necessary, to remove, stockpile concrete curb sections, and reset using same method as existing installation during surface restoration, and all incidentals. Contractor to replace all curb damaged during removal.

10.	300 SF	Remove and Reset Brick Sidewalk Unit Price per square foot of _____ Dollars per square foot (\$_____) / SF	\$ _____
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Includes but not limited to all labor, materials, and equipment necessary, to remove, stockpile bricks from existing sidewalk, and reset using same method as existing installation during surface restoration, and all incidentals.

11.	8 EA	Replace Plantings Unit Price per each of _____ Dollars per each (\$_____) / EA	\$ _____
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Includes but not limited to materials required to furnish and replace each plant disturbed during work with one of similar species, and watering, maintenance after installation, and all other incidental work.

12.	1 EA	Abandon Existing SMH in Place Unit Price per each of _____ Dollars per each (\$_____) / EA	\$ _____
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Includes but not limited to furnishing all equipment, materials, and labor necessary to plug inlets and outlets, drill drain holes, remove top 3 feet of structure, backfill, compact, prep for paving, and all incidentals.

13.	1 LS	3" Loam, Seed, and Mulch the lump sum price of _____ Dollars per lump sum (\$_____) / LS	\$ _____
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Includes but not limited to furnishing all materials, equipment, labor, and maintenance necessary to place loam to full depth and final grades, seed, mulch, water, and fertilizer to satisfactorily restore lawn areas and all incidentals.

Item No.	Estimated Quantity	Pay Item, Brief Description; Unit or Lump Sum Price Bid In Both Words and Figures	Total Price In Figures
14.	200 TON	H.M.A. Pavement Unit Price per ton of _____ Dollars per ton (\$_____) / TON	\$ _____

Includes but not limited to preparation and placement of specified thickness of binder and final surface course pavement in trench areas, shimming and saw cutting all edges before paving as directed by the Engineer, bituminous tack coat, and cutting in butt joints as required to match into existing pavement, and all incidentals.

15.	1 LS	Internal Plumbing Modifications for Southeast Restroom #1 the lump sum price of _____ Dollars per lump sum (\$_____) / LS	\$ _____
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Includes but not limited to all work as shown on Sheet 2 of plans, such as labor and materials required to conduct test pit to locate service, plumb bathroom, restore floor, install interior cleanouts, connect to new sewer service, and all incidentals.

16.	1 LS	Internal Plumbing Modifications for Northwest Restroom #2 the lump sum price of _____ Dollars per lump sum (\$_____) / LS	\$ _____
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Includes but not limited to all work as shown on Sheet 2 of plans, such as labor and materials required to plumb bathroom, restore floor, install interior cleanouts, removing pumping equipment, connect to new sewer service and all incidentals.

All amounts must be shown in both words and figures. In case of discrepancy, the amount in words will govern.

TOTAL PROJECT BID

_____ Dollars and
_____ Cents

(\$ _____)

MAINE AVENUE PROPERTY SEWER RECONSTRUCTION

Bidder's Addendum Acknowledgement Form

*I hereby acknowledge by my signature receipt of each numbered addendum:

Addendum Number 1: _____
Contractor's Signature

Addendum Number 2: _____
Contractor's Signature

*(Signature required to acknowledge receipt of each addendum as may be issued. Sign only upon receipt of written addendum.)

**Request for Proposals
Maine Avenue Parcel Sewer Reconstruction
Proposal No.: P16-026**

**Appendix B
Specifications**

SPECIFICATIONS

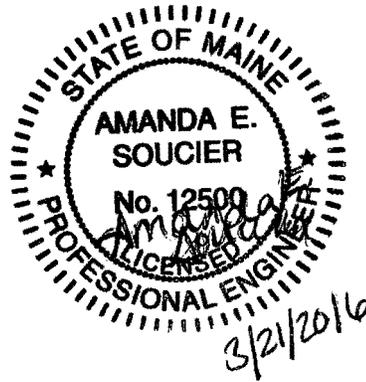


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EXCAVATION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes excavating new utility installation.
- B. Related Sections:
 - 1. Backfilling
 - 2. Trenching
 - 3. Rock Removal
 - 4. Sanitary Sewer Systems

1.2 FIELD MEASUREMENTS

- A. Obtain survey benchmarks from Owner.
- B. Verify that survey benchmark and intended elevations for the Work are as indicated.

PART 2 – PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 PREPARATION

- A. Identify required lines, levels, contours, and datum.
- B. Identify known underground, above ground and aerial utilities. Stake and flag locations.
- C. Erect sheeting, shoring, and bracing as necessary in accordance with all Federal, State, and Local regulations.
- D. Provide dewatering and drainage as required to accomplish work of this section.
- E. Protect new construction, existing structures, existing utilities, plants, trees, etc., at all times. Report any damages immediately to Engineer and proper authorities.
- F. Use extreme caution when excavating near underground utilities. Employ manual excavation where necessary and as required by DigSafe or PUC Regulations as applicable.
- G. Inform appropriate utility or agency of all actions in vicinity of underground pipes, mains, conduits, wires, etc. Coordinate all work with appropriate utility or agency and comply with all requirements. Contact Digsafe and all non-member utilities.

3.2 EXCAVATING

- A. Underpin adjacent structures, which may be damaged by excavation work, including utilities and pipe chases.
- B. Excavate subsoil required to accommodate paving and site structures.
- C. Machine slope banks to angle of repose or less, until shored.
- D. Excavate all materials regardless of nature of elevations and dimensions indicated plus sufficient space for forming, shoring, draining, inspection, etc. Excavate using open cut method unless otherwise indicated or permitted.
- E. Grade top perimeter of excavation to prevent surface water from draining into excavation.
- F. Remove lumped subsoil, boulders, and rock up to 2 cubic yards measured by volume.
- G. Allow Engineer to inspect bottom of excavation for suitability of base material.
- H. Remove unsuitable base material to a depth of at least 12 inches below any pipe or structure or to a depth directed by the Engineer and replace with compacted screened gravel or crushed stone or provide proper base as otherwise directed by Engineer. Place no footing, wall, structure, pipe, etc., on unsuitable material.
- I. Place no structure, pipe, etc., partially on earth and partially on rock. Remove rock and replace with compacted screened gravel or crushed stone.
- J. Protect excavation bottoms from frost and weathering. Place no structure, pipe, etc., on frozen or weathered ground.
- K. Notify Engineer of unexpected subsurface conditions and discontinue Work in affected area until notified to resume Work.
- L. Correct unauthorized excavation at no extra cost to Owner.
- M. Correct areas over-excavated by error in accordance with Backfilling.
- N. Stockpiled excavated material remains City property. This material shall be disposed of as directed by the City Engineer.

