# PROJECT MANUAL

for the

# HAMMOND STREET PHASE II UTILITY UPGRADES PROJECT

BETWEEN OHIO AND STATE STREETS

**CITY OF BANGOR, MAINE**

*Engineering Department*

July, 2016

STATE OF MAINE
AMANDA E. SOUCIER
No. 12500
LICENSED
PROFESSIONAL ENGINEER

9-23-2016


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# A. NOTICE TO CONTRACTORS

## SECTION A

## NOTICE TO CONTRACTORS

Bids are requested for the

# HAMMOND STREET UTILITY UPGRADES PROJECT PHASE II

The project includes installing new sewer main, new storm drain, new catch basins and sanitary manholes, service laterals, new water main, hydrants, and services, and new electrical conduit along approximately 1,000 linear feet on Hammond Street and surrounding streets, and all appurtenances, along with removing and resetting curbing, bricks, trench paving, surface restoration, and other incidental work. This project also includes an alternate bid to install communication conduit for future use.

All work is to be completed by September 2, 2017.

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

**"HAMMOND STREET UTILITY UPGRADES PROJECT PHASE II"**

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

**2:00 PM, Wednesday, November 9, 2016.**

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

A **prebid meeting** will be held on Friday, October 21, 2016 at 11:00 a.m. at the City of Bangor's Council Chambers, 73 Harlow Street, Bangor, Maine.

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 one hundred **($100.00)** charge. If plans need to mailed, an additional fee of thirty-five **($35.00)** will be charged.

Special Provisions

The work under this project is funded by the Maine CWSRF fund and is subject to special provisions, including but not limited to, Davis Bacon wage rates. These have been included as Section F, "SRF Provisions", and Section G, "Standard General Conditions of the Construction

Contract". In accordance with the 2014 Consolidated Appropriations Act, all iron and steel materials used as part of this project must be manufactured in the United States.

Bid Bond

A certified check or bank draft payable to the Owner or a satisfactory Bid Bond executed by the Bidder and a Surety Company in the amount equal to five percent (5%) of the Bid shall be submitted with each bid. No bid may be withdrawn for at least 30 days after receipt of bids unless released by the Owner.

Nondiscrimination in Employment and Labor Standards

Bidders on this work will be required to comply with the President's Executive Order No. 11246 and amendments or supplements to that Order. The requirements for bidders and contractors under this Order are explained in the Information for Bidders.

Federal Requirements

The Contractor must comply with all the Safety and Health Regulations (CFR29 part 1926 and all subsequent amendments) as promulgated by the US Department of Labor on June 24, 1974, the Department of Labor Regulations relating to Copeland "Anti-Kickback Act (18 U.S.C. 874) as supplemented by 29 CFR part 3, Contract Work Hours and Safety Standards Act (40 U.S.C. 327-330) as supplemented by 29 CFR part 5, and Occupational Safety and Health Standards (OSHA) (29 CFR part 1910). The Contractor must comply with all applicable standards, orders, or requirements issued under Section 306 of the Clean Air Act (42 U.S.D. 1857(h)), Section 508 of the Clean Water Act (33 U.S.C. 1368), and Executive Order 11738. Contractors are urged to become familiar with the requirements of these regulations.

Disclaimer

Any awarded contract is expected to be funded, in part, by a State Revolving Loan and/or a State Grant. Neither the State of Maine nor any of its departments, agencies, or employees is or will be a party to this Agreement. The word "AGENCY" in the standard general conditions and the owner-contractor agreement refers to the Maine Department of Environmental Protection, if it is the sole funding agency. If the contract is funded by multiple agencies, then the word "AGENCY" refers to all of the funding agencies.

