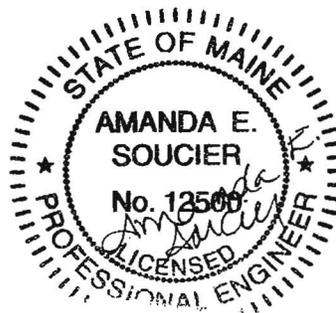


PROJECT MANUAL
for the
**MIDDLE STREET AND CROSS STREET
SEWER REHABILITATION PROJECT**



CITY OF BANGOR, MAINE
Engineering Department

SEPTEMBER, 2016



JOHN M. THERIAULT, PE, PTOE
CITY ENGINEER

CATHERINE M. CONLOW
CITY MANAGER

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A. NOTICE TO CONTRACTORS

SECTION A

NOTICE TO CONTRACTORS

Bids are requested for the

MIDDLE STREET AND CROSS STREET SEWER REHABILITATION PROJECT

The project includes replacing 620 LF existing combined brick sewer main with new 18" diameter sewer main, and installation of new catch basins, new sanitary manholes, new catch basin leads, and new sanitary service laterals, more or less, along Middle Street and Cross Street, and other incidental work.

All work is to be completed by November 18, 2016.

For consideration, the attached bid form sealed in an envelope, distinctly marked

"MIDDLE STREET AND CROSS STREET SEWER REHABILITATION"

must be received at the Office of the City of Bangor Purchasing Agent by

2:00 PM, Wednesday, September 28, 2016.

at which time all proposals will be opened and read aloud.

A **prebid meeting** will be held on September 22, 2016 at 3:00 p.m. at the City of Bangor's Council Chambers, 73 Harlow Street, Bangor, Maine.

Bid security in the amount of 5% of the bid price will be required in the form of cash , a certified check, or bid bond.

The City reserves the right to waive any informalities in or to reject any or all bids submitted, or to accept any proposal considered to be the most advantageous to the City.

Specifications may be obtained at the Engineering Department, City Hall, 73 Harlow Street, Bangor, Maine 04401, for a seventy-five dollar (**\$75.00**) charge. If plans need to be mailed, an additional fee of thirty-five (**\$35.00**) will be charged.

B. INFORMATION FOR BIDDERS

SECTION B

INFORMATION FOR BIDDERS

MIDDLE STREET AND CROSS STREET SEWER REHABILITATION PROJECT

The project includes replacing 620 LF existing combined brick sewer main with new 18" diameter sewer main, and installation of new catch basins, new sanitary manholes, new catch basin leads, and new sanitary service laterals, more or less, along Middle Street and Cross Street, and other incidental work.

Description of Work

The work contemplated under the terms of this contract consists of the following general items:

- Install new utilities as shown on the plans.
- Perform other work as shown on plans.
- Coordinate with other work in the area, including resurfacing work by Bangor Public Works.

Definitions

The following terms or, in the case of Owner, Engineer, or Contractor, the singular, masculine pronouns used in their place, shall have the following meanings within the context of this Contract:

Owner - The City of Bangor, Maine acting through its duly authorized representatives

Engineer - The Bangor City Engineer or his duly authorized representatives

Contractor - The individual, firm, or corporation to whom the contract has been awarded whether acting on his own or through subcontractors or employees

Contract - The Contract shall be deemed to include the Notice to Contractor, Information for Bidders, the Bid Form, the Contract Agreement, the Performance and Payment Bond(s), the Specifications and Plans, any addenda which may be issued to any of the foregoing, and all other provisions which may be required by law to be included in this contract whether actually included or not.

Bid Security

Each bidder must submit with his 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 he has not been notified of the acceptance of his bid.

Withdrawal of Bids

The Owner may consider informal any bid not in accordance with the provisions hereof and may waive any informalities in, or reject, any or all bids. Any bidder may withdraw his bid prior to opening of the bids. Any bid received after the time and date specified will not be considered. No bidder may withdraw his bid within 30 days after the actual bid opening.

Bid Submitted

Bids must be submitted on the prescribed form and all blank spaces must be filled in, in ink, in both words and figures. The price quoted in the bid shall be for the total project, complete and shall include all labor, tools, materials, supplies, equipment, and all else necessary for or incidental thereto.

Qualified Bidder

The Owner may make such investigations as he may deem necessary to determine the ability of any bidder or bidders to perform the work, and the bidder(s) shall furnish to the Owner all such information and data pertinent to this investigation as the Owner may request. The Owner reserves the right to reject any bid after evidence submitted or investigation of the bidder fails to satisfy the Owner that such bidder is properly qualified to carry out the obligations of the Contract and to complete the work contemplated therein. Conditional bids will not be accepted.

Bidder's Obligation

At the time of the opening of the bids it will be presumed that each bidder will have inspected the site and will have thoroughly familiarized himself with the Contract documents, including the plans, specifications, and any addenda which may have been issued thereto. Failure of the bidder to receive and examine any form, instrument, or document, or to visit and examine the site itself will not in any way relieve the successful bidder from any obligation in respect to his bid or to the terms of this contract.

Bid Security Forfeited

Should the bidder to whom the Contract is awarded fail for any reason to execute the Contract and to furnish a satisfactory bond within the time specified, the Owner may determine that the bidder has abandoned the Contract, that his bid shall be considered null and void and that the surety accompanying the bid shall be forfeited to and be retained by the Owner as liquidated damages, and the Contract may be awarded to another bidder. After the execution of the Contract and acceptance of the bond by the Owner, the surety accompanying the successful bidder's bid shall be returned.

Performance Bond and Labor and Materials Bond

Simultaneously with his delivery of the Contract to the Owner, the successful bidder shall deliver to the Owner an executed Performance Bond and an executed Labor and Materials Bond, each in the amount of 100% of the total bid price, as security for the faithful performance of the Contract and for the payment of all persons performing labor or furnishing materials in connection therewith. These bonds shall be on the prescribed forms and shall be furnished by a surety company or companies listed on the current Circular 570 of the U.S. Treasury Department which company or companies shall also have a record of service satisfactory to the Owner, shall be authorized to do business in the State of Maine and shall be independent of the Contractor.

Work Under City Engineer

All work under this project shall be under the direct supervision of the City Engineer. All decisions pertaining to the new construction shall be final and binding. If initial line and grade are requested by the Contractor, the engineering staff of the City of Bangor will establish one line of stakes or points with grades at no cost to the Contractor; however, it shall be the responsibility of the Contractor to establish and maintain such additional layout, including batter boards if so directed by the Engineer, as may be required to properly complete the work.

Questions During Bidding

No interpretation of the meaning of the plans, specifications or other Contract documents will be made to any bidder orally. Every request for such interpretation must be in writing and must be received no later than 4:30 p.m. on September 22, 2016 at bids@bangormaine.gov, subject line Middle Street and Cross Street Sewer Rehabilitation Attn: Amanda Soucier.

Any and all such interpretations and any supplemental instructions will be written addenda to the specifications which, if issued, will be mailed by registered mail with return receipt requested to all prospective bidders at least three (3) working days prior to the bid opening date. Failure of any bidder to receive any addenda or interpretation thus mailed will not relieve the bidder of his obligation under the bid submitted. All addenda so issued will become an integral part of the Contract documents.

Terms and Conditions

The bidder is hereby notified that the construction terms and conditions set forth in the Contract documents will be rigidly enforced, that it is the intention of the Owner to maintain full time inspection during the period of construction, and that only first quality materials and workmanship will be accepted. Neither the fact of such inspection, nor the omission thereof, will imply acceptance by the Owner of any or all of the work performed under this contract or relieve the Contractor of any responsibility for the successful completion of all the terms of this Contract subject to final inspection and review by the Owner.

The City of Bangor is a municipal corporation duly organized under the laws of the State of Maine and therefore is not required to file proof of exemption to the Maine State sales tax.

Time of Completion

All work shall be completed by **November 18, 2016**. After which time **liquidated damages** will be assessed at **\$1,500.00** (fifteen hundred dollars) per calendar day.

C. BID FORM AND BID BOND

BID DATE -- 2:00 PM, Wednesday, September 28, 2016

SECTION C

BID FORM

To the City of Bangor, Maine, herein called the Owner, acting through its City Manager for the construction of the **Middle Street and Cross Street Sewer Rehabilitation Project**, together with all related work specified in the specifications, and any other work necessary or incidental thereto.

The undersigned, as Bidder, herein referred to as singular and masculine, declares that the only parties interested in the bid as principals are named herein; that this bid is made without collusion with any other person, firm, or corporation; that no officer or agent of the Owner is directly or indirectly interested in this bid; that he has carefully examined the location of the proposed work, the annexed form of contract, and the plans and specifications therein referred to and he proposes and agrees that if this bid is accepted he will contract with the Owner, in the form of the copy of the Contract Agreement deposited in the office of the Engineer and attached hereto, to provide all necessary machinery, tools, apparatus, and other means of construction and to do all the work and furnish all the materials specified in this contract in the manner and time therein prescribed, and according to the requirements of the Engineer as therein set forth and that he will take in full payment for the work thereof the following unit prices.

Item No.	Estimated Quantity	Description, Unit or Lump Sum Price Bid In Both Words and Figures	Total Price In Figures
1.	1 LS	Traffic Control the Lump Sum Price of _____ Dollars per lump sum (\$_____/LS	\$ _____
2.	900 FHR	Flagging Hour Unit Price per Flagger per Hour _____ Dollars per flagger per hour (\$_____/FHR	\$ _____
3.	1 LS	Mobilization (not to exceed 3% of total project bid) the Lump Sum Price of _____ Dollars per lump sum (\$_____/LS	\$ _____

BID DATE -- 2:00 PM, Wednesday, September 28, 2016

Item No.	Estimated Quantity	Description, Unit or Lump Sum Price Bid In Both Words and Figures	Total Price In Figures
4.	100 CY	Rock Removal* Unit Price per cubic yard of _____ Dollars per cubic yard (\$_____/CY)	 \$ _____
5.	6 EA	Test Pits Unit Price per each of _____ Dollars per each (\$_____/EA)	 \$ _____
6.	1 LS	Rodent Control the Lump Sum Price of _____ Dollars per lump sum (\$_____/LS)	 \$ _____
7.	1 LS	Maintenance of Sewer Flows the Lump Sum Price of _____ Dollars per lump sum (\$_____/LS)	 \$ _____
8.	260 LF	12" Ø PVC Storm Drain or Sewer Main Unit Price per linear foot of _____ Dollars per linear foot (\$_____/LF)	 \$ _____
9.	620 LF	18" Ø PVC Sewer Main Unit Price per linear foot of _____ Dollars per linear foot (\$_____/LF)	 \$ _____

BID DATE -- 2:00 PM, Wednesday, September 28, 2016

Item No.	Estimated Quantity	Description, Unit or Lump Sum Price Bid In Both Words and Figures	Total Price In Figures
10.	230 LF	6" Ø Sewer Lateral Unit Price per linear foot of _____ Dollars per linear foot (\$_____) / LF	 \$ _____
11.	100 VF	3' Ø Standard Catch Basin with Trap Unit Price per vertical foot of _____ Dollars per vertical foot (\$_____) / VF	 \$ _____
12.	50 VF	4' Ø Standard Sanitary Sewer Manhole Unit Price per vertical foot of _____ Dollars per vertical foot (\$_____) / VF	 \$ _____
13.	32 VF	4' Ø Doghouse Sanitary Sewer Manhole Unit Price per vertical foot of _____ Dollars per vertical foot (\$_____) / VF	 \$ _____
14.	13 VF	6' Ø Doghouse Sanitary Sewer Manhole Unit Price per vertical foot of _____ Dollars per vertical foot (\$_____) / VF	 \$ _____
15.	1000 SF	2" Rigid Insulation Unit Price per square foot of _____ Dollars per square foot (\$_____) / SF	 \$ _____

BID DATE -- 2:00 PM, Wednesday, September 28, 2016

Item No.	Estimated Quantity	Description, Unit or Lump Sum Price Bid In Both Words and Figures	Total Price In Figures
16.	1 LS	Abandon Existing Mains in Travel Way with Flowable Fill The lump sum price of _____ Dollars per lump sum (\$_____/LS)	\$ _____
17.	2 EA	Abandon Existing Catch Basin/Manhole in Place Unit Price per each of _____ Dollars per each (\$_____/EA)	\$ _____
18.	1 LS	Abandon Existing Brick Cistern in Place The lump sum price of _____ Dollars per lump sum (\$_____/LS)	\$ _____
19.	300 TON	Temporary Pavement Unit price per TON of _____ Dollars per TON (\$_____/TON)	\$ _____
20.	270 LF	Remove/Reset Exist. Granite Curb Unit Price per linear foot of _____ Dollars per linear foot (\$_____/LF)	\$ _____
21.	160 CY	Common Excavation Unit Price per cubic yard of _____ Dollars per cubic yard (\$_____/CY)	\$ _____

BID DATE -- 2:00 PM, Wednesday, September 28, 2016

Item No.	Estimated Quantity	Description, Unit or Lump Sum Price Bid In Both Words and Figures	Total Price In Figures
22.	900 SY	Pavement Removal The square yard price of _____ Dollars per square yard (\$_____/SY)	\$ _____
23.	1 LS	Fine Grading The lump sum price of _____ Dollars per lump sum (\$_____/LS)	\$ _____

*Indicates indeterminate quantity for bidding purposes

TOTAL BASE BID (IN FIGURES):\$ _____

TOTAL BASE BID (IN WORDS):_____

_____ Dollars
and _____ Cents

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

*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.)

The foregoing prices shall include all labor, materials, equipment, overhead, profit, insurance, etc., to cover the finished work of the several kinds called for.

If this Bid is accepted by the Owner and the undersigned fails to contract as aforesaid and to give a bond in the sum of the full amount of the Bid, with surety satisfactory to the Owner, within 10 days (not including Sundays or legal holidays) to an address given herewith that the Contract is ready for signature, then the Owner may by option determine that the Bidder has abandoned the Contract and therefore the Bid and Acceptance shall be null and void, and the bid bond shall be forfeited to the Owner.

BID DATE -- 2:00 PM, Wednesday, September 28, 2016

Business Name

Street Address

City, State, Zip Code Telephone

By: _____
Name (Printed or typed) Title

Residence Address

Signature Date

BID BOND

Any singular reference to Bidder, Surety, Owner or other party shall be considered plural where applicable.

BIDDER (*Name and Address*):

SURETY (*Name and Address of Principal Place of Business*):

OWNER (*Name and Address*):

The City of Bangor
 73 Harlow Street
 Bangor, ME 04401

BID

Bid Due Date:
 Description (*Project Name and Include Location*):
 Middle Street and Cross Street Sewer Rehabilitation Project, Bangor, ME

BOND

Bond Number:
 Date (*Not earlier than Bid due date*):
 Penal sum _____

(Words)

\$

(Figures)

Surety and Bidder, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Bid Bond to be duly executed by an authorized officer, agent, or representative.

BIDDER

SURETY

 Bidder's Name and Corporate Seal

(Seal)

 Surety's Name and Corporate Seal

(Seal)

By: _____
 Signature

By: _____
 Signature (Attach Power of Attorney)

 Print Name

 Print Name

 Title

 Title

Attest: _____
 Signature

Attest: _____
 Signature

 Title

 Title

Note: Above addresses are to be used for giving any required notice. Provide execution by any additional parties, such as joint venturers, if necessary.