3.3 FIELD QUALITY CONTROL

- A. Field inspection will be performed under provisions of Quality Control.
- B. Provide for visual inspection of bearing surfaces.

3.4 PROTECTION

- A. Protect excavations by methods required to prevent cave-in or loose soil from falling into excavation.
- B. Protect bottom of excavations and soil adjacent to and beneath foundation from freezing.

END OF SECTION

ROCK REMOVAL

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes removal of rock uncovered during excavation and explosives to assist with rock removal.
- B. Related Sections:
 - 1. Excavation
 - 2. Trenching
 - 3. Backfilling

1.2 REFERENCES

- A. NFPA 495 - Code for Explosive materials.
- B. MDOT Standard Specifications - Highways and Bridges, current revision.

1.3 DEFINITIONS

- A. Rock is defined as any stone, boulder, or piece of concrete or masonry, two cubic yards or more in volume, and any hard natural material or rock ledge that will withstand removal by the usual mechanical excavation methods, such as power shovels or toothed bulldozer blades, and such that normally requires blasting or continuous drilling, wedging, sledging, or barring for removal. No soft or disintegrated rock which can be removed with a hand pick or power operated excavator shovel; no loose, shaken, or previously blasted rock or broken stone in rock fillings or elsewhere; and no rock exterior to the maximum limits of measurements allowed which may fall into the excavation will be measure or allowed. The Engineer shall be sole judge as to whether the material encountered shall be classified as rock in accordance with the above description.

1.4 QUALIFICATIONS

- A. Seismic Survey Firm: Company specializing in seismic surveys with five years documented experience.
- B. Explosives Firm: Company specializing in explosives for disintegration of rock, with five years documented experience.

1.5 REGULATORY REQUIREMENTS

- A. Conform to applicable code for explosive disintegration of rock and to NFPA 495 for handling explosive materials.
- B. Obtain permits from authorities having jurisdiction before explosives are brought to site or drilling is started.

Rock Removal

1.6 SCHEDULING

- A. Schedule Work to avoid disruption to occupied buildings nearby.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Explosives: Type recommended by explosive firm following seismic survey and required by authorities having jurisdiction.
- B. Delay Device: Type recommended by explosives firm.
- C. Blast Mat Materials: Type recommended by explosives firm.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify site conditions and note subsurface irregularities affecting Work of this section.
- B. Beginning of Work of this section mean acceptance of existing conditions.

3.2 PREPARATION

- A. Identify required lines, levels, contours, and datum.
- B. Conduct pre-blast survey and document interior and exterior conditions of buildings and other structures within 500 feet of rock removal areas, making photograph and video record of existing conditions identifying existing irregularities prior to blasting.

3.3 ROCK REMOVAL - EXPLOSIVE METHOD

- A. If rock is uncovered requiring the explosives method for rock disintegration, notify the Engineer and execute as follows.
- B. Advise owners of adjacent buildings or structures in writing prior to executing seismographic survey. Explain planned blasting and seismic operations.
- C. Obtain a seismic survey prior to rock excavation to determine maximum charges that can be used at different locations in area of excavation without damaging adjacent properties or other work.
- D. Contractor shall provide seismographic monitoring during progress of blasting operations to be performed by qualified independent monitoring agent.
- E. Disintegrate rock and remove from excavation.

Rock Removal

- F. Remove rock at excavation bottom to form level bearing surface.
- G. Remove shaled layers to provide a sound and unshattered base.
- H. In utility trenches, excavate to 6 inches below invert elevation of pipe and to width as necessary to complete utility installation trench width.
- I. Remove excavated material from site.
- J. Correct unauthorized rock removal in accordance with backfilling and compacting requirements of Section - Backfilling.
- K. Perform no blasting without informing Engineer, governing authorities, and other concerned parties. Conform to all local, state and federal regulations concerning blasting and pertinent provisions of the "Manual of Accident Contractors of America, Inc., of the "Construction Safety Rules and Regulations, adopted by the State Board of Construction Safety, Augusta, Maine, and Maine Department of Transportation "Standard Specifications" Section 107.12, Use of Explosives.
- L. Blast only with such quantities and strength of explosives and in such a manner as will break the rock approximately to the intended lines and grades and yet will leave the rock not to be excavated in an unshattered condition. Avoid excessive cracking of the rock upon or against which any structure will be built or installed and to prevent injury to existing pipes or other structures and property above or below ground. Cover rock where necessary with specified utility bedding material. Use blasting mats as necessary to protect adjacent facilities.
- M. Blast no closer than 20 feet from completed pipes, manholes, or other structure. Any damages to the Work resulting from blasting shall be repaired at the Contractor's expense.
- N. The contractor shall maintain and submit (if requested) to the Engineer accurate record of each blast. Show the general location of the blast, the depth and number of drill holes, the kind and quantity of explosive used, seismographic monitoring, and other data required for a complete record.

3.4 FIELD QUALITY CONTROL

- A. Field inspection will be performed.
- B. Provide for visual inspection of foundation bearing surfaces and cavities formed by removed rock.

END OF SECTION

TRENCHING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Excavate trenches for utilities.
 - 2. Compacted bedding under fill over utilities to subgrade elevations.
 - 3. Backfilling and compaction.

- B. Related Sections:
 - 1. Excavation
 - 2. Backfilling
 - 3. Rock Removal
 - 4. Sanitary Sewer Systems

1.2 REFERENCES

- A. ANSI/ASTM C136 - Method for Sieve Analysis of Fine and Coarse Aggregates.