# B. INSTRUCTIONS TO BIDDERS

# INSTRUCTIONS TO BIDDERS FOR CONSTRUCTION CONTRACTS

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## INSTRUCTIONS TO BIDDERS

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## ARTICLE 1 – DEFINED TERMS

1.01 Terms used in these Instructions to Bidders have the meanings indicated in the General Conditions and Supplementary Conditions. Additional terms used in these Instructions to Bidders have the meanings indicated below. The following terms or, in the case of City, District, Engineer, or Contractor, the singular, masculine pronouns used in their place, shall have the following meanings within the context of this Contract:

A. *Issuing Office* – The office from which the Bidding Documents are to be issued and where the bidding procedures are to be administered.

B. *City* – The City of Bangor, Maine, acting through its duly authorized representatives.

C. *District* – The Bangor Water District, acting through its duly authorized representatives.

D. *Engineer* – The Bangor City Engineer or duly authorized representatives.

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

F. *Contract* – The Contract shall be deemed to include the Notice to Contractor, Instructions to Bidders, the Bid Form, the Agreement, the General Conditions of the Construction Contract, the Supplementary General Conditions, 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.

## ARTICLE 2 – COPIES OF BIDDING DOCUMENTS

2.01 Complete sets of the Bidding Documents in the number and for the deposit sum, if any, stated in the advertisement or invitation to bid may be obtained from the Issuing Office. The deposit is non-refundable.

2.02 Complete sets of Bidding Documents shall be used in preparing Bids; neither the City, District, nor Engineer assumes any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bidding Documents.

2.03 City, District, and Engineer, in making copies of Bidding Documents available on the above terms, do so only for the purpose of obtaining Bids for the Work and do not authorize or confer a license for any other use.


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## ARTICLE 3 – QUALIFICATIONS OF BIDDERS

3.01 To demonstrate Bidder's qualifications to perform the Work, within seven (7) days of City and District's request, Bidder shall submit written evidence such as financial data, previous experience, present commitments, and evidence of Bidder's authority to do business in the state of Maine.

A. The City or District 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 City or District all such information and data pertinent to this investigation as the City or District may request. The City or District reserves the right to reject any bid after evidence submitted or investigation of the bidder fails to satisfy the City or District 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.

3.02 Bidder is advised to carefully review those portions of the Bid Form requiring Bidder's representations and certifications.

## ARTICLE 4 – EXAMINATION OF BIDDING DOCUMENTS, OTHER RELATED DATA, AND SITE

4.01 *Subsurface and Physical Conditions*

A. The Supplementary Conditions identify:

1. Those reports known to City or District of explorations and tests of subsurface conditions at or contiguous to the Site.

2. Those drawings known to City or District of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities).

B. Copies of reports and drawings referenced in Paragraph 4.01.A will be made available by City or District to any Bidder on request. Those reports and drawings are not part of the Contract Documents, but the "technical data" contained therein upon which Bidder is entitled to rely as provided in Paragraph 4.02 of the General Conditions has been identified and established in Paragraph 4.02 of the Supplementary Conditions. Bidder is responsible for any interpretation or conclusion Bidder draws from any "technical data" or any other data, interpretations, opinions, or information contained in such reports or shown or indicated in such drawings.

4.02 *Underground Facilities*

A. Information and data shown or indicated in the Bidding Documents with respect to existing Underground Facilities at or contiguous to the Site is based upon information and data furnished to City, District, and Engineer by owners of such Underground Facilities, including City or District, or others.


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4.03 *Hazardous Environmental Condition*

A. The Supplementary Conditions identify any reports and drawings known to City or District relating to a Hazardous Environmental Condition identified at the Site.

B. Copies of reports and drawings referenced in Paragraph 4.03.A will be made available by City or District to any Bidder on request. Those reports and drawings are not part of the Contract Documents, but the "technical data" contained therein upon which Bidder is entitled to rely as provided in Paragraph 4.06 of the General Conditions has been identified and established in Paragraph 4.06 of the Supplementary Conditions. Bidder is responsible for any interpretation or conclusion Bidder draws from any "technical data" or any other data, interpretations, opinions, or information contained in such reports or shown or indicated in such drawings.