1. Bidder and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to pay to Owner upon default of Bidder the penal sum set forth on the face of this Bond. Payment of the penal sum is the extent of Bidder's and Surety's liability. Recovery of such penal sum under the terms of this Bond shall be Owner's sole and exclusive remedy upon default of Bidder.
2. Default of Bidder shall occur upon the failure of Bidder to deliver within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents.
3. This obligation shall be null and void if:
 - 3.1 Owner accepts Bidder's Bid and Bidder delivers within the time required by the Bidding Documents (or any extension thereof agreed to in writing by Owner) the executed Agreement required by the Bidding Documents and any performance and payment bonds required by the Bidding Documents, or
 - 3.2 All Bids are rejected by Owner, or
 - 3.3 Owner fails to issue a Notice of Award to Bidder within the time specified in the Bidding Documents (or any extension thereof agreed to in writing by Bidder and, if applicable, consented to by Surety when required by Paragraph 5 hereof).
4. Payment under this Bond will be due and payable upon default of Bidder and within 30 calendar days after receipt by Bidder and Surety of written notice of default from Owner, which notice will be given with reasonable promptness, identifying this Bond and the Project and including a statement of the amount due.
5. Surety waives notice of any and all defenses based on or arising out of any time extension to issue Notice of Award agreed to in writing by Owner and Bidder, provided that the total time for issuing Notice of Award including extensions shall not in the aggregate exceed 120 days from Bid due date without Surety's written consent.
6. No suit or action shall be commenced under this Bond prior to 30 calendar days after the notice of default required in Paragraph 4 above is received by Bidder and Surety and in no case later than one year after Bid due date.
7. Any suit or action under this Bond shall be commenced only in a court of competent jurisdiction located in the state in which the Project is located.
8. Notices required hereunder shall be in writing and sent to Bidder and Surety at their respective addresses shown on the face of this Bond. Such notices may be sent by personal delivery, commercial courier, or by United States Registered or Certified Mail, return receipt requested, postage pre-paid, and shall be deemed to be effective upon receipt by the party concerned.
9. Surety shall cause to be attached to this Bond a current and effective Power of Attorney evidencing the authority of the officer, agent, or representative who executed this Bond on behalf of Surety to execute, seal, and deliver such Bond and bind the Surety thereby.
10. This Bond is intended to conform to all applicable statutory requirements. Any applicable requirement of any applicable statute that has been omitted from this Bond shall be deemed to be included herein as if set forth at length. If any provision of this Bond conflicts with any applicable statute, then the provision of said statute shall govern and the remainder of this Bond that is not in conflict therewith shall continue in full force and effect.
11. The term "Bid" as used herein includes a Bid, offer, or proposal as applicable.

D. CONTRACT AGREEMENT

SECTION D

CONTRACT AGREEMENT

CITY OF BANGOR

This agreement is made this _____ day of _____, **20** by and between

(hereinafter referred to as the "Contractor"),

and the City of Bangor, hereinafter referred to as the "Owner,"),

WITNESSETH, that the Contractor and the Owner, for consideration stated herein mutually agree as follows:

ARTICLE 1 - Statement of the Work

The Contractor shall furnish the materials and perform the work for the Owner for the consideration set forth in the Bid and in strict accordance with the Contract, as the word "Contract" is hereinafter defined.

ARTICLE 2 - The Contract

The following shall be deemed to be part of this Contract:

- A. Notice to Contractor
- B. Information for Bidders
- C. Bid Form
- D. Contract Agreement
- E. Performance and Payment Bonds
- F. Specifications and Plans
- G. Addenda, if any, issued to any of the foregoing
- H. Any and all other provisions required by law to be included in this Contract, whether actually included or not.

All of the foregoing, taken as a whole, shall constitute the Contract document.

In case of conflict, the Articles of Section D will prevail.

ARTICLE 3 - Definitions

The following terms and/or the singular, masculine pronouns used in their place, shall have the following meanings within the context of this Contract:

- Owner - The City of Bangor, Maine acting through its duly authorized representatives.
- Engineer - The Bangor City Engineer or his duly authorized representatives.
- Contractor - The individual, firm, or corporation to whom the contract has been awarded whether acting on his own or through subcontractors or employees.

ARTICLE 4 - Obligations and Liability of the Contractor

The Contractor shall furnish all labor, materials, tools and appliances, except as may be otherwise specified herein, and all else necessary for or incidental to the proper performance and completion of all work required by this Contract in the manner and within the time herein specified. He shall complete the entire work subject to the direction of the Engineer and to the Engineer's complete satisfaction in accordance with the specifications and plans which are a part hereof, at the prices herein agreed upon and fixed therefore.

The Contractor shall conduct his work in such manner as to interfere as little as possible with private business and/or public travel and to protect both life and property. He shall, at his own expense, provide all necessary fences, barricades, lights, watchmen, flagmen, traffic directors, etc. and shall take any and all such other precautionary measures as common sense might dictate or as may be required by the Engineer. Safe access to each property must be maintained. The Contractor will be held solely liable for any and all damages occasioned in any way by his act or failure to act, or by any such action or negligence on the part of his agents, employees, suppliers, or workmen.

The Contractor shall take full responsibility for the work done under this Contract, for the protection of all such work, and for the prevention of injuries to persons and/or damage to property, including utilities, on or about the work site. He shall under no circumstances be relieved of his responsibility by any right of the Engineer to give permission or issue orders relating to any part of the work, or by any such permission given, or by the failure of the Engineer to issue any such orders. The Contractor shall bear any and all losses resulting to him or to the Owner on account of the amount or character of the work, or because the nature of the land in or on which the work is done is different from what was estimated or expected, or on account of the weather, elements, acts of God, or any other causes whatsoever. The Contractor shall assume the defense of any and all claims of any nature whatsoever against the Contractor or the Owner, and shall indemnify, save harmless, and insure the Owner and Owner's officers and/or agents against all claims arising out of injury or damage to persons, corporations, or property whether such claims arise out of negligence or not, or whether said claims are for unavoidable damage or not, and from all claims relating to labor and /or materials furnished for the work. The Contractor will not be required to indemnify the Owner against damage or claims occasioned by acts of the Owner.

ARTICLE 5 - Engineer's Authority

MIDDLE STREET AND CROSS STREET SEWER REHABILITATION

The Engineer will in all cases determine the amount, quality, acceptability and fitness of the several kinds of work and materials which are to be paid for under this contract. He will determine all questions in relation to said work and the construction thereof, and will in all cases decide every question of fact which may arise relative to the fulfillment of this contract on the part of the Owner and on the part of the Contractor. The estimate and decision will be final and conclusive upon all parties to this Contract.

Any differences or conflicts which may arise between the Contractor and other contractors of the Owner in regard to their work will be adjusted and determined by the Engineer.

The Engineer will make all necessary explanations as to the meaning and intent of the plans and specifications and will give all necessary orders and directions.

The order or sequence of execution of the work and the general conduct of the work will be subject to the approval of the Engineer and, should public necessity or welfare so require, to his direction. No such approval or direction will, however, in any way affect the responsibility of the Contractor in the conduct of the work.

ARTICLE 6 - Superintendence

The Contractor shall keep competent supervisory personnel at the site at all times during which work is in progress. He shall designate in writing, before commencement of work under this Contract, a project superintendent who shall be an employee of the Contractor and who shall have complete authority to represent and to act on behalf of the Contractor. The Engineer shall be notified in writing prior to any change in superintendent assignment.

The superintendent shall receive on behalf of the Contractor all communications from the Engineer. Communications of major importance will be confirmed in writing upon request from the Contractor.

ARTICLE 7 - Discrepancies, Errors and Omissions

The plans and specifications are intended to be explanatory of each other, but should any discrepancy appear or any misunderstanding arise as to the import of anything contained in either, the interpretation and decision of the Engineer will be final and binding on both parties to this contract.

Any correction of errors or omissions in plans and/or specifications may be made by the Engineer when such correction is necessary for the proper fulfillment of their intention as construed by him. Where said correction of errors or omissions, except as provided in the next two (2) paragraphs, adds to the amount of work to be done by the Contractor, compensation for said additional work will be made in accordance with ARTICLE 28 hereof regarding Extra Work except where the additional work may be classed under some item of work for which a unit price is included in the bid, in which case compensation will be made accordingly.

The fact that specific mention of a fixture, or of any part of the work, is omitted in the specifications, whether intentionally or otherwise, when the same is clearly shown or indicated on the plans or is usually and customarily required to fully complete such work as is specified herein, will not entitle the

MIDDLE STREET AND CROSS STREET SEWER REHABILITATION

Contractor to consideration in the matter of any claim for extra compensation, but the said fixtures and/or work shall be installed or done the same as if called for by both the plans and specifications.

All work indicated on the plans and not mentioned in the specifications, or vice versa, and all work and material usual and necessary to make the work complete in all its parts, whether or not they are indicated on the plans or mentioned in the specifications shall be furnished and executed the same as if they were called for by both the plans and specifications and no extra compensation will be made therefore.

ARTICLE 8 - Insurance

The Contractor shall arrange insurance for the minimum limits indicated and shall maintain the below listed coverages throughout the period of performance.

- a. Workers' Compensation Insurance Statutory
Employer's Liability Insurance \$100,000. each accident
\$500,000. disease - policy unit
\$100,000. disease - each empl.

- b. Comprehensive General Liability (Public Liability) Insurance including:
General Liability \$1,000,000 each occurrence
Aggregate \$2,000,000
Products, Completed Operations \$1,000,000 each occurrence
Aggregate \$2,000,000
Personal & Advertising Injury \$ 500,000 each occurrence
Fire Damage \$ 50,000 any one fire
Medical Expense \$ 5,000 any one person

- c. Automobile Liability Insurance (owned, hired & non-owned):
Bodily Injury & Property Damage \$1,000,000 combined single limit

- d. The Contractor shall provide a waiver of any rights of subrogation which the Contractor may have against the Owner, its agents or its employees.

- e. Before any of the work is started under the contract, the Contractor shall file with the Purchasing Department of the City a certificate of insurance containing the following information in respect to all insurance carried:
 - (1) Name of insurance company, policy number and expiration date;
 - (2) The coverages required and the limits on each, including the amount of deductible or self-insured retentions (which shall be for the account of the Contractor);
 - (3) A statement indicating that the Owner shall receive thirty (30) days' notice of cancellation or significant modification of any of the policies which may affect the Owner's interest; and
 - (4) The Owner as an additional insured (except Workers' Compensation Insurance).

MIDDLE STREET AND CROSS STREET SEWER REHABILITATION

- f. If any of the work performed under the contract includes blasting, excavating, pile driving or caisson work; moving, shoring, underpinning, razing or demolition of any structure or removal or rebuilding of any structural support thereof, or any subsurface or underground work, the Comprehensive General Liability Insurance policy shall include coverage for the explosion, collapse and underground hazards.

ARTICLE 9 - Patents

The Contractor shall indemnify and save harmless the Owner, and all persons acting for or on behalf of the Owner, from all claims and liability of any nature or kind including costs and expenses arising from or occasioned by any infringement or alleged infringement of patent rights on any invention, process, article or apparatus, or any part thereof, furnished and installed by said Contractor or arising from or occasioned by the use or manufacture thereof, including their use by the Owner.

ARTICLE 10 - Compliance with Laws

The Contractor shall keep himself fully informed of all existing and future state and national laws and municipal ordinances and all regulations in any manner affecting those engaged or employed in the work, or the materials used in the work, or in any way affecting the conduct of the work, and of all such orders and decrees of bodies or tribunals having any jurisdiction or authority over the same. If any discrepancy or inconsistency is discovered in the plans, specifications, or elsewhere in this Contract in relation to any such law, ordinance, regulation, order or decree, he shall forthwith report the same to the Engineer in writing. He shall at all times himself observe and comply with, and cause all his agents and employees to observe and comply with, all such existing and future laws, ordinances, regulations, orders, and decrees; and shall protect and indemnify the Owner and all officers and agents of the Owner against any claim arising from or based upon violation of any such laws, ordinances, regulations, orders or decrees, whether by himself or his employees.

ARTICLE 11 - Permits

The Contractor shall, at his own expense, obtain all necessary permits from the county, municipal, and/or other public authorities; he shall give all notices required by law or ordinances; and he shall post all bonds and pay all fees and charges incident to the due and lawful prosecution of the work covered by this Contract.

ARTICLE 12 - Contractor Not to Sublet or Assign

The Contractor shall give his personal attention constantly to the faithful prosecution of the work, shall keep the same under his personal control, and shall not assign by power of attorney or otherwise, nor sublet the work or any part thereof without the previous written consent of the Owner, and shall not either legally or equitably assign any of the moneys payable under this agreement, or his claim thereto, unless by and with the like consent of the Owner and the surety on the bond(s).

ARTICLE 13 - Time of Beginning Work

MIDDLE STREET AND CROSS STREET SEWER REHABILITATION

Except as herein provided, the Contractor shall commence work at such points as the Engineer may direct or approve. Such time of starting may be postponed but only by written agreement between the Owner and Contractor and then only because of expected delays in receipt of materials and equipment, or if the season be unsuitable for commencement of the work, or because of other contingency clearly beyond the control or responsibility of the Contractor.

ARTICLE 14 - Delay by Owner

The Owner may delay the beginning of the work or any part thereof if the necessary lands or rights-of-way for such work shall not have been obtained by the Owner or if necessary materials or equipment to be furnished by the Owner are not delivered. The Contractor shall have no claim for damages on account of such delay, but shall be entitled to so much additional time wherein to perform and complete this contract as the Engineer shall certify in writing to be just.

ARTICLE 15 - Time of Completion

The rate of progress shall be such that the whole work shall be performed in accordance with the terms of this Contract within the number of calendar days stipulated in the bid unless and except as any part may be delayed under the provisions of this Contract. All work shall in any case be complete on or before any specific date of completion which may be specified elsewhere herein.

It is agreed that the rate of progress herein required has been purposely made low enough to allow for ordinary delays incident to construction work of this character. No extension of time will be made for ordinary delays, inclement weather and/or accidents and the occurrence of such will not relieve the Contractor from the necessity of maintaining this rate of progress.

If delays are caused by acts of God, acts of Government or State, strikes, extra work, floods or other contingencies clearly beyond the control or responsibility of the Contractor, the Contractor will be entitled to so much additional time wherein to complete this Contract as the Engineer shall certify in writing to be just.

The time in which work under this Contract is to be performed and completed is of the essence.

All work shall be completed by November 18, 2016.

ARTICLE 16 - Liquidated Damages

In case the Contractor fails satisfactorily to complete the entire work, or any phase of the work, contemplated and provided for under this Contract on or before the date of completion determined as described elsewhere herein, the Owner shall deduct from the payments otherwise due the Contractor each month the sum of fifteen hundred dollars (\$1500.00) for each calendar day, excluding only Sundays and legal holidays, of delay, which sum is agreed upon not as a 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 to become due the Contractor then the Contractor or his surety shall pay the balance to the Owner.

ARTICLE 17 - Night and Sunday Work

No night work requiring the presence of the Engineer or inspector will be permitted except in the case of emergency and then only to such an extent as is absolutely necessary and with written permission of the Engineer. In the case of a regular crew organized specifically for regular and continuous night work this clause may be waived but only when so specified elsewhere herein or when such work shall be deemed necessary and/or beneficial to the Owner by the Engineer, provision for night time inspection and payment therefore has been made and agreed upon by the Contractor and the Engineer, and the foregoing has been certified in writing by the Engineer.

No Sunday work will be permitted except in the case of great emergency and then only with the written consent of the Engineer and only to such an extent as he may judge necessary. **See Section E, Special Provisions for special night-time work hours.**

ARTICLE 18 - Contractor to Employ Competent Workers

The Contractor shall employ only competent workers and whenever the Engineer shall notify the Contractor in writing that any person or persons employed under this Contract are, in his opinion, incompetent, unfaithful, disorderly, or in any other way unsatisfactory or not employed in accordance with the provisions of this Contract, then such person or persons shall be discharged from work under this Contract and shall not again be employed under this Contract except by written consent of the Engineer.

ARTICLE 19 - Contractor to Employ Sufficient Labor and Equipment

If, in the opinion of the Engineer, the Contractor is not employing sufficient labor or equipment to complete this Contract satisfactorily and within the time specified, the Engineer will so notify the Contractor in writing and the Contractor shall, immediately upon receipt of such notice, employ such additional labor and/or equipment as may be deemed necessary by the Engineer.

ARTICLE 20 - Intoxicating Substances

The Contractor shall neither permit on site nor suffer the introduction or use on site of alcoholic beverages, drugs, or other controlled substances which might in any way impair the judgment, alertness, or efficiency of any person or persons employed under this Contract or which might be used in violation of any State or Federal law or local ordinance.