- B. ANSI/ASTM D698 - Test methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, Using 5.5 lb. Rammer and 12 inch Drop.

1.3 FIELD MEASUREMENTS

- A. Verify that survey benchmark and intended elevations for the Work are as shown on Drawing.

PART 2 - PRODUCTS

2.1 FILL MATERIALS

- A. Types as specified in Backfilling.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify fill materials to be reused are acceptable and obtain Engineer's approval.

3.2 PREPARATION

- A. Identify required lines, levels, contours and datum.

- B. Maintain and protect existing utilities in the work area.

- C. Protect plant life, lawns, rock outcropping and other features remaining as a portion of final landscaping.
- D. Protect benchmarks, existing structures, fences, sidewalks, paving, and curbs from excavation equipment and vehicular traffic.
- E. Protect above and below grade utilities which are to remain.
- F. Cut out soft areas of subgrade not capable of in situ compaction. Backfill with approved granular material and compact to density equal to or greater than requirements for subsequent backfill material.
- G. Cut pavement using a saw or other appropriate methods to provide a uniform edge and to minimize damage to remaining pavement. Do not use removed pavement as fill.

3.3 EXCAVATION

- A. Excavate subsoil required for storm sewers, sanitary sewers and water piping utilities.
- B. Cut trenches sufficiently wide to enable installation of utilities and allow inspection.
- C. Excavation shall not interfere with normal 45 degree bearing splay of foundations.
- D. Hand trim excavation if required for utility installation.
- E. Remove lumped subsoil, boulders, or rock measured by volume up to 2 cubic yards.
- F. Correct unauthorized excavation at no cost to Owner.
- G. Correct areas over-excavated by error in accordance with Section - Backfilling.
- H. Stockpile excavated material in area designated onsite and remove excess material not being used from site.

3.4 BEDDING

- A. Support pipe and conduit during placement and compaction of bedding fill.
- B. Do not compact crushed stone using mechanical methods.

3.5 BACKFILLING

- A. Systematically backfill to allow maximum time for natural settlement. Do not backfill over porous, wet, frozen or spongy subgrade surfaces.

- B. Granular Fill: Place and compact materials in continuous layers not exceeding 6 inches compacted depth.
- C. Soil Fill: Place and compact material in continuous layers not exceeding 8 inches compacted depth.
- D. Employ a placement method that does not disturb or damage pipe in trench.
- E. Maintain optimum moisture content of fill materials to attain required compaction density.
- F. Remove surplus fill materials from site.
- G. Leave fill material stockpile areas completely free of excess fill materials.

3.6 TOLERANCES

- A. Top Surface of Backfilling: Under paved areas plus or minus 1/2 inch from required elevations.
- B. Top Surface of General Backfilling: Plus or minus 1 inch from required elevations.

3.7 FIELD QUALITY CONTROL

- A. Tests and analysis of fill material will be performed in accordance with ANSI/ASTM D698.
- B. Compaction testing will be performed in accordance with ANSI/ASTM D698.
- C. If tests indicate Work does not meet specified requirements, remove Work, replace, compact and retest at no cost to Owner.

3.8 PROTECTION OF FINISHED WORK

- A. Maintain and protect new Work.

END OF SECTION

BACKFILLING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes site filling, backfilling, fill aggregate subbase and aggregate base under paving; consolidation and compaction; fill for over-excavation.
- B. Related Sections:
 - 1. Excavation
 - 2. Trenching
 - 3. Rock Removal

1.2 REFERENCES

- A. ANSI/ASTM C136 - Method for Sieve Analysis of Fine and Course Aggregates.
- B. ANSI/ASTM D698 - Test method for Moisture Density Relations of Soils and Soil Aggregate Mixtures using 5 lb. Rammer and 12-inch Drop.
- C. ANSI/ASTM D1556 - Test Method for Density of Soil in Place by the Sand-Cone Method.
- D. ASTM D2922 - Density of Soil and Soil Aggregate in Place by Nuclear Methods (Shallow Depth).
- E. ASTM D2487 - Classification of Soils for Engineering Purposes.
- F. ASTM 4318 - Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
- G. ASTM D1140 - Test Method For Amount of Material in Soils Finer than the No. 200 (75 - μ m sieve).

PART 2 - PRODUCTS

2.1 SUITABLE FILL AND BACKFILL MATERIAL REQUIREMENT

- A. General: Fill, backfill, and embankment materials shall be suitable selected or processed clean, fine earth, rock or sand, free from grass, roots, brush or other vegetation.

- B. Fill and backfill to be placed within 6 inches of any structure or pipe shall be free of rocks or unbroken masses of earth materials having a maximum dimension no larger than 3 inches for structures and 1 inch for tape-coated pipe or PVC pipe.
- C. Suitable Materials: Soils not classified as unsuitable as defined in paragraph entitled "Unsuitable Material" herein, are defined as suitable material and may be used in fills, backfilling, and embankment construction subject to approval by Engineer, some of the material listed as unsuitable may be used when thoroughly mixed with suitable material to form a stable composite.
- D. Suitable materials may be obtained from on-site excavations, may be processed on-site materials, or may be imported. If imported materials are required to meet the requirements of this section or to meet the quantity requirements of the project, the Contractor shall provide the imported materials at no additional expense to the Owner unless a unit price item is included for imported materials in the bidding schedule.
- E. The following types of suitable materials are designated and defined as follows:
 - 1. COMMON BORROW
 - a. Common borrow shall consist of earth, suitable for embankment construction. It shall be free from frozen material, perishable rubbish, peat and other unsuitable material.
 - b. The moisture content shall be sufficient to provide the required compaction and stable embankment. In no case shall the moisture content exceed 4 percent above optimum.
 - b. The optimum moisture content shall be determined in accordance with ASTM D698.
 - 2. CRUSHED STONE
 - a. Crushed stone shall be durable crushed rock consisting of the angular fragments obtained by breaking and crushing solid or shattered natural rock and reasonably free from thin, flat, elongated, or other objectionable pieces. The crushed stone shall be reasonably free from sand, clay, loam, chemical decay, or deleterious materials and not more than one percent of material passing a No. 200 sieve will be allowed to adhere to the crushed stone. The crushed stone shall be uniformly blended according to the grading requirements listed in the following tables.