4.04 Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to subsurface conditions, other physical conditions, and Underground Facilities, and possible changes in the Bidding Documents due to differing or unanticipated subsurface or physical conditions appear in Paragraphs 4.02, 4.03, and 4.04 of the General Conditions. Provisions concerning responsibilities for the adequacy of data furnished to prospective Bidders with respect to a Hazardous Environmental Condition at the Site, if any, and possible changes in the Contract Documents due to any Hazardous Environmental Condition uncovered or revealed at the Site which was not shown or indicated in the Drawings or Specifications or identified in the Contract Documents to be within the scope of the Work, appear in Paragraph 4.06 of the General Conditions.

4.05 On request, City or District will provide Bidder access to the Site to conduct such examinations, investigations, explorations, tests, and studies as Bidder deems necessary for submission of a Bid. Bidder shall fill all holes and clean up and restore the Site to its former condition upon completion of such explorations, investigations, tests, and studies. Bidder shall comply with all applicable Laws and Regulations relative to excavation and utility locates.

4.06 A. Reference is made to Article 7 of the Supplementary Conditions for the identification of the general nature of other work that is to be performed at the Site by City, District, or others (such as utilities and other prime contractors) that relates to the Work contemplated by these Bidding Documents. On request, City or District will provide to each Bidder for examination access to or copies of contract documents (other than portions thereof related to price) for such other work.

B. Paragraph 6.13.C of the General Conditions indicates that if a City or District safety program exists, it will be noted in the Supplementary Conditions.

4.07 It is the responsibility of each Bidder before submitting a Bid to:

A. examine and thoroughly familiarize himself with the Bidding Documents, including the plans, specifications, any addenda which may have been issued thereto, and the other related data identified in the Bidding Documents;


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B. visit the Site and become familiar with and satisfy Bidder as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work;

C. become familiar with and satisfy Bidder as to all federal, state, and local Laws and Regulations that may affect cost, progress, and performance of the Work;

D. carefully study all: (1) reports of explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities) that have been identified in Paragraph 4.02 of the Supplementary Conditions as containing reliable "technical data," and (2) reports and drawings of Hazardous Environmental Conditions, if any, at the Site that have been identified in the Paragraph 4.06 of the Supplementary Conditions as containing reliable "technical data";

E. consider the information known to Bidder; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and the Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, including applying any specific means, methods, techniques, sequences, and procedures of construction expressly required by the Bidding Documents; and (3) Bidder's safety precautions and programs;

F. agree at the time of submitting its Bid that no further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of its Bid for performance of the Work at the price(s) bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents;

G. become aware of the general nature of the work to be performed by City or District and others at the Site that relates to the Work as indicated in the Bidding Documents;

H. promptly give Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder discovers in the Bidding Documents and confirm that the written resolution thereof by Engineer is acceptable to Bidder; and

I. Determine that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance of the Work.

J. 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.

4.08 The submission of a Bid will constitute an incontrovertible representation by Bidder that Bidder has complied with every requirement of this Article 4, that without exception the Bid is premised upon performing and furnishing the Work required by the Bidding Documents and applying any specific means, methods, techniques, sequences, and procedures of construction that may be shown or indicated or expressly required by the Bidding Documents, that Bidder has given Engineer written notice of all conflicts, errors, ambiguities, and discrepancies that Bidder has discovered in


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the Bidding Documents and the written resolutions thereof by Engineer are acceptable to Bidder, and that the Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performing and furnishing the Work.

## ARTICLE 5 – PRE-BID CONFERENCE

5.01 A pre-Bid conference will be held on October 21, 2016 at 11:00 a.m. at the City Hall Council Chambers. Representatives of City, District, and Engineer will be present to discuss the Project. Bidders are invited to attend and participate in the conference. Engineer will transmit to all prospective Bidders of record such Addenda as Engineer considers necessary in response to questions arising at the conference. Oral statements may not be relied upon and will not be binding or legally effective.