ARTICLE 21 - Access to Work

The Owner, the Engineer, and their agents and employees shall be permitted access to all parts of the work site at all times throughout the duration of this Contract, and the Contractor shall at all times provide safe and proper facilities therefore.

ARTICLE 22 - Examination of Work

MIDDLE STREET AND CROSS STREET SEWER REHABILITATION

The Engineer shall be furnished with every reasonable facility for ascertaining that all work is in accordance with the requirements and intent of this Contract, even to the extent of uncovering or taking down portions of finished work.

Should the work thus exposed or examined prove satisfactory, the uncovering or taking down and the replacement material and rebuilding of the work shall be considered as extra work, as defined and provided for elsewhere herein, unless the original work was done in the absence of the Engineer or his inspector without the Engineer's written authorization. In the latter case, and/or if unsatisfactory work should be so uncovered, then all such uncovering, taking down, replacement, and rebuilding, together with the repair or replacement of any and all such unsatisfactory work as may have been so uncovered, will be at the Contractor's sole cost and expense.

ARTICLE 23 - Defective Work

Inspection of the work by the Engineer and/or his agents shall neither imply that all such work will prove acceptable to the Owner nor will it relieve the Contractor from any obligations or responsibility whatsoever under the terms of this Contract. Any and all defective work and/or materials shall be replaced by the Contractor, at his sole expense, at any time prior to final acceptance of the work as such may be discovered, regardless of whether such work has previously been inspected and/or included in estimates for partial payment. Any material furnished by the Contractor which shall be judged by the Engineer, at any time, to be defective and/or not in conformance with the specifications shall be immediately removed from the site and replaced at the Contractor's sole cost and expense, as shall any materials or goods furnished by the Owner which have been, in the opinion of the Engineer, damaged by the Contractor, his agents or employees.

ARTICLE 24 - Protection Against Water and Storm

The Contractor shall take all necessary precautions to prevent damage to the work by storms or by water entering the work site directly or through the ground. In case of damage by storms or water, the Contractor shall make such repairs and/or replacements or rebuild such parts of the work as the Engineer may require in order that the finished work shall be completed in full accord with the plans and specifications.

The Engineer may prohibit the carrying out of any work at any time that, in his judgment, the conditions are not suitable or the proper precautions are not being taken, whatever the whether or season may be.

ARTICLE 25 - Mistakes of the Contractor

The Contractor shall pay to the Owner all expenses, losses, and/or damages, as determined by the Engineer, incurred in consequence of any defect, omission, or mistake of the Contractor, his agents or employees, or the making good thereof.

ARTICLE 26 - Right to Materials

Nothing in this Contract shall be construed as vesting in the Contractor any right of property in the materials used after they have been attached or affixed to the work or the soil, but all such materials shall, upon being so attached or affixed, become the property of the Owner.

ARTICLE 27 - Alterations

The Engineer may make alterations in the line, grade, plan, form, dimensions or materials of the work or any part thereof, either before or after the commencement of construction. If such alterations increase or diminish the quantity of work to be done, adjustment for such increase or decrease shall be made at the unit prices stipulated for such work under this contract, except that if unit prices are not stipulated for such work, compensation for increased work will be made under the provisions for Extra Work made elsewhere herein, and for decreased work the Contractor shall allow the Owner a reasonable credit as determined by the Engineer. If such alterations diminish the quantity of work to be done, they shall not warrant any claim for damages or for anticipated profits on the work that is dispensed with.

ARTICLE 28 - Extra Work

The Contractor shall do any work incidental to the proper completion of the Contract not otherwise provided for when and as so ordered, in writing, by the Engineer, either (a) at a price agreed upon before the work is commenced and named in the written order for the work, or (b) if the Engineer so elects, for the reasonable cost of said work, as determined by the Engineer, plus fifteen (15) percent of such cost. No extra work will be paid for unless specifically ordered as such by the Engineer in writing.

The Contractor shall, when so requested by the Engineer, furnish itemized statements of the cost of the work ordered, and shall give the Engineer access to the accounts, bills, and vouchers relating thereto.

The Engineer shall include in the cost of extra work under (b) above the reasonable cost to the Contractor of all materials used, of all labor common and skilled and of foremen, and the fair rental of all machinery used upon the extra work for the period of such use.

The fair rental for all machinery shall be based upon the most recent edition of "Compilation of Rental Rates for Construction Equipment" as published by the Associated Equipment Distributors, rental rates established buy the Maine State Department of Transportation, or similar publication approved by the Engineer. Rental for machinery which was upon the work site immediately before, or which will be required by or used upon the work after the extra work is done, shall be based upon an appropriate fraction of the approved monthly rate schedule. If said work requires the use of machinery not upon the work site or otherwise to be used upon the work, then the cost of transportation, not exceeding a total round trip distance of 150 miles, of such machinery to and from the work shall be added to the fair rental as accepted by the Engineer.

The Engineer shall include in the cost of extra work the cost to the Contractor of additional premiums paid on the required insurance on account of such extra work, and the cost of Social Security and/or other direct assessment upon the Contractor's payroll by Federal or other properly authorized public agencies. The Engineer shall not include in the cost of extra work any cost or rental of small tools, buildings, or any portion of the time of the Contractor or his superintendent, or any allowance for use of capital or the premium on the bond as assessed upon the amount of extra work, these items being considered as being covered by the fifteen (15) percent added to the reasonable cost.

ARTICLE 29 - Extension of Time on Account of Extra Work

MIDDLE STREET AND CROSS STREET SEWER REHABILITATION

When extra work ordered at any time during the progress of the work is such as to require, in the opinion of the Engineer, an unavoidable increase in the amount of time necessary for completion of the Contract, then a suitable extension of time will be added to the completion date.

ARTICLE 30 - Changes not to Affect Bond

It is distinctly agreed and understood that any changes made in or to the plans and/or specifications, whether the amount of work to be done under this Contract should thereby be affected or not, or any change or changes in the manner or time of payments made by the Owner to the Contractor, shall in no wise annul, release, or affect the liability and/or surety on the bond or bonds provided by the Contractor.

ARTICLE 31 - Claims for Damages

If the Contractor claims compensation for any damages sustained by breach of Contract or otherwise, be the same based on claims that due and full credit has not been given the Contractor for work performed or materials furnished in accordance with the terms of the Contract or for any other cause, he shall, promptly after the sustaining of any such damage, make a written statement to the Engineer of the nature of the damage sustained and shall, on or before the fifteenth day of the month following that in which the damage shall have been sustained, file with the Engineer an itemized statement of the details and amount of such damage. Unless such statement is made in such time and manner as thus required his claim for compensation will be forfeited and invalidated and he will not be entitled to payment on account of any such damage.

ARTICLE 32 - Abandonment of Work

If the work to be done under this Contract shall be abandoned, or if this Contract or any part thereof shall be sublet without the previous written consent of the Owner, or if the Contract or any claim thereunder shall be assigned by the Contractor otherwise than as herein specified, or if at any time the Engineer shall be of the opinion, and shall so certify in writing, that the conditions herein specified as to the rate of progress of work under this Contract are not fulfilled, or that the work or any part thereof is unnecessarily or unreasonably delayed, or that the Contractor has violated any of the provisions of this Contract, the Owner may notify the Contractor by a written order with a copy to the home office of the surety to discontinue all work or any part thereof, and thereupon the Contractor shall discontinue such work or such part thereof as the Owner may designate, and the Owner may thereupon, by contract or otherwise, as the Owner may determine, complete the work or any part thereof, and charge the entire expense of completing such work or part thereof to the Contractor; and for such completion the Owner, or such contractors as the Owner may employ, may take possession of and use or cause to be used in the completion of the work or part thereof, any of such materials, equipment, machinery, implements and tools of every description as may be found at the location of said work.

Any and all costs or expenses, including liquidated damages as specified elsewhere herein, incurred by the Owner under this article shall be deducted and paid out of any moneys then due or to become due the Contractor under this Contract, or any part thereof; and in such accounting the Owner shall not be held to obtain the lowest figures for the work of completing the Contract or any part thereof, or for insuring its proper completion, but all sums actually paid therefor shall be charged to the Contractor. If the aforementioned costs and expenses so incurred, coupled with payments already made to the

Contractor, shall exceed the amount which would have been payable under this Contract if the same had been completed by the Contractor, then the Contractor or the Contractor's surety shall pay the full amount of any such excess to the Owner.

ARTICLE 33 - Prices for Work

The Owner will pay and the Contractor shall accept the prices stipulated in the bid as full and just compensation for everything furnished and done by the Contractor, and for any and all expenses of any nature incurred by the Contractor in completing properly and to the entire satisfaction of the Owner all work under this Contract, including any losses or damages incurred by the Contractor as a result of work under this Contract and excepting only such expenses, losses, etc. for which other provisions are specifically made elsewhere herein.

ARTICLE 34 - Money may be Retained

The Owner may keep any moneys which would otherwise be payable at any time hereunder, and may apply the same, or so much as may be necessary therefor, to the payment of expenses, losses or damages incurred by the Owner and determined as herein provided, and may retain, until all claims are settled, so much of such money as, in the Owner's opinion, will be required to settle all claims filed with the Owner relating to this Contract.

ARTICLE 35 - Progress Estimates

Except as hereinafter provided, the Engineer shall, once in each month, make an estimate in writing of the total amount of the work done to the first of the month, and the amount earned by the Contractor. The Owner will retain ten (10) percent of such estimated value as part security for fulfillment of this Contract by the Contractor and shall deduct from the balance all previous payments and all sums to be retained under this and/or other provisions of this Contract. The Owner shall pay to the Contractor each month the balance not retained as aforesaid, except that such monthly payment may be withheld at any time if the work, in the opinion of the Engineer, is not proceeding expeditiously and in accordance with the Contract. The Owner may, if it is deemed expedient to do so, cause estimates and payments to be made more frequently than once a month.

Estimates of lump sum items will be based on the Engineer's estimate of the percentage of each such item completed, each such percentage to be applied to the appropriate lump sum price as set forth on the Bid Form.

Payment for materials will not be made unless and until such materials have been satisfactorily installed or otherwise incorporated into the work.

ARTICLE 36 - Final Estimate and Payment

The Engineer shall, as soon as practicable following the completion of work under this Contract, make a final estimate in writing of the total amounts of such work done under the various items contained in the bid and of the total amount of money due the Contractor for said work, and he shall also fix the date of substantial completion of such work and incorporate same into said final estimate.

MIDDLE STREET AND CROSS STREET SEWER REHABILITATION

The Owner will pay to the Contractor the entire sum so found to be due hereunder, including the ten (10) percent interim retainage withheld from previous payments, after deducting from said entire sum all previous payments, a retainage of two (2) percent as guaranty for a period of one year following the certified date of substantial completion unless said guaranty is specifically waived in writing by the Owner, and any and all other amounts as may be retained under the various provisions of this Contract. Such payment shall be made not later than fifteen (15) days after, but in no event before, the expiration of the time within which claims for labor performed and materials used or employed must be entered under the Lien Law, or if such time is not specified by law, the expiration of 30 days after the aforementioned date of substantial completion.

All prior progress estimates and payments shall be subject to correction in the final estimate and payment.

ARTICLE 37 - Liens

If, at any time before the expiration of the period within which claims must be entered under the Lien Law or, if not otherwise specified by law, within thirty (30) days after the certified date of substantial completion of all work under this Contract, any person, corporation, firm or other legal entity shall claim to have performed any of the work or to have furnished any of the materials under this Contract and shall file with the Owner suitable notice, the Owner will retain until discharge of such notice sufficient money to satisfy and discharge the amount claimed to be due in such notice together with the cost of any action or actions brought to enforce such lien created by the filing of such notice.

ARTICLE 38 - Waivers

Neither inspection by the Owner or any agents thereof, nor any orders, measurement or certificate by the Engineer, nor any order by the Owner for the payment of money, nor any payment for or acceptance of the whole or any part of the work performed under this Contract by the Owner, nor any extension of time nor any possession taken by Owner or agents thereof shall operate as a waiver of any provision of this Contract, or of any power herein reserved to the Owner, or any right to damages herein provided, nor shall any waiver of any breach of this Contract be held to be a waiver of any other or subsequent breach. Any remedy provided in this Contract shall be taken and construed as cumulative, that is, in addition to each and every other remedy herein provided, and in addition to all other suits, actions, or legal proceedings. The Owner shall also be entitled as of right to a writ of injunction against any breach of any of the provisions of this Contract.

ARTICLE 39 - Indemnification

The Contractor shall indemnify, defend and hold harmless the Owner 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 his direction or control or in his behalf in the course of his performance under this Contract, provided the Contractor's aforesaid indemnity and hold harmless agreement shall not be applicable to any liability based upon the sole negligence of the Owner.

The Contractor hereby expressly agrees that he will defend, indemnify and hold the Owner harmless from any and all claims made or asserted by the Contractor's agents, servants or employees arising out

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

ARTICLE 40 - Liability of Owner

No person, firm, corporation or other legal entity other than the Contractor now has any interest hereunder, and no claim shall be made or be valid, and neither the Owner nor any agent of the Owner shall be liable for or be held to pay any money except as herein provided. The acceptance by the Contractor of the payment of the final estimate shall operate as and shall be a release to the Owner, and every agent of the Owner, from all claim and liability to the Contractor for anything done or furnished for, or relating to the work performed under this Contract, and for any act or neglect of the Owner or of any person relating to or affecting said work except the claim against the Owner for the remainder, if any there be, of the amounts kept or retained as provided elsewhere herein.

ARTICLE 41 - Guaranty

The Contractor guarantees that the work to be done under this Contract and the materials to be furnished by him for use in the construction of same will be free from defects or flaws. This guaranty shall remain in effect for a period of one year from the certified date of substantial completion of all work under this Contract. It is agreed and understood, however, that this guaranty shall not include any repairs made necessary by any cause or causes other than defective work or materials furnished by the Contractor.

As surety of this guaranty the Owner will retain an amount equal to two (2) percent of the total final Contract amount at the time of payment of the final estimate. If at any time within said period of guaranty any part of the work constructed under this Contract shall require repairs because of, in the opinion of the Engineer, defective workmanship and/or materials, then the Owner may notify the Contractor in writing by certified mail, return receipt requested, of his obligation to make such repairs. Should the Contractor fail to make such repairs to the complete satisfaction of the Owner within ten (10) calendar days of receipt of such notice, then the Owner may elect to employ others to make said repairs and to pay for same out of the sum retained hereby for that purpose. Upon the expiration of the period of guaranty the Engineer will inspect the work, or cause same to be inspected, and upon his determination that the work is in good order the retainage, less any amount which may have been expended in the making of repairs, will be released upon receipt of invoice from the Contractor.

It is agreed and understood, however, that the Owner may keep the whole or any portion of the sum retained for settlement of any and all claims which may have arisen out of this Contract against the Owner or agents thereof, and for any and all expenses, losses, or damages incurred by the Owner by reason of said claims.

ARTICLE 42 - Legal Address of Contractor

Both the address given in the bid and the Contractor's temporary field office are hereby designated as places to which letters, notices and other communications to the Contractor may be mailed or delivered. The first named address may be changed at any time, in writing, by the Contractor.

ARTICLE 43 - Progress Schedule

The Contractor shall, within five (5) days of commencement of Work, prepare and submit to the Engineer for approval a practicable schedule showing the order in which the Contractor proposes to carry on the work, the date on which he will start the several salient features thereof, and the contemplated dates for completing the same. The schedule shall be in the form of a progress chart of suitable scale to indicate appropriately the percentage of work scheduled for completion at any time and shall be acceptable to the Engineer. If, in the opinion of the Engineer, the Contractor falls behind such schedule, the Contractor shall take any and all such steps as may be deemed necessary by the Engineer to improve his progress toward completion of the work and shall submit and maintain such supplemental schedules as the Engineer may deem necessary to demonstrate that all work under this Contract will be completed within the time and/or by such completion date as may be specified elsewhere herein. None of the foregoing shall result in any additional cost to the Owner.