3/4 Inch Crushed Stone:

<u>Sieve Size</u>	<u>Weight Passing (%)</u>
1"	100
3/4"	95-100

1/2"	35-70
3/8"	0-25

3. AGGREGATE SUBBASE

- a. Aggregate subbase shall be sand or gravel consisting of hard durable particles, which are free from vegetable matter, lumps, or balls of clay, and other deleterious substances. The gradation of the portion which will pass a 3-inch sieve shall meet the grading requirements of the following table:

<u>Sieve Size</u>	<u>Weight Passing (%)</u>
1/4"	25-70
No. 40	0-30
No. 200	0-7

- b. Granular subbase and gravel subbase shall not contain particles of rock, which will not pass the 6-inch square mesh sieve.
- c. Gradation tests shall conform to ASTM C136 except that the material may be separated on the 1/2-inch sieve.

4. AGGREGATE BASE

- a. Aggregate Base shall be screened or crushed gravel consisting of hard durable particles, which are free from vegetable matter, lumps or balls of clay, and other deleterious substances. The gradation of the part that passes a 3-inch sieve shall meet the grading requirements of the following table.

<u>Sieve Size</u>	<u>Weight Passing (%)</u>	
	<u>Screened</u>	<u>Crushed</u>
1/2"	35-75	45-70
1/4"	25-60	30-55
No. 40	0-25	0-20
No. 200	0-6	0-6

- b. Screened gravel base shall not contain particles or rock, which will not pass the 4-inch square mesh sieve. Crushed gravel base shall not contain particles or rock, which will not pass the 2-inch mesh sieve.

5. REFILL MATERIAL

- a. Refill material for replacement of unsuitable material or rock excavation below grade shall be aggregate subbase material or crushed stone of 3/4 inch maximum size, free from silt, loam, and clay.

2.2 UNSUITABLE MATERIAL

- A. Unsuitable soils for fill and backfill material shall include soils which, when classified under the standard method for "Classification of Soils for Engineering Purposes" (ASTM D2487), fall in the classification of Pt, OH, CH, MH, or OL.
- B. In addition, any soil containing organic matter, having a plastic limit of less than 8 percent when tested in accordance with the requirements of ASTM D4318 and containing more than 25 percent of material, by weight, passing the No. 200 sieve when analyzed according to the requirements of ANSI/ASTM D1140, or any solid which cannot be compacted sufficiently to achieve the percentage of maximum density specified for the intended use, shall be classed as unsuitable material.

2.3 SUBMITALS

- A. Contractor shall submit testing in accordance with Submittals.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify fill materials to be reused are acceptable.

3.2 PREPARATION

- A. Scarify and recompact subgrade to density required for subsequent backfill materials.
- B. Cut out soft areas of subgrade not capable of insitu compaction. Backfill with an approved granular material and compact to a density equal to or greater than requirements for subsequent backfill material.
- C. Prior to placement of aggregate subbase course material in paved areas, compact subsoil to 95 percent of its maximum dry density in accordance with ANSI/ASTM D698.
- D. Prior to placement of backfill against foundation walls required to have structural bracing, install bracing in accordance with approved bracing scheme.

3.3 BACKFILLING

- A. Use suitable materials from excavations which conform to the requirements herein or are approved by the Engineer for backfill up to rough grade lines except where these specifications have more stringent or special requirements for certain parts of the contract work. Supply extra fill if there is not enough fill

to complete the project. Use no material from any excavation as backfill unless approved by the Engineer.

- B. Material within two feet of top of roadway gravel in any areas to be paved or within five feet horizontally of any structure shall contain no stone having any dimension exceeding six inches. Excess and unsuitable excavated materials shall be removed from the site and satisfactorily disposed of. In the event sufficient suitable excavated material is not available for backfill, supply a granular backfill.
- C. Place materials in layers of thicknesses specified herein but in no case greater than 12 inches before compaction. Wet backfill when necessary, uniformly to obtain required density. Compact each layer with vibratory compactors before placing next layer.
- D. In cross-country runs, trenches shall be backfilled and mounded six inches above surrounding grade in addition to the normal compaction procedure.
- E. In street work, backfill above the stone to a depth of 24 inches below bottom of roadway gravel, placed in 12-inch layers and then compacted to required densities. Roadway gravel will be placed in 6-inch layers of base or subbase as specified and then compacted to required densities.
- F. In backfilling around structures, place material in 8-inch layers and then compact to required densities. Allow no heavy machinery within 5 feet of structure during placement. Place no material until structure can withstand the load. Place temporary backfill where required and remove when no longer required. Bring backfill up evenly on all sides of the structure.
- G. Systematically backfill to allow maximum time for natural settlement. Do not backfill over porous, wet, frozen or spongy subgrade surfaces.
- H. Maintain moisture content within 2 percent, plus or minus, of optimum moisture content of backfill materials to attain required compaction density.

3.4 FIELD QUALITY CONTROL

- A. Field inspection and testing will be performed.
- B. Tests and analysis of fill material will be performed in accordance with ANSI/ASTM D698.
- C. Compaction testing will be performed in accordance with ANSI/ASTM D698.
- D. If tests indicate Work does not meet specified requirements, remove Work, replace and retest at no cost to Owner.
- E. Frequency of Tests: Compaction Tests

1. Trench - 1 test every 300 feet varying lifts.
2. Site work - 1 test every 5,000 SF, each lift.
3. Underneath Structures - 1 per 1,000 SF per lift.

F. Proof roll compacted fill surfaces under paving.

G. Minimum densities following compaction shall be as follows:

<u>Fill and Backfill Location</u>	<u>Standard Proctor Density %</u>
Top 2 feet under pavement	95
Under or within 5 feet of structures	95
Fill for Erosion Repair Areas	92
Under pavements below top 2 feet	90
Trenches through unpaved areas	90
In embankment (including temporary)	90
Pipe bedding and trenching	90

H. Compaction shall be accompanied by appropriate methods, i.e., vibratory compaction of granular materials, sheepsfoot compaction of cohesive materials, etc. In no case shall trench compaction be deemed adequate with the use of a non-compactive device such as a bulldozer or excavator bucket.