## ARTICLE 6 - SITE AND OTHER AREAS

6.01 The Site is identified in the Bidding Documents. Easements for permanent structures or permanent changes in existing facilities are to be obtained and paid for by City or District unless otherwise provided in the Bidding Documents. All additional lands and access thereto required for temporary construction facilities, construction equipment, or storage of materials and equipment to be incorporated in the Work are to be obtained and paid for by Contractor.

## ARTICLE 7 – INTERPRETATIONS AND ADDENDA

7.01 No interpretation of the meaning of the plans, specifications or other Bidding Documents will be made to any bidder orally. Every request for such interpretation must be in writing and must be received by close of business on October 27, 2016 by:

bids@bangormaine.gov
Subject Line: Hammond Street Utility Upgrades Phase II, Attn: John Theriault

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.

## ARTICLE 8 – BID SECURITY

8.01 A certified check or bank draft payable to the Cityor a satisfactory Bid Bond executed by the Bidder and a Surety Company meeting the requirements of Paragraphs 5.01 and 5.02 of the General Conditions in the amount equal to five percent (5%) of the Bid shall be submitted with each bid. Bid Bond C-430 included in the Bidding Documents is a satisfactory Bid Bond form. 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 City, District, and Contractor have executed the Contract. If the Contract has not been awarded within thirty (30) days of the bid opening, the surety


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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.

8.02 The Bid security of the Successful Bidder will be retained until such Bidder has executed the Contract Documents, furnished the required contract security and met the other conditions of the Notice of Award, whereupon the Bid security will be returned. If the Successful Bidder fails for any reason to execute and deliver the Contract Documents and furnish the required contract security within 15 days after the Notice of Award, the City or District may determine that the Bidder has abandoned the Contract, may annul the Notice of Award, the Bid security of that Bidder will be forfeited and will be retained by the City or District as liquidated damages, and the Contract may be awarded to another bidder. Such forfeiture shall be City or District's exclusive remedy if Bidder defaults. After the execution of the Contract and acceptance of the bond by the City or District, the surety accompanying the Successful Bidder's bid shall be returned. The Bid security of other Bidders whom City or District believes to have a reasonable chance of receiving the award may be retained by City or District until the earlier of seven days after the Effective Date of the Agreement or 31 days after the Bid opening, whereupon Bid security furnished by such Bidders will be returned.

## ARTICLE 9 – CONTRACT TIMES

9.01 The times for Substantial Completion and readiness for final payment are to be set forth by Bidder in the Bid and will be entered into the Agreement (or incorporated therein by reference to the specific language of the Bid). The Contractor shall complete all work to the satisfaction of the Engineer on or before **September 2, 2017,** subject only to such other provisions of this Contract as may apply. The times will be taken into consideration by City or District during the evaluation of Bids, and it will be necessary for the apparent Successful Bidder to satisfy City or District that it will be able to achieve Substantial Completion and be ready for final payment within the times designated in the Bid.

## ARTICLE 10 – LIQUIDATED DAMAGES

10.01 Provisions for liquidated damages, if any, are set forth in the Agreement. See also Article 8.02 herein.

## ARTICLE 11 – SUBSTITUTE AND "OR-EQUAL" ITEMS

11.01 The Contract, if awarded, will be on the basis of materials and equipment specified or described in the Bidding Documents without consideration of possible substitute or "or-equal" items. Whenever it is specified or described in the Bidding Documents that a substitute or "or-equal" item of material or equipment may be furnished or used by Contractor if acceptable to Engineer, application for such acceptance will not be considered by Engineer until after the Effective Date of the Agreement.

## ARTICLE 12 – SUBCONTRACTORS, SUPPLIERS AND OTHERS (ARTICLE DELETED)

## ARTICLE 13 – PREPARATION OF BID


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13.01 Bids must be submitted on the Bid Form included with the Bidding Documents.

13.02 All blanks on the Bid Form shall be completed in ink, in both words and figures, and shall be signed in ink. 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. In the case of optional alternatives the words "No Bid," "No Change," or "Not Applicable" may be entered.