ARTICLE 44 - Site Investigation

The Contractor acknowledges that he has satisfied himself as to the nature and location of the work, the general and local conditions including but not restricted to those bearing upon transportation, disposal, handling and storage of materials, availability of labor, water, electric power, roads and uncertainties of weather, river stages, tides or similar physical conditions at the site, the conformation and condition of the ground, and the character of equipment and facilities needed preliminary to and during prosecution of the work. The Contractor further acknowledges that he has satisfied himself as to the character, quality and quantity of surface and subsurface materials or obstacles to be encountered insofar as this information is reasonably ascertainable from an inspection of the site, including all exploratory work done by the Owner as well as from information presented by the plans and specifications hereof. Any failure by the Contractor to acquaint himself with the available information will not relieve him from responsibility for estimating properly the difficulty or cost of successfully completing the work. The Owner assumes no responsibility for any conclusions or interpretations made by the Contractor on the basis of the information made available to him.

ARTICLE 45 - Protection of Existing Utilities

Existing utilities, structures, or other works that may be shown on the plans, reasonably located or anticipated by a site investigation, or marked on the ground or in any other way by the Owner or by the respective utility companies shall be protected from damage by the Contractor during construction operations and, if damaged, shall be repaired by the Contractor at his sole expense. It will be the Contractor's sole responsibility to contact the Dig Safe Center at 1-800-225-4977 and to assure that any and all utility companies in the project area have been notified, furnished with sufficient information, and have located on the ground their respective underground utilities in any area(s) where excavation will occur, all prior to commencement of any such excavation.

Materials below existing utilities which are removed or disturbed during excavation shall be replaced and thoroughly compacted to prevent future settlement and damage to the utility. Utilities damaged due to subsequent settlement of the backfill or of any materials disturbed by the Contractor shall be repaired by the Contractor, or as otherwise required by the utility company, at the Contractor's sole expense.

The locations of certain existing subsurface pipes and utilities are indicated on the plans to the best of the Owner's knowledge but they are approximate only and no guarantee is made either to the accuracy or completeness thereof. It is the Contractor's absolute responsibility to determine to his best ability the existence and location of any and all underground utilities prior to commencement of excavation and to exercise such precautions during excavation as may be necessary to compensate for any incompleteness or inaccuracy of such determination. Should the scope of work under this contract be substantially altered because of the existence of subsurface utilities not shown on the plans or reasonably anticipated by the Contractor at the time of bidding hereon, then the contract price may be adjusted accordingly by the Owner but the mere fact of damage by the Contractor to an existing utility, whether shown on the plans or not, shall under no circumstances result in extra compensation to the Contractor by the Owner, and all necessary repairs together with any and all related costs, damages, and/or claims related thereto or arising therefrom will be the Contractor's sole responsibility and shall be made and/or otherwise satisfied at the Contractor's sole expense.

ARTICLE 46 - Temporary Power and Water

The Contractor shall make all necessary applications and arrangements and shall pay all fees and charges for electrical power, light and water necessary for proper completion of this Contract during its entire progress. The Contractor shall provide and pay for all temporary wiring, switches, piping, connections, meters and all else that may be required in this regard.

ARTICLE 47 - Temporary Field Office and Storage Facilities

The Contractor shall provide and maintain a suitable temporary field office at the project site for his own use and the use of the Engineer, if deemed necessary for the project. It shall be provided with adequate heat, electric lighting, telephone, and desk for plan references. It shall be located at a site acceptable to the Engineer, shall be relocated at any time during the course of construction under this Contract if and as deemed necessary by the Engineer, and shall be removed from the site immediately upon completion of said construction.

The Contractor shall provide and maintain such additional offices, storage sheds, and/or other temporary buildings and/or trailers at the site as may be required for his own use, all subject to the Engineer's direction and approval.

Article 48: Termination of Contract:

Termination for Convenience: The City may terminate this Contract, 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' notice to the Contractor. The City will pay all invoices for services up to the date of termination. 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.

MIDDLE STREET AND CROSS STREET SEWER REHABILITATION

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

ARTICLE 49 - Time of Completion

All work shall be completed by **November 18, 2016**.

MIDDLE STREET AND CROSS STREET SEWER REHABILITATION

IN WITNESS WHEREOF, the City of Bangor, Owner, has caused this instrument to be signed by its Purchasing Agent or its City Manager, hereunto duly authorized, and the Contractor has hereunto set his hand and has caused this instrument to be signed by his (Officer) _____ hereunto duly authorized to execute this instrument as of the date first written above.

WITNESS:

CITY OF BANGOR, OWNER

By: _____

Debbie A. Cyr
Purchasing Agent

Or by : _____

Catherine M. Conlow
City Manager

CONTRACTOR

WITNESS:

Name of Individual, Firm or Corporation

By: _____

Name: _____
Printed or Typed

Title: _____
Printed or Typed

E. SPECIAL PROVISIONS

SECTION E

SPECIAL PROVISIONS

Customer, Driveway, and Street Access

The Contractor shall maintain customer access to adjacent property at all times. The Contractor shall make every effort to plan the Work so that adjacent property owners shall have driveway access to their properties at all times during non-working hours, and as much as possible during working hours. The Contractor shall use every effort to cooperate with adjacent property owners on their need to access their property. The Contractor shall notify the Bangor Police and Fire Departments at least four hours in advance of any necessary cutting off of access by emergency vehicles. Every effort shall be made to keep streets open to emergency vehicles at all times.

Disposal of Excavated Material

Unless otherwise directed by the Engineer, all suitable excess excavated material will remain the property of the City and shall be hauled by the Contractor to a site designated by the Engineer within a five-mile radius of the project. If no disposal site is designated by the Engineer than the Contractor shall be responsible for disposing of all excess fill material. Haul and disposal of surplus excavated material is considered necessary and incidental to the work and no separate payment will be made therefor. The contractor shall notify the Resident Engineer of the location of all off site disposal areas and shall provide a copy of the property owner's grading and fill permit to the Engineer before placing any fill on private property.

Working Hours

Normal working hours shall be from 7:00 A.M. until sunset. The Contractor shall cease all activity within 1/2 hour of sunset unless otherwise directed. It is intended that the Contractor stop work promptly at sunset; however, it is recognized that occasionally work may proceed a few minutes after sunset. If work proceeds later than 1/2 hour after sunset without permission of the Resident Engineer, then the Contractor shall be notified in writing that any additional violation of the working hours provision of the Contract shall be grounds for dismissing the Contractor and / or revoking his privilege to bid future projects. Night work will be required for any work that takes place on Main Street. Night work may be performed in other areas at the request of the contractor upon receiving permission in advance.

Traffic Control

The Contractor shall provide all traffic control signs, lights, etc. in conformance of the latest edition of the Manual on "Uniform Traffic Control Devices" by the U. S. Department of Transportation and Federal Highway Administration. The Contractor shall submit a detailed traffic control plan showing proposed traffic routing and locations and/or any anticipated detours at least two weeks prior to the start of construction. The Contractor shall also submit a proposed work schedule in accordance with the Contract.

Time and Material Payment

If, at any time during the construction of the project, a situation occurs where payment for work performed cannot be paid for under pay items in the Contract, then the Contractor may request payment on a time and materials basis. All labor and equipment rates, crew sizes, equipment and materials used, and other factors affecting the work shall be approved by the Resident Engineer before work commences. The Contractor and Engineer shall agree to and record hours worked, crew and equipment used, and all materials used at the end of each working day. Requests for time and materials payment after the fact may not be considered for payment if the Resident Engineer was not properly notified.

Notification of Property Owners

Every effort shall be made to keep adjacent property owners fully informed of pending interruptions to access or service. The Contractor shall be responsible for notifying the Resident Engineer in advance of any pending operations which may affect adjacent property, including but not limited to the cutting off of driveway access, the disconnection of sewer service laterals, or blasting operations. It will be the Resident Engineer's responsibility to communicate with the property owner or tenants; if such interruptions are to take place during the absence of the Resident Engineer, then the Contractor shall communicate directly with the property owner.

References

The apparent low Bidder shall furnish the City Engineer with references from at least three similar projects within three working days of the bid opening date, if deemed necessary by City Engineer. References must be for projects in neighborhoods similar in dollar value and scope of work to the project proposed herein. If, in the opinion of the City Engineer, the Contractor does not have prior work experience in successfully completing projects of this scope, then the City Engineer may recommend rejection of the bid and recommend award of the contract to the next qualified Bidder.

Housekeeping & Erosion Control

All open trenches located within the travel way shall be restored with a hard surface at the conclusion of each working week. Acceptable methods of restoration are to bring flowable fill up to finish grade or to install temporary pavement. Cold patch will not be considered an acceptable substitute.

The contractor shall be required to keep utility scoping equipment onsite in order to expedite the process of determining if utilities within the project are active or inactive and require reconnection or abandonment.

Erosion Control shall be in accordance with the Maine DEP's BMP Manual, most current version, or as directed by Engineer. Covering grates of drainage structures with filter fabric will not be considered an effective method of erosion control.

At the conclusion of each working day, the contractor shall take necessary measures to leave the site in suitable condition, including but not limited to, sweeping, dust control, and removal of equipment or large construction debris that block normal access ways. At the conclusion of each working week, all trenches within the travel way shall be restored to finish grade using flowable fill or temporary pavement as necessary to provide a surface suitable for traffic.

Coordination with Other Work

The Contractor shall be required to coordinate work with other construction in the area, including surface improvements to be performed by the City of Bangor.

Coordination with City Events

The Contractor shall be required to coordinate work with City events as deemed necessary.

Unit Prices

In the event the actual quantity of work to be done varies significantly from the quantity of work estimated by the bid form, the Contractor, Owner, or District shall have the opportunity to renegotiate unit prices.

As-Built Drawings

The Contractor shall keep a set of "As-Built" drawings on the job site for the Resident Inspector's review that shall show all work up to one week prior to the date of inspection. The Resident Inspector may examine the drawings on a weekly or monthly basis at his own discretion. **If the "As Built" drawings are not kept up to date as the work progresses, then the monthly payment requisition will not be processed for payment until the "As-Built" have been brought up to date.**

Time of Completion

All work shall be completed by November 18, 2016.

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.

F. NOTICE OF AWARD

Notice of Award

Date: _____, 2016

Project: MIDDLE STREET AND CROSS STREET SEWER REHABILITATION

Owner: The City of Bangor, Maine

Owner's Contract No.:

Contract:

Engineer's Project No.:

Bidder:

Bidder's Address:

You are notified that your Bid dated _____ for the above Contract has been considered. You are the Successful Bidder and are awarded a Contract for Middle Street and Cross Street Sewer Rehabilitation

The Contract Price of your Contract is _____ Dollars and ____ Cents (\$_____).

_ copies of the proposed Contract Documents (except Drawings) accompany this Notice of Award.

0 sets of the Drawings will be delivered separately or otherwise made available to you immediately.

You must comply with the following conditions precedent within [15] days of the date you receive this Notice of Award.

1. Deliver to the Owner [4] fully executed counterparts of the Contract Documents.
2. Deliver with the executed Contract Documents the Contract security [Bonds] as specified in the Instructions to Bidders (Article 20), General Conditions (Paragraph 5.01), and Supplementary Conditions (Paragraph SC-5.01).
3. Other conditions precedent:

Failure to comply with these conditions within the time specified will entitle Owner to consider you in default, annul this Notice of Award, and declare your Bid security forfeited.

Within ten days after you comply with the above conditions, Owner will return to you one fully executed counterpart of the Contract Documents.

City of Bangor, Maine
Owner
By: _____
Authorized Signature
City Manager

Title

Copy to Engineer

G. NOTICE TO PROCEED

Notice to Proceed

Date: _____

Project: MIDDLE STREET AND CROSS STREET SEWER REHABILITATION

Owner: The City of Bangor

Owner's Contract No.: ____1____

Contract:

Engineer's Project No.: ____1____

Contractor:

Contractor's Address: *[send Certified Mail, Return Receipt Requested]*

You are notified that the Contract Times under the above Contract will commence to run on _____. On or before that date, you are to start performing your obligations under the Contract Documents. In accordance with the Agreement, the project must be completed on or before November 18, 2016.

Before you may start any Work at the Site, Paragraph 2.01.B of the General Conditions provides that you and Owner must each deliver to the other (with copies to Engineer and other identified additional insureds and loss payees) certificates of insurance which each is required to purchase and maintain in accordance with the Contract Documents.

Also, before you may start any Work at the Site, you must:

_____ *[add other requirements]*.

Owner

Given by:

Authorized Signature

Title

Date

Copy to Engineer

Copy to Contractor

H. PERFORMANCE BOND

PERFORMANCE BOND

Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.

CONTRACTOR (*Name and Address*): SURETY (*Name, and Address of Principal Place of Business*):

OWNER (*Name and Address*):

CONTRACT

Effective Date of Agreement:
Amount:
Description (*Name and Location*):

BOND

Bond Number:
Date (*Not earlier than Effective Date of Agreement*):
Amount:
Modifications to this Bond Form:

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Performance Bond to be duly executed by an authorized officer, agent, or representative.

CONTRACTOR AS PRINCIPAL

SURETY

Contractor's Name and Corporate Seal (Seal)

Surety's Name and Corporate Seal (Seal)

By: _____
Signature

By: _____
Signature (Attach Power of Attorney)

Print Name

Print Name

Title

Title

Attest: _____
Signature

Attest: _____
Signature

Title

Title

Note: Provide execution by additional parties, such as joint venturers, if necessary.

Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to Owner for the performance of the Contract, which is incorporated herein by reference.

1. If Contractor performs the Contract, Surety and Contractor have no obligation under this Bond, except to participate in conferences as provided in Paragraph 2.1.
2. If there is no Owner Default, Surety's obligation under this Bond shall arise after:
 - 2.1 Owner has notified Contractor and Surety, at the addresses described in Paragraph 9 below, that Owner is considering declaring a Contractor Default and has requested and attempted to arrange a conference with Contractor and Surety to be held not later than 15 days after receipt of such notice to discuss methods of performing the Contract. If Owner, Contractor, and Surety agree, Contractor shall be allowed a reasonable time to perform the Contract, but such an agreement shall not waive Owner's right, if any, subsequently to declare a Contractor Default; and
 - 2.2 Owner has declared a Contractor Default and formally terminated Contractor's right to complete the Contract. Such Contractor Default shall not be declared earlier than 20 days after Contractor and Surety have received notice as provided in Paragraph 2.1; and
 - 2.3 Owner has agreed to pay the Balance of the Contract Price to:
 1. Surety in accordance with the terms of the Contract; or
 2. Another contractor selected pursuant to Paragraph 3.3 to perform the Contract.
3. When Owner has satisfied the conditions of Paragraph 2, Surety shall promptly, and at Surety's expense, take one of the following actions:
 - 3.1 Arrange for Contractor, with consent of Owner, to perform and complete the Contract; or
 - 3.2 Undertake to perform and complete the Contract itself, through its agents or through independent contractors; or
 - 3.3 Obtain bids or negotiated proposals from qualified contractors acceptable to Owner for a contract for performance and completion of the Contract, arrange for a contract to be prepared for execution by Owner and contractor selected with Owner's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Contract, and pay to Owner the amount of damages as described in Paragraph 5 in excess of the Balance of the Contract Price incurred by Owner resulting from Contractor Default; or
 - 3.4 Waive its right to perform and complete, arrange for completion, or obtain a new contractor, and with reasonable promptness under the circumstances:
 1. After investigation, determine the amount for which it may be liable to Owner and, as soon as practicable after the amount is determined, tender payment therefor to Owner; or
 2. Deny liability in whole or in part and notify Owner citing reasons therefor.
4. If Surety does not proceed as provided in Paragraph 3 with reasonable promptness, Surety shall be deemed to be in default on this Bond 15 days after receipt of an additional written notice from Owner to Surety demanding that Surety perform its obligations under this Bond, and Owner shall be entitled to enforce any remedy available to Owner. If Surety proceeds as provided in Paragraph 3.4, and Owner refuses the payment tendered or Surety has denied liability, in whole or in part, without further notice Owner shall be entitled to enforce any remedy available to Owner.
5. After Owner has terminated Contractor's right to complete the Contract, and if Surety elects to act under Paragraph 3.1, 3.2, or 3.3 above, then the responsibilities of Surety to Owner shall not be greater than those of Contractor under the Contract, and the responsibilities of Owner to Surety shall not be greater than those of Owner under the Contract. To the limit of the amount of this Bond, but subject to commitment by Owner of the Balance of the Contract Price to mitigation of costs and damages on the Contract, Surety is obligated without duplication for:

- 5.1 The responsibilities of Contractor for correction of defective Work and completion of the Contract;
- 5.2 Additional legal, design professional, and delay costs resulting from Contractor's Default, and resulting from the actions of or failure to act of Surety under Paragraph 3; and
- 5.3 Liquidated damages, or if no liquidated damages are specified in the Contract, actual damages caused by delayed performance or non-performance of Contractor.