3.5 PROTECTION OF FINISHED WORK

A. Protect and maintain finished Work as necessary.

END OF SECTION

SANITARY SEWER STRUCTURES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Manholes
 - 2. Frames and Covers
 - 3. Testing
 - 4. Abandoning Existing Structures in Place
- B. Related Sections
 - 1. Sanitary Sewer and Storm Drain Systems

1.2 REFERENCE STANDARDS

- A. American Society for Testing and Materials (ASTM).
 - 1. ASTM A48-83 - Specification for Gray Iron Castings.
 - 2. ASTM C478-84 - Precast Reinforced Concrete Manhole Sections.
 - 3. ASTM C923-84 - Resilient Connectors Between Reinforced Concrete Manhole Structures and Pipes.

1.3 SUBMITALS

- A. Manufacturer's Literature: Supply copies of descriptive literature and recommendations for installation.
- B. Certificates: Supply copies of manufacturer's certification that supplied products comply with specification requirements.

1.4 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Deliver products on manufacturer's original skids, or in original unopened protective packaging..
- B. Store materials to prevent physical damage.
- C. Protect material during transportation and installation to avoid physical damage.

1.5 PROJECT RECORD DRAWINGS

- A. Submit documents under provisions of Section – Contract Close-out.

- B. Accurately record location of manholes, rim, and invert elevations of all incoming and outgoing pipes.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Sewer Manholes
 - 1. Precast concrete, conforming to ASTM Specification C478. Minimum 28-day compressive strength of 4,000 psi, rated for H-20 loading.
 - 2. Eccentric cone section.
 - 3. Base and barrel sections: Circular components of minimum one (1) foot and maximum four (4) foot deep segments.
 - 4. Manhole inverts to be precast or poured in place. Concrete to be 3,000 psi minimum.
- B. Manhole Steps
 - 1. Copolymer polypropylene plastic coated steel or forged aluminum conforming to applicable safety requirements.
 - a. Steel: 1/2 inch diameter grade 60, minimum.
 - b. Aluminum: ALCOA No. 12653B or equal.
- C. Pipe-to-Manhole Joints
 - 1. Gravity: Molded neoprene compound boot, conforming to ASTM Specification C923.
 - 2. Force Main: Mechanical seals shall be Link Seal by Thunerline Corp. or approved equal and shall utilize 304-stainless assembly hardware.
- D. Frames and Covers
 - 1. Gray iron conforming to ASTM Specification A48-83, Class 30B.
 - 2. Manholes
 - a. 26 inch diameter gray cast iron, 24 inch clear opening.
 - b. Cover labeled "Sewer".
 - c. Rated for H-20 loading.
 - d. Model 62112 (frame) and 62112 2 (cover) as manufactured by EJ Prescott, or approved equal.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify site conditions noting irregularities affecting work of this section.
- B. Beginning of Work means acceptance of existing conditions.

3.2 INSTALLATION

A. Structures

1. Establish pipe invert elevations for all incoming and outgoing pipes as indicated on Contract Drawings.
2. Place structures on compacted foundation of 3/4 inch crushed stone of not less than twelve (12) inches depth and not less than 8 inches wider than manhole base.
3. Install precast barrel sections to minimize use of precast rings for shimming frames and covers to finish grade.
 - a. In no case shall precast ring shimming exceed one foot in height.
4. Excavation Drainage:
 - a. Provide temporary channels as required for water flowing along or across work site.
 - b. Pumped or drained water: Suitably disposed, causing no damage to adjacent property or interference with work.
 - c. In no case is drainage to be allowed through pipes being installed.

B. TESTING

1. Vacuum Test: Prior to backfilling, all manholes shall be vacuum tested in the following manner:
 - a. A vacuum of 10 inches of Hg shall be drawn on the manhole and the loss of 1 inch of Hg vacuum timed. The manhole shall be considered to have passed the test if the time for loss of 1 inch of Hg is 2 minutes or longer.
 - b. If the manhole fails the initial test, the Contractor shall locate the leaks and make repairs. The manhole shall be retested until a satisfactory result is obtained.

C. MANHOLE REPAIRS

1. Correct leakage by reconstruction, replacement of gaskets and/or other engineer-approved methods.

END OF SECTION

SANITARY SEWER SYSTEMS

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Sanitary Gravity Sewer Piping.
- B. Service Laterals and connection to existing lateral piping.
- C. Fittings
- D. Cleanouts
- E. Testing
- F. Abandoning Existing Sewer Mains in Place

1.2 RELATED SECTIONS

- A. Excavation
- B. Sanitary Sewer and Storm Drain Systems

1.3 REFERENCE STANDARDS

- A. ANSI/ASTM D3034 and/or ASTM F2736, ASTM F2764 - Sewer Pipe and Fittings.
- B. ASTM D3212 and/or ASTM F2736, ASTM F2764 - Joints for Drain and Sewer Plastic Pipes Using Flexible Elastomeric Seals.
- C. ASTM 477 – Standard Specifications for Elastomeric Seals for joining plastic pipe.

1.4 SUBMITTALS

- A. Product data for pipe, pipe accessories including documentation that products comply with specification requirements.
- B. Manufacturer's recommendations and instructions for installation.

1.5 PROJECT RECORD DOCUMENTS

- 1. Documents for requirements of Contract Closeout including, but not limited to, warranties, testing, adjusting, spare parts, etc.
- 2. Accurately record location of pipe runs, connections, structures, and invert elevations.
- 3. Field measurements for locating ends of unconnected service laterals.
- 4. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver products on manufacturer's original skids, or in original unopened protective packaging.
- B. Store materials to prevent physical damage.

Sanitary Sewer Systems

- C. Protect material during transportation and installation to avoid physical damage.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. PVC Pipe – J.M. Eagle, North American Pipe, or approved equal.
- B. Gravity Couplings - Fernco. Inc., or manufacturer's recommendation, or approved equal.