13.03 A Bid by a corporation shall be executed in the corporate name by the president or a vice-president or other corporate officer accompanied by evidence of authority to sign. The corporate seal shall be affixed and attested by the secretary or an assistant secretary. The corporate address and state of incorporation shall be shown.

13.04 A Bid by a partnership shall be executed in the partnership name and signed by a partner (whose title must appear under the signature), accompanied by evidence of authority to sign. The official address of the partnership shall be shown.

13.05 A Bid by a limited liability company shall be executed in the name of the firm by a member and accompanied by evidence of authority to sign. The state of formation of the firm and the official address of the firm shall be shown.

13.06 A Bid by an individual shall show the Bidder's name and official address.

13.07 A Bid by a joint venture shall be executed by each joint venturer in the manner indicated on the Bid Form. The official address of the joint venture shall be shown.

13.08 All names shall be printed in ink below the signatures**.**

13.09 The Bid shall contain an acknowledgment of receipt of all Addenda, the numbers of which shall be filled in on the Bid Form.

13.10 Postal and e-mail addresses and telephone number for communications regarding the Bid shall be shown.

13.11 The Bid shall contain evidence of Bidder's authority and qualification to do business in the state where the Project is located, or Bidder shall covenant in writing to obtain such authority and qualification prior to award of the Contract and attach such covenant to the Bid. Bidder's state contractor license number, if any, shall also be shown on the Bid Form.

## ARTICLE 14 – BASIS OF BID; COMPARISON OF BIDS

14.01 *Lump Sum*

A. Bidders shall submit a Bid on a lump sum basis and for unit prices as set forth in the Bid Form.

A. Bidders shall submit a Bid on a lump sum basis for the base Bid and include a separate price for each alternate described in the Bidding Documents as provided for in the Bid Form. The price


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for each alternate will be the amount added to or deleted from the base Bid if City or District selects the alternate. In the comparison of Bids, alternates will be applied in the same order as listed in the Bid form.

14.02 *Unit Price*

A. Bidders shall submit a Bid on a unit price basis for each item of Work listed in the Bid schedule.

B. The total of all estimated prices will be the sum of the products of the estimated quantity of each item and the corresponding unit price. The final quantities and Contract Price will be determined in accordance with Paragraph 11.03 of the General Conditions.

C. Discrepancies between the multiplication of units of Work and unit prices will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum.

14.03 *Allowances*

A. For cash allowances the Bid price shall include such amounts as the Bidder deems proper for Contractor's overhead, costs, profit, and other expenses on account of cash allowances, if any, named in the Contract Documents, in accordance with Paragraph 11.02.B of the General Conditions.

14.04 *Completion Time Comparisons*

A. Bid prices will be compared after adjusting for differences in the time designated by Bidders for Substantial Completion. The adjusting amount will be determined at the rate set forth in the Contract Documents for liquidated damages for failing to achieve Substantial Completion for each day before or after the desired date appearing in Article 9 above.

## ARTICLE 15 – SUBMITTAL OF BID

15.01 With each copy of the Bidding Documents, a Bidder is furnished one separate unbound copy of the Bid Form, and, if required, the Bid Bond Form. The unbound copy of the Bid Form is to be completed and submitted with the Bid security and the following documents:

A. *[See BF-7.01 for a list of documents typically required to be submitted with the Bid.]*

15.02 A Bid shall be submitted no later than the date and time prescribed and at the place indicated in the advertisement or invitation to bid and shall be enclosed in a plainly marked sealed envelope marked "***HAMMOND STREET UTILITY UPGRADES PHASE II"*** shall contain the name and address of Bidder, and shall be accompanied by the Bid security and other required documents. If a Bid is sent by mail or other delivery system, the sealed envelope containing the Bid shall be enclosed in a separate package plainly marked on the outside with the notation "BID ENCLOSED." A mailed Bid shall be addressed to:

City Purchasing Agent


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## ARTICLE 16 – WITHDRAWAL OF BIDS

16.01 The City or District may consider informal any bid not in accordance with the provisions hereof and may waive any informality 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 bid may be withdrawn for at least 30 days after receipt of bids unless released by the City or District.