6. Surety shall not be liable to Owner or others for obligations of Contractor that are unrelated to the Contract, and the Balance of the Contract Price shall not be reduced or set off on account of any such unrelated obligations. No right of action shall accrue on this Bond to any person or entity other than Owner or its heirs, executors, administrators, or successors.

7. Surety hereby waives notice of any change, including changes of time, to Contract or to related subcontracts, purchase orders, and other obligations.

8. Any proceeding, legal or equitable, under this Bond may be instituted in any court of competent jurisdiction in the location in which the Work or part of the Work is located, and shall be instituted within two years after Contractor Default or within two years after Contractor ceased working or within two years after Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

9. Notice to Surety, Owner, or Contractor shall be mailed or delivered to the address shown on the signature page.

10. When this Bond has been furnished to comply with a statutory requirement in the location where the Contract was to be performed, any provision in this Bond conflicting with said statutory requirement shall be deemed deleted herefrom and provisions conforming to such statutory requirement shall be deemed incorporated herein. The intent is that this Bond shall be construed as a statutory bond and not as a common law bond.

11. Definitions.

- 11.1 Balance of the Contract Price: The total amount payable by Owner to Contractor under the Contract after all proper adjustments have been made, including allowance to Contractor of any amounts received or to be received by Owner in settlement of insurance or other Claims for damages to which Contractor is entitled, reduced by all valid and proper payments made to or on behalf of Contractor under the Contract.
- 11.2 Contract: The agreement between Owner and Contractor identified on the signature page, including all Contract Documents and changes thereto.
- 11.3 Contractor Default: Failure of Contractor, which has neither been remedied nor waived, to perform or otherwise to comply with the terms of the Contract.
- 11.4 Owner Default: Failure of Owner, which has neither been remedied nor waived, to pay Contractor as required by the Contract or to perform and complete or otherwise comply with the other terms thereof.

FOR INFORMATION ONLY – <i>(Name, Address and Telephone)</i> Surety Agency or Broker: Owner's Representative <i>(Engineer or other party)</i> :
--

I. PAYMENT BOND

PAYMENT BOND

Any singular reference to Contractor, Surety, Owner, or other party shall be considered plural where applicable.

CONTRACTOR (*Name and Address*):

SURETY (*Name, and Address of Principal Place of Business*):

OWNER (*Name and Address*):

CONTRACT

Effective Date of Agreement:

Amount:

Description (*Name and Location*):

BOND

Bond Number:

Date (*Not earlier than Effective Date of Agreement*):

Amount:

Modifications to this Bond Form:

Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth below, do each cause this Payment Bond to be duly executed by an authorized officer, agent, or representative.

CONTRACTOR AS PRINCIPAL

SURETY

Contractor's Name and Corporate Seal (Seal)

Surety's Name and Corporate Seal (Seal)

By: _____
Signature

By: _____
Signature (Attach Power of Attorney)

Print Name

Print Name

Title

Title

Attest: _____
Signature

Attest: _____
Signature

Title

Title

Note: Provide execution by additional parties, such as joint venturers, if necessary.

1. Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to Owner to pay for labor, materials, and equipment furnished by Claimants for use in the performance of the Contract, which is incorporated herein by reference.
2. With respect to Owner, this obligation shall be null and void if Contractor:
 - 2.1 Promptly makes payment, directly or indirectly, for all sums due Claimants, and
 - 2.2 Defends, indemnifies, and holds harmless Owner from all claims, demands, liens, or suits alleging non-payment by Contractor by any person or entity who furnished labor, materials, or equipment for use in the performance of the Contract, provided Owner has promptly notified Contractor and Surety (at the addresses described in Paragraph 12) of any claims, demands, liens, or suits and tendered defense of such claims, demands, liens, or suits to Contractor and Surety, and provided there is no Owner Default.
3. With respect to Claimants, this obligation shall be null and void if Contractor promptly makes payment, directly or indirectly, for all sums due.
4. Surety shall have no obligation to Claimants under this Bond until:
 - 4.1 Claimants who are employed by or have a direct contract with Contractor have given notice to Surety (at the address described in Paragraph 12) and sent a copy, or notice thereof, to Owner, stating that a claim is being made under this Bond and, with substantial accuracy, the amount of the claim.
 - 4.2 Claimants who do not have a direct contract with Contractor:
 1. Have furnished written notice to Contractor and sent a copy, or notice thereof, to Owner, within 90 days after having last performed labor or last furnished materials or equipment included in the claim stating, with substantial accuracy, the amount of the claim and the name of the party to whom the materials or equipment were furnished or supplied, or for whom the labor was done or performed; and
 2. Have either received a rejection in whole or in part from Contractor, or not received within 30 days of furnishing the above notice any communication from Contractor by which Contractor had indicated the claim will be paid directly or indirectly; and
 3. Not having been paid within the above 30 days, have sent a written notice to Surety (at the address described in Paragraph 12) and sent a copy, or notice thereof, to Owner, stating that a claim is being made under this Bond and enclosing a copy of the previous written notice furnished to Contractor.
5. If a notice by a Claimant required by Paragraph 4 is provided by Owner to Contractor or to Surety, that is sufficient compliance.
6. When a Claimant has satisfied the conditions of Paragraph 4, the Surety shall promptly and at Surety's expense take the following actions:
 - 6.1 Send an answer to that Claimant, with a copy to Owner, within 45 days after receipt of the claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed.
 - 6.2 Pay or arrange for payment of any undisputed amounts.
7. Surety's total obligation shall not exceed the amount of this Bond, and the amount of this Bond shall be credited for any payments made in good faith by Surety.
8. Amounts owed by Owner to Contractor under the Contract shall be used for the performance of the Contract and to satisfy claims, if any, under any performance bond. By Contractor furnishing and Owner accepting this Bond, they agree that all funds earned by Contractor in the performance of the Contract are dedicated to satisfy obligations of Contractor and Surety under this Bond, subject to Owner's priority to use the funds for the completion of the Work.

9. Surety shall not be liable to Owner, Claimants, or others for obligations of Contractor that are unrelated to the Contract. Owner shall not be liable for payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligations to make payments to, give notices on behalf of, or otherwise have obligations to Claimants under this Bond.

10. Surety hereby waives notice of any change, including changes of time, to the Contract or to related subcontracts, purchase orders, and other obligations.

11. No suit or action shall be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the location in which the Work or part of the Work is located or after the expiration of one year from the date (1) on which the Claimant gave the notice required by Paragraph 4.1 or Paragraph 4.2.3, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Contract, whichever of (1) or (2) first occurs. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable.

12. Notice to Surety, Owner, or Contractor shall be mailed or delivered to the addresses shown on the signature page. Actual receipt of notice by Surety, Owner, or Contractor, however accomplished, shall be sufficient compliance as of the date received at the address shown on the signature page.

13. When this Bond has been furnished to comply with a statutory requirement in the location where the Contract was to be performed, any provision in this Bond conflicting with said statutory requirement shall be deemed deleted herefrom and provisions conforming to such statutory requirement shall be deemed incorporated herein. The intent is that this Bond shall be construed as a statutory Bond and not as a common law bond.

14. Upon request of any person or entity appearing to be a potential beneficiary of this Bond, Contractor shall promptly furnish a copy of this Bond or shall permit a copy to be made.

15. Definitions

15.1 Claimant: An individual or entity having a direct contract with Contractor, or with a first-tier subcontractor of Contractor, to furnish labor, materials, or equipment for use in the performance of the Contract. The intent of this Bond shall be to include without limitation in the terms “labor, materials or equipment” that part of water, gas, power, light, heat, oil, gasoline, telephone service, or rental equipment used in the Contract, architectural and engineering services required for performance of the Work of Contractor and Contractor’s subcontractors, and all other items for which a mechanic’s lien may be asserted in the jurisdiction where the labor, materials, or equipment were furnished.

15.2 Contract: The agreement between Owner and Contractor identified on the signature page, including all Contract Documents and changes thereto.

15.3 Owner Default: Failure of Owner, which has neither been remedied nor waived, to pay Contractor as required by the Contract, or to perform and complete or otherwise comply with the other terms thereof.

FOR INFORMATION ONLY – *(Name, Address, and Telephone)*

Surety Agency or Broker:

Owner’s Representative *(Engineer or other)*:

J. APPLICATION FOR PAYMENT

Contractor's Application for Payment No.

	Application Period:	Application Date:
To (Owner):	From (Contractor):	Via (Engineer):
Project:	Contract:	
Owner's Contract No.:	Contractor's Project No.:	Engineer's Project No.:

Application For Payment Change Order Summary

Approved Change Orders				
Number	Additions	Deductions		
TOTALS				
NET CHANGE BY				
CHANGE ORDERS				

	1. ORIGINAL CONTRACT PRICE..... \$ _____
	2. Net change by Change Orders..... \$ _____
	3. Current Contract Price (Line 1 ± 2)..... \$ _____
	4. TOTAL COMPLETED AND STORED TO DATE (Column F on Progress Estimate)..... \$ _____
	5. RETAINAGE:
	a. X _____ Work Completed..... \$ _____
	b. X _____ Stored Material..... \$ _____
	c. Total Retainage (Line 5a + Line 5b)..... \$ _____
	6. AMOUNT ELIGIBLE TO DATE (Line 4 - Line 5c)..... \$ _____
	7. LESS PREVIOUS PAYMENTS (Line 6 from prior Application)..... \$ _____
	8. AMOUNT DUE THIS APPLICATION..... \$ _____
	9. BALANCE TO FINISH, PLUS RETAINAGE (Column G on Progress Estimate + Line 5 above)..... \$ _____

Contractor's Certification

The undersigned Contractor certifies that to the best of its knowledge: (1) all previous progress payments received from Owner on account of Work done under the Contract have been applied on account to discharge Contractor's legitimate obligations incurred in connection with Work covered by prior Applications for Payment; (2) title of all Work, materials and equipment incorporated in said Work or otherwise listed in or covered by this Application for Payment will pass to Owner at time of payment free and clear of all Liens, security interests and encumbrances (except such as are covered by a Bond acceptable to Owner indemnifying Owner against any such Liens, security interest or encumbrances); and (3) all Work covered by this Application for Payment is in accordance with the Contract Documents and is not defective.

By:	Date:
-----	-------

Payment of:	\$ _____	
		(Line 8 or other - attach explanation of the other amount)
is recommended by:	_____	_____
	(Engineer)	(Date)
Payment of:	\$ _____	
		(Line 8 or other - attach explanation of the other amount)
is approved by:	_____	_____
	(Owner)	(Date)
Approved by:	_____	_____
	Funding Agency (if applicable)	(Date)

Stored Material Summary

Contractor's Application

For (contract):						Application Number:			
Application Period:						Application Date:			
A	B	C	D		E		F		G
Invoice No.	Shop Drawing Transmittal No.	Materials Description	Stored Previously		Stored this Month		Incorporated in Work		Materials Remaining in Storage (\$) (D + E - F)
			Date (Month/Year)	Amount (\$)	Amount (\$)	Subtotal	Date (Month/Year)	Amount (\$)	
		Totals							

**Engineers Joint Documents Committee
Design and Construction Related Documents
Instructions and License Agreement**

Instructions

Before you use any EJCDC document:

1. Read the License Agreement. You agree to it and are bound by its terms when you use the EJCDC document.
2. Make sure that you have the correct version for your software.

How to Use:

1. While EJCDC has expended considerable effort to make the software translations exact, it can be that a few document controls (e.g., bold, underline) did not carry over.
2. Similarly, your software may change the font specification if the font is not available in your system. It will choose a font that is close in appearance. In this event, the pagination may not match the control set.
3. If you modify the document, you must follow the instructions in the License Agreement about notification.
4. Also note the instruction in the License Agreement about the EJCDC copyright.

License Agreement

You should carefully read the following terms and conditions before using this document.

Commencement of use of this document indicates your acceptance of these terms and conditions. If you do not agree to them, you should promptly return the materials to the vendor, and your money will be refunded.

The Engineers Joint Contract Documents Committee ("EJCDC") provides **EJCDC Design and Construction Related Documents** and licenses their use worldwide. You assume sole responsibility for the selection of specific documents or portions thereof to achieve your intended results, and for the installation, use, and results obtained from **EJCDC Design and Construction Related Documents**.

You acknowledge that you understand that the text of the contract documents of **EJCDC Design and Construction Related Documents** has important legal consequences and that consultation with an attorney is recommended with respect to use or modification of the text. You further acknowledge that EJCDC documents are protected by the copyright laws of the United States.

License:

You have a limited nonexclusive license to:

1. Use **EJCDC Design and Construction Related Documents** on any number of machines owned, leased or rented by your company or organization.
2. Use **EJCDC Design and Construction Related Documents** in printed form for bona fide contract documents.
3. Copy **EJCDC Design and Construction Related Documents** into any machine readable or printed form for backup or modification purposes in support of your use of **EJCDC Design and Construction Related Documents**.

You agree that you will:

1. Reproduce and include EJCDC's copyright notice on any printed or machine-readable copy, modification, or portion merged into another document or program. All proprietary rights in **EJCDC Design and Construction Related Documents** are and shall remain the property of EJCDC.
2. Not represent that any of the contract documents you generate from **EJCDC Design and Construction Related Documents** are EJCDC documents unless (i) the document text is used without alteration or (ii) all additions and changes to, and deletions from, the text are clearly shown.

You may not use, copy, modify, or transfer EJCDC Design and Construction Related Documents, or any copy, modification or merged portion, in whole or in part, except as expressly provided for in this license. Reproduction of EJCDC Design and Construction Related Documents in printed or machine-readable format for resale or educational purposes is expressly prohibited.

If you transfer possession of any copy, modification or merged portion of EJCDC Design and Construction Related Documents to another party, your license is automatically terminated.

Term:

The license is effective until terminated. You may terminate it at any time by destroying **EJCDC Design and Construction Related Documents** altogether with all copies, modifications and merged portions in any form. It will also terminate upon conditions set forth elsewhere in this Agreement or if you fail to comply with any term or condition of this Agreement. You agree upon such termination to destroy **EJCDC Design and Construction Related Documents** along with all copies, modifications and merged portions in any form.

Limited Warranty:

EJCDC warrants the CDs and diskettes on which **EJCDC Design and Construction Related Documents** is furnished to be free from defects in materials and workmanship under normal use for a period of ninety (90) days from the date of delivery to you as evidenced by a copy of your receipt.

There is no other warranty of any kind, either expressed or implied, including, but not limited to the implied warranties of merchantability and fitness for a particular purpose. Some states do not allow the exclusion of implied warranties, so the above exclusion may not apply to you. This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

EJCDC does not warrant that the functions contained in **EJCDC Design and Construction Related Documents** will meet your requirements or that the operation of **EJCDC Design and Construction Related Documents** will be uninterrupted or error free.

Limitations of Remedies:

EJCDC's entire liability and your exclusive remedy shall be:

1. the replacement of any document not meeting EJCDC's "Limited Warranty" which is returned to EJCDC's selling agent with a copy of your receipt, or
2. if EJCDC's selling agent is unable to deliver a replacement CD or diskette which is free of

defects in materials and workmanship, you may terminate this Agreement by returning EJCDC Document and your money will be refunded.

In no event will EJCDC be liable to you for any damages, including any lost profits, lost savings or other incidental or consequential damages arising out of the use or inability to use **EJCDC Design and Construction Related Documents** even if EJCDC has been advised of the possibility of such damages, or for any claim by any other party.