2.2 GRAVITY SEWER PIPE MATERIALS

- A. Polyvinyl Chloride (PVC) Non-pressure Sewer Pipe, conforming to ASTM Specification D3034.
 - 1. Class: SDR 35.
 - 2. Joints: Flexible Elastomeric Seals conforming to ASTM Specifications D3212.
 - a. All joints to be an integral part of pipe bell.
 - 3. Polyvinyl Chloride Resin Compound: Conforming to ASTM 1784.
 - 4. Rubber gaskets for use with PVC pipe; ASTM D1869, all joints to be an integral part of pipe bell.
 - 5. Elastomeric polyvinyl chloride fittings and reducers with stainless steel straps; meeting the requirements of ASTM C443, C425, C564, and D1869.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Excavate test pits as necessary to verify locations and grades of existing utilities prior to beginning installation of sanitary sewer system.
- B. Verify that trench cut is ready to receive work, and excavations, locations, dimensions and elevations are as indicated on Drawings.
- C. Beginning of installation means acceptance of existing conditions.

3.2 PREPARATION

- A. Hand trim excavations to required elevations. Correct over excavation with 3/4" crushed stone.
- B. Remove large stones, debris, or other hard matter which could damage pipes or impede consistent bedding, backfilling or compaction.

3.3 GRAVITY PIPE INSTALLATION

- A. Install pipes, fittings and accessories according to manufacturer's instructions.
- B. Place pipe on bedding in accordance with Section - Backfilling.
- C. Lay pipe to alignment, slope gradient and elevations noted on Drawings.
- D. Joints and joint material conforming to manufacturer's recommendations.
- E. Lay pipe without break, upgrade from structure to structure with bell end upstream.
- F. Install bedding at bottom, sides, and over top of pipe, to depths shown on Drawings.
- G. Install and bed pipe up to spring line; do not cover pipe without the presence of the Owner's representative.
 - 1. Work backfilled without presence of Engineer shall be uncovered at Contractor's expense.
- H. Manually "chink" bedding around pipe haunches for lateral support.
 - 1. Do not mechanically compact crushed stone over flexible pipe.
- I. Cover pipe with bedding to depth shown on drawings.
- J. Place excavated material or select granular backfill over pipe, as directed by Engineer.
 - 1. Place material in maximum 12-inch lifts.
 - 2. Increase compaction of each successive lift.
 - 3. Do not displace or damage pipe during compaction.
- K. Backfill and secure each pipe length prior to installing next length.
- L. Continue backfill placement to finish grade level.
- M. Protect pipes against impact shocks and free falls.
 - 1. Remove and replace damaged pipe.
 - 2. Place and tamper sufficient bedding material over and around pipe to prevent damage and movement.
- N. Install a water tight plug in open pipe ends when pipe laying not in progress.

3.4 SERVICE LATERALS

- A. Maintain sewer service laterals to buildings connected to existing sewer at all times during conduct of Work, unless otherwise instructed by Engineer.

1. Make all necessary arrangements with property owners to assure no unnecessary disturbance or inconvenience of service resulting from Work.
- B. New sewer service laterals to consists of: wye, inserta-tee or approved equal where applicable, appropriate adapters, and sufficient pipe length to connect existing building laterals to new sewer.
 1. New piping to extend from sewer main to existing sewer service as shown on the plans, or as directed by the Engineer.
 2. Location of existing service laterals shown on plans are approximate. Contractor responsible for field verification of actual lateral locations.
 - C. Prior to connecting new lateral pipe to existing services notify Engineer.
 1. Engineer to visually inspect condition of existing pipes.
 2. Engineer may stop construction on connections to dye test each service if existing pipe integrity or source is questionable.
 - D. Cap, mark with witness stake, and take tie measurements to any service laterals not immediately connected to an existing pipe.

3.5 FIELD QUALITY CONTROL

- A. Examine pipes for defects, weak structural components, and deviations within allowable tolerances.
- B. Remove rejected materials from job site.
- C. Obtain Engineer Certification and installation conformance to specifications prior to backfilling.
- D. Install pipe to lines and grades shown on contract Drawings.
- E. Allowable Tolerances:
 1. Pipe elevation: +/- 0.02 feet/100 feet.
 2. Horizontal layout: +/- 0.03 feet/100 feet.

3.6 PIPE LEAKAGE TESTING

- A. General
 1. Test all lines after backfilling.
 2. Lines to meet infiltration limit of 100 gallons/day/inch/mile.
 - a. Limit inferred by air exfiltration test.
- B. Low Pressure Air Test – to be performed on any pipe segments that do not contain service laterals or any pipe segments in which new laterals can be plugged at right of way.
 1. Perform test according to stated procedures in presence of Engineer.

2. Equipment used, a minimum:
 - a. Pneumatic plugs with sealing length greater than or equal to pipe diameter.
 - b. Plugs to resist test pressures requiring no external bracing.
 - c. Air used passing through single control panel.
 - d. Use three (3) individual hoses for following connections:
 - From control panel to pneumatic plugs for inflation.
 - From control panel to sealed line for introducing pressure air.
 - From sealed line to control panel for continually monitoring air pressure rise in sealed line.
3. Seal test plugs prior to actual test as follows:
 - a. Seal both ends of a length of pipe laid on ground.
 - b. Introduce air to plugs to 30 psig.
 - c. Pressurize pipe to 5 psig.
 - d. Plugs must hold without movement to pass.
4. Areas of known groundwater:
 - a. Install 1/2 inch diameter capped pipe nipple, 10-inches long, through manhole wall above an inlet line.
 - b. Prior to performing air test determine groundwater level as follows:
 - 1) Remove nipple cap.
 - 2) Blow air through nipple to clear.
 - 3) Connect clear plastic tube to nipple.
 - 4) Hold hose vertically and measure height of water.
 - 5) Divide height by 2.3 to obtain groundwater back pressure in psig.
5. After backfilling manhole to manhole segment:
 - a. After the sewer pipe has been cleaned and the pneumatic plugs checked, place the plugs in the sewer line at each manhole and inflate them.
 - b. Introduce low pressure air into the sealed sewer pipeline until the air pressure reaches 4 psig greater than the average groundwater pressure.
 - c. Allow a minimum of 2 minutes for the air pressure to stabilize to a minimum of 3.5 psig greater than the groundwater pressure. Groundwater is assumed to be at ground surface unless the Contractor can prove by otherwise by test pitting.
 - d. After the stabilization period, disconnect the air hose from the control panel to the air supply.
 - e. The pipeline will be acceptable if the pressure decrease is not greater than 1/2 psig in the time stated in the following table for the length of pipe being tested:

<u>Pipe Diameter</u> <u>(inches)</u>	<u>Time (Min.) for Length of Pipe</u>			
	<u>0-100 ft</u>	<u>101-200 ft</u>	<u>201-300 ft</u>	<u>301-400 ft</u>
4	2.0	2.0	2.0	2.0
6	3.0	3.0	3.0	3.0
8	4.0	4.0	4.0	5.0
10	5.0	5.0	6.0	8.0
12	5.5	5.5	8.5	11.5
15	7.0	8.5	13.0	17.0
18	8.5	12.0	19.0	25.0
21	10.0	17.5	26.0	35.0
24	11.5	23.0	34.0	45.5
27 and larger		(not recommended)		

6. If pipe segment fails air test:
 - a. Perform necessary work to meet these requirements.
7. Provide, as necessary, proper plugs, weirs and necessary equipment to perform tests.
8. Testing of pipe sections to include service connection portions installed under this Contract.
9. Provide, as necessary, equipment to bypass flow around test segments.
 - a. Maintain service to services temporarily disconnected, capped or plugged for test.
10. Test each day's work.
 - a. Pipe laying may be stopped by Engineer if testing procedures or results are unacceptable.

3.7 VIDEO INSPECTION

A. General: Contractor shall contact City of Bangor Sewer Maintenance Department when the main has been completed to schedule CCTV inspection of new mains.

B. Any defects found during the video inspection shall be repaired to the satisfaction of the Engineer. The cost shall be incidental to the project.

END OF SECTION

Sanitary Sewer Systems

SEEDING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Fertilizing.
 - 2. Seeding.
 - 3. Hydroseeding.
 - 4. Seed Protection.
 - 5. Maintenance.

1.2 QUALITY ASSURANCE

- A. Follow all local, state and federal recommendations concerning seeding.

1.3 REFERENCE STANDARDS

- A. American Society OF state Highway and Transportation Officials (AASHTO):
 - 1. M 145-74, Classification of Soils and Soil-Aggregate Mixtures for Highway Construction Purposes.
- B. Maine Department of Transportation (MDOT):
 - 1. Standard Specifications - Highways and Bridges.

1.4 SUBMITTALS

- A. Test Reports:
 - 1. Provide analysis of topsoil fill.
 - a. Analyze to ascertain percentage of nitrogen, phosphorus, potash, soluble salt content, organic matter content, and Ph value.
 - b. Results of seed purity and germination tests.
 - c. Results of fertilizer analysis.
 - d. Results of peat moss analysis.
- B. Certificates:
 - 1. Soil conditions and fertilizers.
 - 2. Grass seed.
 - 3. Quarantine restrictions.

1.5 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Tag seed, with botanical and common names.
- B. Store and protect seed from excessive heat, cold, sun, rain, wind and other deleterious environmental conditions.

- C. Deliver fertilizer in waterproof bags showing weight, chemical analysis, and name of manufacturer.

1.6 JOB CONDITIONS

- A. The seeding process shall meet the following conditions:
 - 1. Do not place seed on frozen, extremely wet, or extremely dry soils.
 - 2. Place seed between April 15 to June 15 or August 15 to October 15.
 - 3. Do not seed when wind exceeds 15 mph.

1.7 DEFINITIONS

- A. Weeds: Include Dandelion, Jimsonweed, Quackgrass, Horsetail, Morning Glory, Rush Grass, Mustard, Lambsquarter, Chickweed, Cress, Crabgrass, Canadian Thistle, Nutgrass, Poison Oak, Blackberry, Tansy Ragwort, Bermuda Grass, Johnson Grass, Poison Ivy, Nut Sedge, Nimble Will, Bindweed, Bent Grass, Wild Garlic, Perennial Sorrel, and Brome Grass.

1.8 GUARANTEE

- A. Guarantee seed through one full growing season after planting. Replace if necessary.

PART 2 - PRODUCTS

2.1 SEED

- A. Lawn Areas: Park Mixture:

Pennlawn Red Fescue	44.32%
Kentucky Blue Grass	35.98%
Merion Blue Grass	13.52%
Inert Matter	5.89%
Other	0.29%

- B. Other Areas: Conservation Mixture:

Creeping Red Fescue	35.00%
Red Top	6.00%
Kentucky Blue Grass	24.00%
Perennial Rye	10.00%
Annual Rye	20.00%
White Clover	5.00%

2.2 MULCH

- A. Clean hay, wood fiber, or jute netting, as appropriate.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Verify that prepared topsoil is ready to receive the Work of this Section.
- B. Beginning of installation means acceptance of existing site conditions.

3.2 FERTILIZING

- A. Apply fertilizer at a rate of 25 pounds per 1,000 square feet.
- B. Apply after smooth raking of topsoil and prior to roller compaction.
- C. Do not apply fertilizer at same time or with same machine as will be used to apply seed.
- D. Mix thoroughly into upper 2 inches with an appropriate method.
- E. Lightly water to aid the dissipation of fertilizer.
- F. Water dry topsoil to a depth of 4 inches, 48 hours prior to seeding to obtain a loose, friable seed bed.

3.3 SEEDING

- A. Apply seed at a rate of 3 pounds per 1,000 square foot evenly in two intersection directions. Rake in lightly to a depth of 3/8 inch. Do not seed area in excess of that which can be mulched on same day.
- B. Planting Season: April 15 to June 15 or August 15 to October 1.
- C. Do not sow immediately following rain, when ground is too dry, or during windy periods.
- D. Roll seeded area with roller weighing a maximum of 150 lbs/foot of width.
- E. Apply mulch immediately following seeding.
- F. Apply water with a fine spray immediately after each area has been mulched. Saturate to 4 inches of soil.