## ARTICLE 17 – OPENING OF BIDS

17.01 Bids shall be received in the office of the City Purchasing Agent on or before Wednesday, November 9, 2016, at 2:00 p.m., at which time all bids will be opened and read aloud. An abstract of the amounts of the base Bids and major alternates, if any, will be made available to Bidders after the opening of Bids.

## ARTICLE 18 – BIDS TO REMAIN SUBJECT TO ACCEPTANCE

18.01 All Bids will remain subject to acceptance for the period of time stated in the Bid Form, but City or District may, in its sole discretion, release any Bid and return the Bid security prior to the end of this period.

## ARTICLE 19 – EVALUATION OF BIDS AND AWARD OF CONTRACT

19.01 The City and District reserves the right to reject any or all Bids, including without limitation, nonconforming, nonresponsive, unbalanced, or conditional Bids. The City and District further reserves the right to reject the Bid of any Bidder whom it finds, after reasonable inquiry and evaluation, to not be responsible. The City and District may also reject the Bid of any Bidder if the City or District believes that it would not be in the best interest of the Project to make an award to that Bidder. The City and District also reserves the right to waive all informalities not involving price, time, or changes in the Work and to negotiate contract terms with the Successful Bidder.

19.02 More than one Bid for the same Work from an individual or entity under the same or different names will not be considered. Reasonable grounds for believing that any Bidder has an interest in more than one Bid for the Work may be cause for disqualification of that Bidder and the rejection of all Bids in which that Bidder has an interest.

19.03 In evaluating Bids, City and District will consider whether or not the Bids comply with the prescribed requirements, and such alternates, unit prices and other data, as may be requested in the Bid Form or prior to the Notice of Award.

19.04 In evaluating Bidders, City and District will consider the qualifications of Bidders and may


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consider the qualifications and experience of Subcontractors, Suppliers, and other individuals or entities proposed for those portions of the Work for which the identity of Subcontractors, Suppliers, and other individuals or entities must be submitted as provided in the Supplementary Conditions.

19.05 City or District may conduct such investigations as City and District deems necessary to establish the responsibility, qualifications, and financial ability of Bidders, proposed Subcontractors, Suppliers, individuals, or entities proposed for those portions of the Work in accordance with the Contract Documents.

19.06 The Contract will be awarded to the Contractor submitting the lowest bid. In the case where the Contractor submitting the low bid is found to not be properly qualified to carry out the work, then the Contract will be awarded to the lowest qualified bidder.

## ARTICLE 20 – CONTRACT SECURITY AND INSURANCE

20.01 Article 5 of the General Conditions, as may be modified by the Supplementary Conditions, sets forth City and District's requirements as to performance and payment bonds and insurance. When the Successful Bidder delivers the executed Agreement to City and District, it shall be accompanied by such bonds. 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 City and District, shall be authorized to do business in the state of Maine and shall be independent of the Contractor.

## ARTICLE 21 – SIGNING OF AGREEMENT

21.01 When the City and District issue a Notice of Award to the Successful Bidder, it shall be accompanied by the required number of unsigned counterparts of the Agreement along with the other Contract Documents which are identified in the Agreement as attached thereto. Within fifteen (15) days thereafter, Successful Bidder shall sign and deliver the required number of counterparts of the Agreement and attached documents to City and District. Within ten (10) days thereafter, City and District shall deliver one fully signed counterpart to Successful Bidder with a complete set of the Drawings with appropriate identification.

## ARTICLE 22 – SALES AND USE TAXES

22.01 The City of Bangor and the Bangor Water District are municipal corporations 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.

## ARTICLE 23 – RETAINAGE

23.01 Provisions concerning Contractor's rights to deposit securities in lieu of retainage are set forth in the Agreement.