Some states do not allow the limitation or exclusion of liability for incidental or consequential damages, so the above limitation or exclusion may not apply to you.

General:

You may not sublicense, assign, or transfer this license except as expressly provided in this Agreement. Any attempt otherwise to sublicense, assign, or transfer any of the rights, duties, or obligations hereunder is void.

This Agreement shall be governed by the laws of the State of Virginia. Should you have any questions concerning this Agreement, you may contact EJCDC by writing to:

Arthur Schwartz, Esq.
General Counsel
National Society of Professional
Engineers
1420 King Street
Alexandria, VA 22314

Phone: (703) 684-2845
Fax: (703) 836-4875
e-mail: aschwartz@nspe.org

You acknowledge that you have read this agreement, understand it and agree to be bound by its terms and conditions. You further agree that it is the complete and exclusive statement of the agreement between us which supersedes any proposal or prior agreement, oral or written, and any other communications between us relating to the subject matter of this agreement.

K. CERTIFICATE OF SUBSTANTIAL COMPLETION

Certificate of Substantial Completion

Project: MIDDLE STREET AND CROSS STREET SEWER REHABILITATION

Owner: _____ Owner's Contract No.: 1

Contract: _____ Engineer's Project No.: 1

This [tentative] [definitive] Certificate of Substantial Completion applies to:

- All Work under the Contract Documents: The following specified portions of the Work:

Date of Substantial Completion

The Work to which this Certificate applies has been inspected by authorized representatives of Owner, Contractor, and Engineer, and found to be substantially complete. The Date of Substantial Completion of the Project or portion thereof designated above is hereby declared and is also the date of commencement of applicable warranties required by the Contract Documents, except as stated below.

A [tentative] [definitive] list of items to be completed or corrected is attached hereto. This list may not be all-inclusive, and the failure to include any items on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

The responsibilities between Owner and Contractor for security, operation, safety, maintenance, heat, utilities, insurance and warranties shall be as provided in the Contract Documents except as amended as follows:

- Amended Responsibilities Not Amended

Owner's Amended Responsibilities:

Contractor's Amended Responsibilities:

GENERAL SPECIFICATIONS

SUMMARY OF WORK

PART 1 - GENERAL

1.1 REQUIREMENT INCLUDED

- A. The work to be performed under this Contract consists of furnishing all tools, labor, equipment, materials providing startup services, and for furnishing all transportation and services, including fuel, power, water, and essential communications, and for the performance of all labor, or other operations required for the fulfillment of the Contract in strict accordance with the specifications, drawings, and other Contract Documents as herein before defined, all of which are made a part hereof; and including such detail sketches as may be furnished by the Engineer from time to time during construction in explanation of said Contract Documents. The work shall be complete, and all work, materials, and services not expressly shown or called for in the Contract Documents which may be necessary for the complete and proper construction of the work in good faith shall be performed, furnished, and installed by the Contractor as though originally so specified or shown, at no increase in cost to the Owner.

1.2 WORK COVERED BY CONTRACT DOCUMENTS

- A. Contractor shall complete all Work as specified or indicated in the Contract Documents titled "Middle Street and Cross Street Sewer Rehabilitation Project", City of Bangor, Maine dated September, 2016, prepared by The City of Bangor Engineering Department.

1.3 CONTRACT METHOD

- A. The work will be constructed under unit prices as indicated in the Bid Schedule.
- B. The Contractor shall include the General Conditions of the Contract as a part of all of its subcontract agreements.

1.4 WORK BY OTHERS

- A. The Contractor's attention is directed to the fact that work may be conducted at the site by other Contractors during the performance of the work under this Contract. The Contractor shall conduct its operations so as to cause a minimum of interference with the work of such other Contractors and shall cooperate fully with such Contractors to provide continued safe access to their respective portions of the site, as required to perform their respective contracts.
- B. Interference with Work on Utilities: The Contractor shall cooperate fully with all utility forces of the Owner or forces of other public or private agencies engaged in the

relocation, altering, or otherwise rearranging of any facilities which interfere with the progress of the work, and shall schedule the work so as to minimize interferences with said relocation, altering, or other rearranging of facilities.

1.5 WORK SEQUENCE

- A. The Contractor shall construct work in phases or stages as required to accommodate Owner's occupancy requirements. The Contractor shall coordinate construction schedule and operations with Owner.

1.6 CONTRACTOR USE OF PROJECT SITE

- A. The Contractor's use of the project site shall be limited to its construction operations, including onsite storage of materials as needed for the immediate work, onsite fabrication facilities, and field offices.

PART 2 - PRODUCTS

Not Applicable

PART 3 - EXECUTION

3.1 MAINTAIN EXISTING WORKS

- A. Existing Operations
 - 1. The existing sewer, water, and electrical must remain operable at all times during construction, or provisions must be made to provide temporary service in advance of discontinuing operation of an existing operation.
- B. Maintain Operation
 - 1. State and Federal regulations require that at all times during construction work under this Contract, existing utilities remain operational until the new utilities are accepted and on line.
 - 2. The responsibility of the Contractor shall be to provide, maintain and operate all temporary facilities such as bypass wastewater pumping equipment, dams, sewers, conduits, valves and all other labor and equipment necessary to intercept the sewage flow before it reaches the points where it would interfere with his work, and carry it past his work such that essential transport of wastewater remains operational and effective.

3. The Contractor's operations shall not hinder the delivery, storage and use of materials and supplies, nor hinder staff duties, nor disrupt utility service.
4. The Owner must have access to the existing facilities at all times unless a specific exception is granted by the Owner.

C. Minimize Interference

1. The Contractor shall conduct operations so as to interfere as little as possible with existing works. The Contractor shall develop a program, for review and approval by the Engineer and Owner, which shall provide for the construction and putting into service of the new works in the most orderly manner possible. This program shall be adhered to except as otherwise directed by Engineer.
2. It may be necessary to work outside of normal working hours to minimize interference. Work of connecting with, cutting into and reconstructing existing pipes or structures shall be planned to interfere with the operation of the existing facilities for the shortest possible time and when the demands on the facilities best permit such interference. Before starting work which will interfere with the operation of existing facilities, the Contractor shall do all possible preparatory work and shall see that all tools, materials, and equipment are made ready and at hand.
3. When making interconnections to active lines, perform such work at low flow times and in a manner to maintain flows. The Contractor is responsible for providing temporary bypass pumping or other means as necessary to ensure continuous wastewater flow.

D. Existing Wastewater Flows

1. Existing flows vary significantly from hour to hour and season to season. Peak flows are influenced by rain events and groundwater depths. The Contractor shall conduct operations to be prepared for these variable flow conditions. The Contractor shall provide the engineer with a written plan of the intended procedure for handling flows within the existing sanitary sewer system during construction.

3.2 CONSTRUCTION SEQUENCE

- A. The Contractor shall submit to the Owner for review and acceptance, a complete schedule of proposed sequence of construction operations prior to commencing work.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

- A. Notify Engineer when necessary measurements must be taken. Do not proceed until measurements have been taken.

4.2 SCHEDULE OF PAYMENT ITEMS

Bid Item 3: Mobilization (not to exceed 3% of total project bid)

- a. Payment: Lump sum price as stated in the Proposal.
- b. Measurement: Lump sum upon completion of first full thirty-day pay period of work.
- c. Includes: The cost of initiating the Contract, general contract administration costs, procuring insurance and bonds, moving equipment, supplies, and materials to the site, and all other incidental start-up costs.
- d. Explanation: Payment for Mobilization will be made on the first payment requisition covering a full thirty-day pay period. Payment for mobilization will not be made prior to the completion of the first full thirty-day pay period of work performed by the Contractor.

Bid Item 7: Maintenance of Sewer Flows

- a. Payment: Lump sum price as stated in the Proposal.
- b. Measurement: Paid in proportion to percentage of work completed at time of requisition.
- c. Includes: The cost of installing, maintaining, and dismantling the temporary sanitary sewer bypass system, including all equipment, labor, and materials required to install and maintain the temporary bypass during construction, and moving the operations as necessary to facilitate construction.

END OF SECTION

SUBMITTALS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Submittal procedures.
- B. Construction progress schedules.
- C. Product Data.
- D. Shop Drawings.
- E. Design data.
- F. Test reports.
- G. Certificates.
- H. Manufacturer's instructions.

1.2 RELATED SECTIONS

- A. Section - Quality Control: Manufacturers' field services and reports.
- B. Section - Contract Closeout: Contract warranties, manufacturers' certificates, and closeout submittals.

1.3 SUBMITTAL PROCEDURES

- A. Transmit each submittal with Engineer accepted form.
- B. Sequentially number the transmittal form. Revise submittals with original number and a sequential alphabetic suffix.
- C. Identify Project, Contractor, Subcontractor or supplier; pertinent drawing and detail number, and specification section number, as appropriate.
- D. Apply Contractor's stamp, signed or initialed certifying that review, approval, verification of Products required, field dimensions, adjacent construction Work, and coordination of information is in accordance with the requirements of the Work and Contract Documents.
- E. Schedule submittals to expedite the Project, and deliver to Engineer at business address.

Coordinate submission of related items.

- F. For each submittal for review, allow 14 days excluding delivery time to and from the contractor.
- G. Identify variations from Contract Documents and Product or system limitations which may be detrimental to successful performance of the completed Work.
- H. Provide space for Contractor and Engineer review stamps.
- I. When revised for resubmission, identify all changes made since previous submission.
- J. Distribute copies of reviewed submittals as appropriate. Instruct parties to promptly report any inability to comply with requirements.
- K. Submittals not requested will not be recognized or processed.

1.4 CONSTRUCTION PROGRESS SCHEDULES

- A. Submit initial schedule in duplicate within 14 days after date of Owner-Contractor Agreement.
- B. Revise and resubmit as required.
- C. Submit revised schedules with each Application for Payment, identifying changes since previous version.
- D. Submit a horizontal bar chart with separate line for each major portion of Work or operation, identifying first work day of each week.
- E. Show complete sequence of construction by activity, identifying Work of separate stages and other logically grouped activities. Indicate the early and late start, early and late finish, float dates, and duration.
- F. Indicate estimated percentage of completion for each item of Work at each submission.
- G. Indicate submittal dates required for shop drawings, product data, samples, and product delivery dates, including those furnished by Owner and required by Allowances.

1.5 PRODUCT DATA

- A. Product Data For Review:
 - 1. Submitted to Engineer for review for the limited purpose of checking for conformance with information given and the design concept expressed in the

Submittals

contract documents.

2. After review, provide copies and distribute in accordance with this Section and for record documents purposes described in Section - Contract Closeout.

B. Product Data For Information:

1. Submitted for the Engineer's knowledge as contract administrator or for the Owner.

C. Product Data For Project Close-out:

1. Submitted for the Owner's benefit during and after project completion.

D. Submit the number of copies which the Contractor requires, plus two copies which will be retained by the Engineer.

E. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.

F. Indicate Product utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

G. After review distribute in accordance with the Submittal Procedures article above and provide copies for record documents described in Section - Contract Closeout.

1.6 SHOP DRAWINGS

A. Shop Drawings For Review:

1. Submitted to Engineer for review for the limited purpose of checking for conformance with information given and the design concept expressed in the contract documents.
2. After review, produce copies and distribute in accordance with Submittal Procedures article above and for record documents purposes described in Section - Contract Closeout.

B. Shop Drawings For Information:

1. Submitted for the Engineer's knowledge as contract administrator or for the Owner.

C. Shop Drawings For Project Close-out:

1. Submitted for the Owner's benefit during and after project completion.

- D. Indicate special utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.
- E. Submit the number of opaque reproductions which Contractor requires, plus two copies which will be retained by Engineer.

1.9 DESIGN DATA

- A. Submit for the Engineer's knowledge as contract administrator or for the Owner.
- B. Submit for information for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.

1.10 TEST REPORTS

- A. Submit for the Engineer's knowledge as contract administrator or for the Owner.
- B. Submit test reports for information for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.

1.11 CERTIFICATES

- A. When specified in individual specification sections, submit certification by the manufacturer, installation/application subcontractor, or the Contractor to Engineer, in quantities specified for Product Data.
- B. Indicate material or Product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
- C. Certificates may be recent or previous test results on material or Product, but must be acceptable to Engineer.

1.12 MANUFACTURER'S INSTRUCTIONS

- A. When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, to Engineer for delivery to owner in quantities specified for Product Data.
- B. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.
- C. Refer to Section - Quality Control, Manufacturers' Field Services article.

1.13 ERECTION DRAWINGS

- A. Submit drawings for the Engineer's benefit as contract administrator or for the Owner.
- B. Submit for information for the limited purpose of assessing conformance with information given and the design concept expressed in the contract documents.
- C. Data indicating inappropriate or unacceptable Work may be subject to action by the Engineer or Owner.

PART 2 - PRODUCTS

Not Used.

PART 3 - EXECUTION

Not Used.

END OF SECTION

QUALITY CONTROL

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Quality assurance and control of installation.
- B. References.
- C. Inspection and testing laboratory services.

1.2 QUALITY ASSURANCE/CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, Products, services, site conditions, and workmanship, to produce Work of specified quality.
- B. Comply fully with manufacturers' instructions, including each step in sequence.
- C. Comply fully with manufacturers' instructions. If in conflict with Contract Documents, request clarification from Engineer before proceeding.
- D. Comply with specified standards as a minimum quality for the Work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. Perform Work by persons qualified to produce workmanship of specified quality.
- F. Secure Products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion or disfigurement.

1.3 REFERENCES

- A. Conform to reference standard by date of issue current on date of Contract Documents.
- B. Should specified reference standards conflict with Contract Documents, request clarification from Engineer before proceeding.
- C. The contractual relationship of the parties to the Contract shall not be altered from the Contract Documents by mention or interference otherwise in any reference documents.

1.4 INSPECTION AND TESTING LABORATORY SERVICES

- A. Owner will appoint, employ, and pay for services of an independent firm to perform

inspection and testing if required, unless specifically noted otherwise in Contract Documents.

- B. The independent firm will perform inspections, tests, and other services specified in individual specification Sections and as required by the Engineer.
- C. Reports will be submitted by the independent firm to the Engineer, in duplicate, indicating observations and results of tests and indicating compliance or noncompliance with Contract Documents.
- D. Cooperate with independent firm; furnish samples of materials, design mix, equipment, tools, storage and assistance as requested.
 - 1. Notify Engineer and independent firm 24 hours prior to expected time for operations requiring services.
 - 2. Make arrangements with independent firm and pay for additional samples and tests required for Contractor's use.
- E. Retesting required because of non-conformance to specified requirements shall be performed by the same independent firm on instructions by the Engineer. Payment for retesting will be the Contractor's responsibility.

END OF SECTION

TRAFFIC CONTROL

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Construction Parking Control.
- B. Flag Persons.
- C. Flares and Lights.
- D. Haul Routes.
- E. Traffic Signs and Signals.
- F. Removal.

1.2 RELATED SECTIONS

- A. Manual on Uniform Traffic Control Devices (MUTCD).
- B. Maine Department of Transportation, Standard Details, Highways and Bridges.

PART 2 - PRODUCTS

2.1 SIGNS, SIGNALS, AND DEVICES

- A. Traffic Control Signals: As approved by local jurisdictions.
- B. Traffic Cones and Drums, Flares and Lights: As approved by local jurisdiction.
- C. Flag Person Equipment: As required by local jurisdiction.

PART 3 - EXECUTION

3.1 CONSTRUCTION PARKING CONTROL

- A. Control vehicular parking to prevent interference with pedestrians, public vehicular traffic, public parking, and access by emergency vehicles, and Owner's operations.

- B. Monitor parking of construction personnel's vehicles. Maintain vehicular access to and through parking areas.
- C. Prevent parking on or adjacent to access roads or in non- designated areas.

3.2 FLAG PERSONS

- A. Provide trained and equipped flag persons to regulate traffic during construction operations as directed by Engineer.

3.3 NIGHT AND OTHER HOURS OF LOW VISIBILITY

- A. Lights should be used to illuminate work area, equipment crossings, and other areas as necessary during low visibility times as directed by Engineer.