3.4 HYDROSEEDING

- A. Apply seeded slurry at a rate of 3 pounds per 1,000 square feet evenly in two intersection directions, with a hydraulic seeder. Do not hydroseed area in excess of that which can be mulched on same day.
- B. Immediately following seeding and rolling, apply mulch to a thickness of 1/8 inches. Maintain clear of shrubs and trees.

- C. Apply water with a fine spray immediately after each area has been mulched. Saturate to 4 inches of soil.

3.5 SEED PROTECTION

- A. Cover seeded slopes where grade is 2:1 or greater with jute mat. Roll fabric onto slopes without stretching or pulling. Apply mulch in all other areas.
- B. Lay fabric smoothly on surface, bury top end of each section in 6-inch deep excavated topsoil trench. Provide 12-inch overlay of adjacent rolls. Backfill trench and rake smooth, level with adjacent soil.
- C. Secure outside edges and overlaps at 36-inch intervals with stakes.
- D. Lightly dress slopes with topsoil to ensure close contact between fabric and soil.
- E. At sides of ditches, lay fabric laps in direction of water flow. Lap ends and edges a minimum of 6 inches.

3.6 MAINTENANCE

- A. Water to prevent grass and soil from drying out.
- B. Roll surface to remove minor depressions or irregularities.
- C. Control growth of weeds. Apply herbicides in accordance with manufacturer's instructions. Remedy damage resulting from improper use of herbicides.
- D. Immediately reseed areas which show bare spots.

3.7 SPECIALIZED MAINTENANCE

- A. Applies only to new utilities in park areas, cross-country residential areas, and other recreational spaces.
- B. Fence off newly seeded areas until grass established.
- C. Mow grass at regular intervals to maintain a maximum height of 2-1/2 inches. Do not cut more than 1/3 of grass blade at any one mowing.
- D. Neatly trim edges and hand clip where necessary.
- E. Immediately remove clippings after mowing and trimming.

END OF SECTION

HOT MIX ASPHALT PAVING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Hot Mix Asphalt Paving.
- B. Related Sections:
 - 1. Backfilling

1.2 REFERENCES

- A. Maine Department of Transportation Standard Specifications Highways and Bridges, latest edition and supplementals.

1.3 QUALITY ASSURANCE

- A. Perform Work in accordance with Maine Department of Transportation Standard Specification - Highway and Bridges.
- B. Mixing Plant: Conform to State of Maine Department of Transportation Standards.
- C. Obtain materials from same source throughout.

1.4 ENVIRONMENTAL REQUIREMENTS

- A. Do not place asphalt when aggregate base surface temperature is less than 35 degrees F for Bituminous Concrete Binder and 50 degrees F for Bituminous Concrete Surface, or when surface is wet or frozen.
- B. Apply bituminous prime and tack coats prior to placing all asphalt.
- C. Do not place surface pavement when the binder surface is wet or contains an excess of moisture, which would prevent uniform distribution and the required penetration.
- D. Conform to applicable standards for paving work.

PART 2 - PRODUCTS

2.1 AGGREGATE SUBBASE

- A. As specified in Backfilling.

2.2 AGGREGATE BASE

- A. As specified in Backfilling.

2.3 BITUMINOUS CONCRETE BASE COURSE

- A. MDOT Specification, Section 401.
- B. As shown on plans.

2.4 BITUMINOUS TACK COAT

- A. MDOT Specification, Section 409.
- B. Type MS-2, Emulsified Asphalt, Mixing.

2.5 BITUMINOUS CONCRETE SURFACE COURSE

- A. MDOT Specification, Section 401.
- B. As shown on plans.

2.6 SIDEWALKS, DRIVES AND SHIM

- A. MDOT Specification, Section 401.
- B. As shown on plans.

2.7 TEMPORARY PATCHING

- A. Hot or cold, as approved by Engineer.

2.8 ACCESSORIES

- A. Tack Coat: Homogeneous, medium curing, liquid asphalt, in accordance with Maine Department of Transportation Specifications.

PART 3 - EXECUTION

3.1 AGGREGATE SUBBASE

- A. As specified in Backfilling.

3.2 AGGREGATE BASE

- A. As specified in Backfilling.

3.3 BITUMINOUS CONCRETE BASE COURSE

- A. MDOT Specification, Section 401.

3.4 BITUMINOUS TACK COAT

- A. Apply emulsified asphalt tack coat to gutters and pavement if required by Engineer to promote adequate bond.
- B. Apply at a rate of 0.03 to 0.05 gallons/square yard; excess coating and/or fat spots will not be permitted.

3.5 BITUMINOUS CONCRETE SURFACE COURSE

- A. MDOT Specification, Section 401.

3.6 SIDEWALKS, DRIVES AND SHIM

- A. MDOT Specification, Section 401.

3.7 COMPACTION

- A. Bituminous compaction shall take place at as high a temperature as possible without the mix bulging excessively in front of the rolls. For most dense graded mix this is between 260 degrees F and 285 degrees F. At no time shall the pavement be allowed to fall below 185 degrees F without compaction.
- B. Pavement compacted at temperatures below 185 degrees may be removed if deemed unsatisfactory by the Engineer.

3.8 TOLERANCES

- A. Flatness: Maximum variation of 1/4 inch measured with 10 foot straight edge.
- B. Scheduled Compacted Thickness: Within 1/4 inch.
- C. Variation from True Elevation: Within 1/2 inch.

3.9 FIELD QUALITY CONTROL

- A. Field quality control testing shall be performed by the Contractor.

3.10 FIELD QUALITY ASSURANCE

- A. Field quality assurance testing shall be performed by an independent testing agency provided by the Engineer.

3.10 PROTECTION

- A. Immediately after placement, protect pavement from mechanical injury for 3 days.

3.11 SCHEDULES

- A. Parking Lots

- 1. Thicknesses and Widths as shown on drawings and details.

END OF SECTION

**Request for Proposals
Maine Avenue Property Sewer Reconstruction
Proposal No.: P16-026**

**Appendix C
Plan and Detail Sheets**