3.4 HAUL ROUTES

- A. Consult with authority having jurisdiction in establishing public thoroughfares to be used for haul routes and site access.

3.5 TRAFFIC SIGNS AND SIGNALS

- A. Traffic signage and devices shall conform with MUTCD as related to work zones.
- B. Install and operate traffic control signals to direct and maintain orderly flow of traffic in areas under Contractor's control, and areas affected by Contractor's operations in accordance with MUTCD.
- C. Relocate as Work progresses, to maintain effective traffic control.
- D. Contractor shall install one electronic signboard at each end of the project prior to beginning construction for advance warning of traveling public. Signboards shall remain in place for the duration of the project during active construction.

3.6 MDOT REQUIREMENTS

- A. Meet all applicable requirements of the Maine Department of Transportation.

3.7 REMOVAL

- A. Remove equipment and devices when no longer required.
- B. Repair damage caused by installation.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

- A. Notify Engineer when necessary measurements must be taken. Do not proceed until measurements have been taken.

4.2 SCHEDULE OF PAYMENT ITEMS

Bid Item 1: Traffic Control:

- a. Payment: Lump Sum price as stated in the Proposal.
- b. Measurement: Paid in proportion to percentage of Work completed at time of requisition.
- c. Includes all costs associated with traffic control including labor, barrels, cones, signage, police detail if required, electronic sign boards, and incidentals.

Bid Item 2: Flagging Hour:

- a. Payment: Price per flagger per hour as stated in the Proposal.
- b. Measurement: Hour per flagger onsite and on station, and breaker flagger onsite.
- c. Includes all costs associated with flagging personnel including hiring, transporting, equipping, supervising, and the payment of all flaggers and all overhead and incidentals necessary to complete the work and provide satisfactory traffic control.

END OF SECTION

MATERIAL AND EQUIPMENT

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Products.
- B. Transportation and handling.
- C. Storage and protection.
- D. Product options.
- E. Substitutions.

1.2 RELATED SECTIONS

- A. None.

1.3 PRODUCTS

- A. Products: Means new material, machinery, components, equipment, fixtures, and systems forming the Work. Does not include machinery and equipment used for preparation, fabrication, conveying and erection of the Work. Products may also include existing materials or components required for reuse.

1.4 TRANSPORTATION AND HANDLING

- A. Transport and handle Products in accordance with manufacturers' instructions.
- B. Promptly inspect shipments to assure that Products comply with requirements, quantities are correct, and Products are undamaged.
- C. Provide equipment and personnel to handle Products by methods to prevent soiling, disfigurement, or damage.

1.5 STORAGE AND PROTECTION

- A. Store and protect Products in accordance with manufacturers' instructions, with seals and labels intact and legible. Store sensitive Products in weathertight, climate controlled enclosures.

- B. For exterior storage of fabricated Products, place on sloped supports, above ground.
- C. Provide off-site storage and protection when site does not permit onsite storage or protection.
- D. Cover Products subject to deterioration with impervious sheet covering. Provide ventilation to avoid condensation.
- E. Store loose granular materials on solid flat surfaces in a well-drained area. Avoid mixing with foreign matter.
- F. Provide equipment and personnel to store Products by methods to prevent soiling, disfigurement, or damage.
- G. Arrange storage of Products to permit access for inspection. Periodically inspect to assure Products are undamaged and are maintained under specified conditions.

1.6 PRODUCT OPTIONS

- A. Products Specified by Naming One or More Manufacturers with a Provision for Substitutions: Submit a request for substitution for any manufacturer not named.

1.7 SUBSTITUTIONS

- A. Engineer will consider requests for Substitutions only within 14 days after date established in Notice to Proceed.
- B. Substitutions may be considered when a Product becomes unavailable through no fault of the Contractor.
- C. Document each request with complete data substantiating compliance of proposed Substitution with Contract Documents.
- D. A request constitutes a representation that the Contractor:
 1. Has investigated proposed Product and determined that it meets or exceeds the quality level of the specified Product.
 2. Will provide the same warranty for the Substitution as for the specified Product.
 3. Will coordinate installation and make changes to other Work which may be required for the Work to be complete with no additional cost to Owner.
 4. Waives claims for additional costs or time extension which may subsequently

become apparent.

- E. Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals, without separate written request, or when acceptance will require revision to the Contract Documents.
- F. Substitution Submittal Procedure:
 - 1. Submit three copies of request for Substitution for consideration. Limit each request to one proposed Substitution.
 - 2. Submit shop drawings, Product data, and certified test results attesting to the proposed Product equivalence.
 - 3. The Engineer will notify Contractor, in writing, of decision to accept or reject request.

END OF SECTION

SITework SPECIFICATIONS

SITE CLEARING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes removal of surface debris, removal of designated paving, curbs, and concrete, and removal of existing abandoned trolley tracks.
- B. Related Sections:
 - 1. Grading
 - 2. Excavation
 - 3. Rock Removal

1.2 SUBMITTALS

- A. See procedures as noted in Submittals.

1.3 QUALITY ASSURANCE

- A. Perform work in accordance with current version of the State of Maine, Department of Transportation, Standard Specifications – Highways and Bridges.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Not Used.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verification of existing conditions before starting work.
- B. Identify waste area for placing removed materials.

3.2 PROTECTION

- A. Temporary and permanent erosion control shall be installed in accordance with the current Maine DEP Best Management Practices Manual for Erosion and Sedimentation Control prior to disturbing any earth.
- B. Locate, identify, and protect utilities indicated to remain, from damage.
- C. Protect trees, plant growth, and features designated to remain as final landscaping.

- D. Protect benchmarks, survey control points, and existing structures from damage or displacement.

3.3 CLEARING

- A. Clear areas required for access to site and execution of Work.

3.4 REMOVAL

- A. Remove debris, rock, and extracted plant life from site.
- B. Remove paving, curbs, and concrete as indicated on Drawings. Neatly saw cut edges at right angle to surface.
- C. Remove abandoned trolley tracks as necessary to complete new work. Neatly cut edges at right angle to surface. Do not disturb excess pavement.
- D. Continuously clean up and remove waste materials from site. Do not allow materials to accumulate on site.
- E. Do not burn or bury materials on site. Leave site in clean condition.

PART 4 – MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

- A. Not Used.

END OF SECTION

EXCAVATION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes excavating for test pits and new utility installation.
- B. Related Sections:
 - 1. Site Clearing
 - 2. Grading
 - 3. Rock Removal
 - 4. Backfilling
 - 5. Trenching
 - 6. Rock Removal
 - 7. Sanitary Sewer Structures
 - 8. Storm Drainage Structures
 - 9. Sanitary Sewer and Storm Drain 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. Dig Safe must be contacted.

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. Larger material will be removed under Section – Rock Excavation.
- 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. Stockpile 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.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

- A. Notify Engineer when necessary measurements must be taken. Do not proceed until measurements have been taken.

4.2 SCHEDULE OF PAYMENT ITEMS

Bid Item 5: Test Pits

- a. Payment: Unit price per each test pit unit as stated in the Proposal.
- b. Measurement: Per unit completed.
- c. Includes clearing, excavation, shoring, dewatering, backfilling, and compaction in locations as shown in Drawings or as directed by the Engineer.

Bid Item 21: Common Excavation

- a. Payment: Unit price per cubic yard as stated in the Proposal.
- b. Measurement: Per cubic yard.
- c. Includes all equipment, labor, and materials necessary to remove and dispose of the existing paved surface within the project site in locations as shown in Drawings or as directed by the Engineer.

Bid Item 22: Pavement Removal

- a. Payment: Unit price per square yard as stated in the Proposal.
- b. Measurement: Per square yard.
- c. Includes all equipment, labor, and materials necessary to mill and dispose of the existing paved surface within the project site to the specified depth in locations as shown in Drawings or as directed by the Engineer.

END OF SECTION

ROCK REMOVAL

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes removal of rock uncovered during excavation, rock estimated to be present using ledge probes, and explosives to assist with rock removal.
- B. Related Sections:
 - 1. Site Clearing
 - 2. Excavation
 - 3. Trenching
 - 4. Backfilling
 - 5. Grading

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.

1.6 SCHEDULING

- A. Schedule Work under the provisions of Section - Submittals.
- B. 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.
- 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 under the provisions of Quality Control.
- B. Provide for visual inspection of foundation bearing surfaces and cavities formed by removed rock.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

- A. Notify Engineer when necessary measurements must be taken. Do not proceed until measurements have been taken.

4.2 SCHEDULE OF PAYMENT ITEMS

Bid Item 4: Rock Removal

- a. Payment: Unit price per each cubic yard as stated in the Proposal.
- b. Measurement: Per unit removed.
- c. Includes: All labor, materials, tools, and equipment necessary to complete the excavation including pre-blast surveys, drilling, blasting, monitoring, loading, removal by mechanical means, and disposing of the excess or unusable material outside the work limits and all else incidental thereto for which payment is not provided under other items. No payment shall be made for rocks excavated beyond the trench pay width as noted on the drawings.
- d. Explanation: Must be minimum of 2 cubic yards to be eligible for payment.

END OF SECTION

TRENCHING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Excavate trenches for utilities from property lines to municipal utilities and for municipal utilities within rights-of-way.
 - 2. Compacted bedding under fill over utilities to subgrade elevations.
 - 3. Backfilling and compaction.

- B. Related Sections:
 - 1. Grading
 - 2. Excavation
 - 3. Backfilling
 - 4. Rock Removal
 - 5. Sanitary Sewer Structures
 - 6. Storm Drainage Structures
 - 7. Sanitary Sewer and Storm Drain 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. Field testing will be performed under provisions of Section – Quality Control.
- B. Tests and analysis of fill material will be performed in accordance with ANSI.ASTM D698 and Section – Quality Control.
- C. Compaction testing will be performed in accordance with ANSI/ASTM D698 and Section – Quality Control.
- D. 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. Grading
 - 2. Excavation
 - 3. Trenching
 - 4. Rock Removal
 - 5. Sanitary Sewer Structures
 - 6. Storm Drainage Structures

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 - μm 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. SAND

- a. Sand shall be well-graded, coarse sand without excessive fines and free from loam, clay, and organic matter. Beach sand shall not be used. The grading requirements are as follows:

<u>Sieve Size</u>	<u>Weight Passing (%)</u>
3/8"	100
No. 4	95-100
No. 16	50-85
No. 50	10-30
No. 100	2-10

4. 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.

5. 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.

6. STRUCTURAL FILL

- a. Structural fill shall consist of a relatively free draining soil meeting the following gradation.

<u>Sieve Size</u>	<u>Percent Finer by Weight</u>
4"	100
3"	90-100
1/4"	25-90
#40	0-30
#200	0-7

7. 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.

8. TILL MATERIAL

- a. Till material used for sewer trench check dams shall be a well-graded mixture of clay, silt, sand, and gravel with 25 to 45 percent of the material, by weight, passing the No. 200 sieve.

9. SELECT FILL

- a. Select fill shall consist of well graded granular material free of organic material and having no rocks with a maximum dimension greater than 4 inches and meeting the following gradation requirements, except where it is used for pipe bedding, in which case the maximum size shall be 2 inches.

<u>Sieve Size</u>	<u>Weight Passing (%)</u>
4"	100
3"	90-100
1/4"	25-90
#40	0-30
#200	0-5

10. BEDDING MATERIAL

- a. Where any of the above material is used for bedding materials, it shall further meet the following additional criteria. Bedding material shall be so graded that 100% will pass a one (1) inch screen and not more than 10% will pass a 200-mesh sieve. Gradation test results of the bedding material shall be submitted to the Engineer for approval. In the event abnormally unstable or wet conditions are encountered, bedding

material shall be crushed stone, if directed by the Engineer. The following schedule gives bedding requirements for various types of pipe.

PVC, HDPE, Culverts 6" Minimum 3/4" Crushed Stone

11. FLOWABLE FILL

- a. Strength = 1500 psi.

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 under provisions of Quality Control.
- B. Tests and analysis of fill material will be performed in accordance with ANSI/ASTM D698 and Quality Control.
- C. Compaction testing will be performed in accordance with ANSI/ASTM D698 and Quality Control.

- 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 list.
 - 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.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

- A. Notify Engineer when necessary measurements must be taken. Do not proceed until measurements have been taken.

4.2 SCHEDULE OF PAYMENT ITEMS

Bid Item 16: Abandon Existing Mains in Travel Way with Flowable Fill

- a. Payment: Lump sum price as stated in Proposal.
- b. Measurement: Paid in proportion to percentage of work completed at time of requisition.
- c. Includes: Furnishing all materials, equipment and labor necessary to completely fill any

abandoned main line underneath major roadways not removed during installation of new pipe with flowable fill, as shown on the Drawings or as directed by the Engineer.

Bid Item 17: Abandon Existing Manhole/Catch Basin in Place

- a. Payment: Unit price per each unit as stated in Proposal.
- b. Measurement: Per unit completed.
- c. Includes: Furnishing all materials, equipment and labor necessary to plug inlets and outlets, drill drain holes, remove top 3' of structure, and backfill as noted on the plans.

Bid Item 18: Abandon Existing Brick Cistern In Place

- a. Payment: Lump sum price as stated in Proposal.
- b. Measurement: Paid in proportion to percentage of work completed at time of requisition.
- c. Includes: Furnishing all materials, equipment and labor necessary to excavate, expose, and confirm location of cistern, pump dry, remove top, completely fill with flowable fill or sand, and backfill excavation, such that the new sewer can then be installed, as shown on the Drawings or as directed by the Engineer.

Bid Item 19: Temporary Pavement

- a. Payment: Unit price per ton of pavement as stated in the Proposal
- b. Measurement: As measured in place within the pay limits and to the thickness as shown on the drawings and directed by the Engineer.
- c. Includes: preparation and placement of temporary pavement in trench areas as noted on the Drawings and as directed by the Engineer in order to restore bituminous surface at the completion of each working week.
- d. Explanation: this is to be distinguished from flowable fill temporary surface restoration which is included in the measurement and payment for pipe trenches.

END OF SECTION

GRADING

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes removal of topsoil and subsoil; and cutting, grading, filling, and compacting, as shown on plans and as directed by Engineer.
- B. Related Sections:
 - 1. Site Clearing
 - 2. Excavation
 - 3. Backfilling
 - 4. Trenching
 - 5. Rock Removal

1.2 REFERENCES

- A. American Association of State Highway and Transportation Officials:
 - 1. AASHTO T180 – Standard Specification for Moisture-Density Relations of Soils Using a 10-lb Rammer and an 18-in. Drop.
- B. American Society for Testing and Materials:
 - 1. ASTM C136 - Method for Sieve Analysis of Fine and Coarse Aggregates.
 - 2. ASTM D698 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, Using 5.5-lb Rammer and 12-inch Drop.
 - 3. ASTM D1556 - Test Methods for Density of Soil in Place by the Sand-Cone Method.
 - 4. ASTM D1557 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10-lb Rammer and 18-inch Drop.
 - 5. ASTM D2167 - Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.
 - 6. ASTM D2419 - Standard Test Method for Sand Equivalent Value of Soils and Fine Aggregate.
 - 7. ASTM D2434 - Standard Test Method for Permeability of Granular Soils (Constant Head).
 - 8. ASTM D2922 - Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).

9. ASTM D3017 - Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth).

C. State of Maine, Department of Transportation, Standard Specifications – Highways and Bridges.

1.3 SUBMITTALS

A. Section - Execution Requirements: Requirements for submittals.

B. Project Record Documents: Accurately record actual locations of utilities remaining by horizontal dimensions, elevations or inverts, and slope gradients.

1.4 QUALITY ASSURANCE

A. Perform work in accordance with current version of the State of Maine, Department of Transportation, Standard Specifications – Highways and Bridges.

B. Maintain one copy of document on site.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Topsoil: Excavated material, graded, free of roots, rocks larger than 1 inch, subsoil, debris and large weeds.

B. Subsoil: Excavated material, graded, free of lumps larger than 6 inches, rocks larger than 3 inches and debris.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify site conditions.

B. Verify survey bench mark and intended elevations for the Work are as indicated on Drawings.

C. Verify existing conditions before starting work.

3.2 PREPARATION

A. Temporary and permanent erosion control shall be installed and maintained in accordance with the current Maine DEP Best Management Practices Manual for Erosion and Sedimentation Control before construction shall begin.

B. Identify required lines, levels, contours, and datum.

Grading

- C. Stake and flag locations of known utilities.
- D. Locate, identify, and protect utilities indicated to remain, from damage.
- E. Notify utility company before removing or relocating utilities.
- F. Protect above and below grade utilities indicated to remain.
- G. Protect plant life, lawns, and other features remaining as portion of final landscaping.
- H. Protect benchmarks, survey control point, property pins, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.

3.3 SUBSOIL EXCAVATION

- A. Excavate subsoil from marked areas.
- B. Do not excavate wet subsoil or excavate and process wet material to obtain optimum moisture content.
- C. When excavating through roots, perform Work by hand and cut roots with sharp axe or saw.
- D. Remove excess subsoil not intended for reuse, from site.
- E. Stability: Replace damaged or displaced subsoil as specified for fill.

3.4 FILLING

- A. Install work in accordance with current version of the State of Maine, Department of Transportation, Standard Specifications – Highways and Bridges.
- B. Fill areas to contours and elevations with unfrozen materials.
- C. Place fill material on continuous layers and compact in accordance with schedule in Backfilling
- D. Maintain optimum moisture content of fill materials to attain required compaction density.
- E. Slope grade away from building minimum ¼ inch per foot, unless noted otherwise.
- F. Make grade changes gradual. Blend slope into level areas.
- G. Remove surplus fill materials from site.

3.5 TOLERANCES

- A. Top Surface of Subgrade: Plus or minus 0.10 feet from required elevation.

- B. Finish Grade: Plus or minus 0.05 feet from required elevation.

3.6 FIELD QUALITY CONTROL

- A. Section - Quality Requirements: Testing and Inspection Services
- B. Testing: In accordance with ASTM D1557.
- C. When tests indicate Work does not meet specified requirements, remove Work, replace and retest.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

- A. Notify Engineer when necessary measurements must be taken. Do not proceed until measurements have been taken.

4.2 SCHEDULE OF PAYMENT ITEMS

Bid Item 23: Fine Grading

- a. Payment: Lump sum price as stated in Proposal.
- b. Measurement: Paid in proportion to percentage of work completed at time of requisition.
- c. Includes all equipment, labor, and materials necessary to fine grade roadway areas that do not have existing road base concrete, and installation of gravel material as necessary to achieve desired grade, and compaction, in locations as shown in Drawings or as directed by the Engineer.

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/A 48M-03, Class 35B.
 2. Manholes – Standard
 - a. 26 inch diameter gray cast iron, 24 inch clear opening.
 - b. Cover labeled "Sewer".
 - c. Rated for H-20 loading.
 - d. Model 146-IC SWR by General Foundries Inc., 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. Not applicable to doghouse structures.

C. MANHOLE REPAIRS

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

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

- A. Notify Engineer when necessary measurements must be taken. Do not proceed until measurements have been taken.

4.2 SCHEDULE OF PAYMENT ITEMS

Bid Items 12 -14: Sanitary Sewer MH

- a. Payment: Unit price per vertical foot as stated in Proposal.
- b. Measurement: Vertical linear feet as measured from the rim to the invert.
- c. Includes: Furnishing all materials, equipment and labor necessary to install the structure to the required grade, testing, and all piping, fittings, and supports within the manholes as specified to form a complete unit, whether doghouse or standard unit with precast invert, and frame and cover.

END OF SECTION

STORM DRAINAGE STRUCTURES

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Catch Basins
 - 2. Frames and Grates
- B. Related Sections
 - 1. Excavation
 - 2. 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. PreCast Structures

1. Precast concrete, conforming to ASTM Specification C478.
 - a. 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.

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. Molded neoprene compound boot, conforming to ASTM Specification C923.

D. Frames and Covers or Grates

1. Gray iron conforming to ASTM Specification A48-83, Class 30B.
2. Catch basins
 - a. Gray iron conforming to ASTM Specification A48-83, Class 30B.
 - b. Model 62057 with 62540 grate cascade style as distributed by E.J. Prescott or approved equal.
 - c. Rated for H-20 wheel loading.
3. Catch basins
 - a. "Pedestrian friendly", longitudinal slope openings no wider than 1/2".
 - b. Model R-3210-Q as manufactured by Neenah Foundry, or equal.

E. Sump

1. Provide 2' sump in all drain manholes and catchbasins.

F. Trap

1. Provide trap in all satellite catch basins in small diameter outlets.
2. "The Eliminator" or 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.
2. 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.
3. 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.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

- A. Notify Engineer when necessary measurements must be taken. Do not proceed until measurements have been taken.

4.2 SCHEDULE OF PAYMENT ITEMS

Bid Item 11: 3' Diameter Standard Catch Basin with Trap

- a. Payment: Unit price per vertical foot as stated in Proposal.
- b. Measurement: Vertical linear feet as measured from the rim to the sump.
- c. Includes: Furnishing all materials, equipment and labor necessary to install the structure to the required grade, testing, and all piping, traps, fittings, and supports within the manholes as specified to form a complete unit, and frame and grate or frame and cover.

END OF SECTION

SANITARY SEWER AND STORM DRAIN 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.
- C. Protect material during transportation and installation to avoid physical damage.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. PVC Pipe - John Mansville, Extrusion Technologies, Inc. or approved equal.
- B. Gravity Couplings - Fernco. Inc., or manufacturer's recommendation, or approved equal.

2.2 GRAVITY 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
 - 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:
 - 1) From control panel to pneumatic plugs for inflation.
 - 2) From control panel to sealed line for introducing pressure air.
3. From sealed line to control panel for continually monitoring air pressure rise in sealed line.
4. 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.
5. 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.
6. 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> (inches)	<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

<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>
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)		

7. If pipe segment fails air test:
 - a. Perform necessary work to meet these requirements.
8. Provide, as necessary, proper plugs, weirs and necessary equipment to perform tests.
9. Testing of pipe sections to include service connection portions installed under this Contract.
10. Provide, as necessary, equipment to bypass flow around test segments.
 - a. Maintain service to services temporarily disconnected, capped or plugged for test.
11. 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.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

- A. Notify Engineer when necessary measurements must be taken. Do not proceed until measurements have been taken.

4.2 SCHEDULE OF PAYMENT ITEMS

Bid Items 8 - 10: Lateral, Sewer, or Storm Drain (Various Sizes)

- a. Payment: Unit price per each linear foot as stated in Proposal
- b. Measurement: Linear feet as measured along the horizontal projection of

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the centerline of the pipe; measured from and to inside face of manhole in the case of mainline or along the horizontal projection of the centerline of the pipe from the main sewer line to the connection point.

- c. Includes: clearing, sawcutting of existing pavement or abandoned trolley tracks, excavation, compaction, stone bedding, backfill, roadway base and subbase, roadway concrete, fittings, shoring, and bracing, dewatering, cleaning, pipe, fittings, brick and concrete collars, connections to existing mains, concrete encasement or pipe sleeves in case of eligible sewer main crossing of water mains, testing, and incidentals as shown on the Drawings or as required.

END OF SECTION

INSULATION

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK

- A. Install rigid foam insulation for pipe trenches and under concrete equipment pads as shown on Drawings and indicated by provisions of this section.

1.2 QUALITY ASSURANCE

- A. Thermal Conductivity: Thicknesses indicated for board insulation are for thermal conductivity (k-value at 75°F or 24°C) specified for each material. Provide adjusted thicknesses as directed for equivalent use of material having different thermal conductivity.

1.3 PRODUCT HANDLING

- A. General Protection: Protect insulations from physical damage and from becoming wet, soiled, or covered with ice or snow. Comply with manufacturer's recommendations for handling, storage and protection during installation.

1.4 SUBMITTALS

- A. Product data for each type of insulation proposed.

PART 2 - PRODUCTS

2.1 INSULATION

- A. Rigid Board-Type Insulation for Pipe Trenches and Under Concrete Pads: Closed-cell rigid foamed polystyrene, equal to "Styrofoam" HI-60, by Dow Chemical, or Owens Corning Foamular 600.

1. Thermal resistance: Aged R-value = 5 per inch of 75°F mean temperature.
2. Compressive strength \geq 60 psi.
3. Flexural strength \geq 75 psi.
4. Minimum density 1.60 PCF.
5. Water adsorption \leq 0.1 percent by volume.
6. Coefficient of linear thermal expansion: maximum 3.5×10^{-5} in/ °F.

PART 3 - EXECUTION

3.1 INSTALLATION

A. General:

1. For pipe trench insulation, provide to the extent practical, full sheets of insulation over trench width to minimize the number of openings between sheets. Use four foot minimum width sheets centered on pipe(s), and add additional width to fill trench as necessary, or as directed by Engineer. Install to length and thickness as shown on drawings.

3.2 PROTECTION

- #### A. General:
- Protect installed insulation from possible physical abuses and damage prior to backfilling or placement of concrete.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

- #### A.
- Notify Engineer when necessary measurements must be taken. Do not proceed until measurements have been taken.

4.2 SCHEDULE OF PAYMENT ITEMS

Bid Item 15: 2" Rigid Insulation

- a. Payment: Unit price per square foot as stated in Proposal.
- b. Measurement: As measured in place.
- c. Includes: Furnishing all materials, equipment and labor necessary to install the insulation, and insulation sheets.
- d. Explanation: In areas where double insulation is noted, payment will be based on double the unit price.

END OF SECTION

GRANITE CURB

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes providing labor, equipment, materials, incidental work, and construction methods necessary to furnish and install new granite curb or remove and reset existing granite curb.

1.2 REFERENCES

- A. The following standards shall apply to the work of this Section.
 - 1. State of Maine Department of Transportation (MDOT)
Specifications - Standard Specifications for Highways and Bridges

1.3 SUBMITTALS

- A. Submit manufacturers cut sheets for new curbing materials as applicable.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Granite curb units to be removed and reset shall be adequately protected from damage during storage.

- B. Curb shall be protected against staining, chipping, and other damage. Cracked, badly chipped, or stained units will be rejected and shall not be employed in the work.

- C. Store pallets of granite curbing on pavement or other hard, durable surfaces that will not compact as a result of the weight of the pallets of curbing. Prevent steel strapping around pallets and curb from rusting and staining of pavement.

PART 2 - PRODUCTS

2.1 CEMENT MORTAR

- A. Mortar for pointing joints between curbstones shall be a cement mortar composed of one part Portland cement and two parts sand, by volume with sufficient water to form a workable, stiff, mixture, if necessary to fill large gaps between curb being removed and reset.

2.2 CONCRETE

- A. Concrete for Foundation Cradle of Curb: Concrete where designated for foundation cradle at curb installations shall be 3000 psi concrete bedding.

- B. Concrete for Backing Up Curb: Concrete where designated for backing up curb shall be 4000 psi, ¾ inches high early strength concrete surface conforming to MDOT Specifications.

2.3 WOOD SHIMS

A. Wood shims shall be used to level curb as necessary during installation.

PART 3 - EXECUTION

3.1 SETTING GRANITE CURB

A. Sawcut existing pavement prior to beginning granite curb installation.

B. Curb shall be set accurately to line and grade. Curb alignment shall be uniform with smooth and continuous lines.

C. Vertical face of vertical curb shall be plumb.

D. Gaps between curb units being removed and reset shall be carefully filled with cement mortar, and neatly pointed on the top and front exposed positions. After pointing, excess mortar shall be cleaned from curb surface.

E. Backfill material behind granite curb shall be granular base material, loam, or as otherwise directed by Engineer. Extreme care shall be taken not to destroy curb alignment during backfilling. Curb sections disturbed during backfilling or otherwise shall be reset to line and grade, and properly backfilled.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. Notify Engineer when necessary measurements must be taken. Do not proceed until measurements have been taken.

4.2 SCHEDULE OF PAYMENT ITEMS

Bid Item 20: Remove & Reset Existing Granite Curb

a. Payment: Unit price per linear foot as stated in the Proposal.

b. Measurement: Linear feet as measured along the horizontal projection of the centerline of the curb.

c. Includes: all supervision, labor, materials, and equipment necessary, including removal and stockpiling of granite curb during demolition, concrete bedding, base gravel, and reinstallation during surface restoration and other incidentals as shown on the Drawings or as required to provide complete installation.

END OF SECTION

RODENT CONTROL

PART 1 - GENERAL

1.01 SCOPE OF WORK

- A. This Section specifies requirements for pest control related activities at all work and staging areas in connection with this Contract. The Contractor shall conduct a Rodent Control Survey and Control Plan that conforms to the City of Bangor and State of Maine requirements.
- B. Pest Control Survey and Control Plan shall be performed by a certified pest control specialist. A weekly inspection for pest activity and sanitation deficiencies in all work areas, staging areas and adjacent areas shall be included in the Plan.

1.02 SUBMITTALS

- A. Submit in accordance with Submittals a written description of the Rodent Control Survey and Control Plan and procedures to be used. The Pest Control Plan must be approved by the Engineer.
- B. Three weeks prior to pest control work in the staging areas outside the Contract area, submit the location of the area, the name of the pest control operator, pest control time schedule and products and procedures to be used. Submit before site occupancy a written statement from the pest control operator certifying that the staging areas are rodent-free.

PART 2 – PRODUCTS - NOT USED

PART 3 - EXECUTION

3.01 WORK AND STAGING AREAS WITHIN THE CONTRACT AREA

- A. Before mobilization begins, provide notification that rodent populations have been effectively controlled by the pest control contractor in the work areas.
- B. Following site clearing and before demolition, excavation, or construction, inspect work areas and remove all remaining trash, debris and weeds.
- C. Maintain work and staging areas free of trash, garbage, weeds and debris. Provide and enforce proper use of refuse containers to ensure that rodents and other pests are not harbored or attracted.
- D. Designate specific locations as lunch and coffee break areas to prevent random disposal of garbage and trash. Keep those areas free of litter and garbage and provide proper refuse containers with lids. Keep refuse containers upright with their lids shut tight.
- E. Have all refuse containers emptied daily to maintain site sanitation.

RODENT CONTROL

- F. Notify the Engineer within 24 hours whenever rodents (rats or mice) or signs of rodent activity (burrows or droppings) are observed in work or staging areas.

3.02 STAGING AREAS OUTSIDE THE CONTRACT AREA

- A. Implement pest control at all staging areas that are not areas of this Contract, but that are used in connection with this Contract. Undertake rodent control at least two weeks prior to use of the area and with adequate time to ensure that the site is free of rodent populations (rats and mice) prior to site occupancy. Maintain the site free of rodents throughout the duration of its use.
- B. Clear staging areas of trash, debris and weeds prior to occupancy. Initiate those actions only after rodent populations have been effectively controlled.
- C. Maintain staging areas free of trash, garbage, weeds and debris. Provide and enforce proper use of refuse containers to ensure that rodents and other pests are not harbored or attracted.
- D. Dispose of all garbage or trash associated with food in refuse containers with tight-fitting lids. Have refuse containers emptied twice weekly, or more frequently if necessary to maintain sanitation.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

- A. Notify Engineer when necessary measurements must be taken. Do not proceed until measurements have been taken.

4.2 SCHEDULE OF PAYMENT ITEMS

Bid Item 6: Rodent Control

- a. Payment: Lump Sum price as stated in the Proposal.
- b. Measurement: Paid in proportion to percentage of Work completed at time of requisition.
- c. The lump sum price for this item shall constitute full compensation for all activities, materials, labor, tools, equipment required to accomplish the control of rodent population during the construction of this project within the limits specified, and all other work incidental to rodent control. A payment in the amount of 25% of the price bid for this item shall be made after the preconstruction survey has been completed, the necessary steps for the duration of the project have been initiated and the Rodent Control Plan for public right of way and private property work has been submitted. The remaining 75% shall be paid on a monthly basis for maintenance of the rodent control measures as approved by the Engineer.

END OF SECTION

RODENT CONTROL