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## ARTICLE 24 – OTHER REQUIREMENTS

24.01 Work Under City Engineer

All work under this project shall be under the direct supervision of the City Engineer and all decisions by the City Engineer pertaining to the new construction shall be final and binding. If initial benchmarks are requested by the Contractor, the engineering staff of the City of Bangor will establish two benchmarks at no cost to the Contractor; however, it shall be the responsibility of the Contractor to establish and maintain such additional layout as may be required to properly complete the work.

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 City and District 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 City or District 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 City and District.

24.02 Nondiscrimination in Employment and Labor Standards

Bidders on this work will be required to comply with the President's Executive Order No. 11246 and amendments or supplements to that Order. The requirements for bidders and contractors under this Order are explained in the Information for Bidders.

24.03 Federal Requirements

The Contractor must comply with all the Safety and Health Regulations (CFR29 part 1926 and all subsequent amendments) as promulgated by the US Department of Labor on June 24, 1974, the Department of Labor Regulations relating to Copeland "Anti-Kickback Act (18 U.S.C. 874) as supplemented by 29 CFR part 3, Contract Work Hours and Safety Standards Act (40 U.S.C. 327-330) as supplemented by 29 CFR part 5, and Occupational Safety and Health Standards (OSHA) (29 CFR part 1910). The Contractor must comply with all applicable standards, orders, or requirements issued under Section 306 of the Clean Air Act (42 U.S.D. 1857(h)), Section 508 of the Clean Water Act (33 U.S.C. 1368), and Executive Order 11738. Contractors are urged to become familiar with the requirements of these regulations.

24.04 Funding Requirements

Contractor shall comply with SRF Provisions as detailed in Section F, including, but not limited to, Davis Bacon Wage Rate Requirements, DBE Requirements, and American Iron and Steel Requirements.

24.05 Disclaimer

Any awarded contract is expected to be funded, in part, by a State Grant. Neither the State of Maine nor any of its departments, agencies, or employees is or will be a party to this Agreement.


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24.06 Suspension and Debarment

The Contractor must comply with Subpart B and Subpart C of 2 CFR Part 180 and Part 1532. By entering into this contract, the contractor certifies that neither the contractor's firm, nor any person or firm who has an interest in the contractor firm, is a Debarred or Suspended person or firm. Furthermore, by entering into this contract, the contractor shall certify that no part of this contract shall be subcontracted to a Debarred or Suspended person or firm. Contractors may access the federal government's Excluded Parties List System on the internet for verification of excluded parties.

24.07 Gratuities

If Owner finds after a notice and hearing that Contractor, or any of Contractor's agents or representatives, offered or gave gratuities (in the form of entertainment, gifts, or otherwise) to any official, employee, or agent of Owner or Agency in an attempt to secure this Contract or favorable treatment in awarding, amending, or making any determinations related to the performance of this Contract, Owner may, by written notice to Contractor, terminate this Contract. Owner may also pursue other rights and remedies that the law or this Contract provides. However, the existence of the facts on which Owner bases such findings shall be an issue and may be reviewed in proceedings under the dispute resolution provisions of this Contract. In the event this Contract is terminated as provided in above paragraph, Owner may pursue the same remedies against Contractor as it could pursue in the event of a breach of this Contract by Contractor. As a penalty, in addition to any other damages to which it may be entitled by law, Owner may pursue exemplary damages in an amount (as determined by Owner) which shall not be less than three nor more than ten times the costs Contractor incurs in providing any such gratuities to any such officer or employee.

24.08 Bid Protests

All protests arising from the Owner's procurement practices must be submitted to the Owner as soon as practical. The Owner will investigate the basis for the protest, seek the advice of legal counsel, document all meetings and actions, and attempt to resolve the protest promptly and equitably.


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# C. BID FORM AND BID BOND

# BID FORM
# FOR CONSTRUCTION CONTRACTS

Prepared by

**ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE**

and

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# BID FORM

# HAMMOND STREET UTILITY UPGRADES PHASE II

## BID DATE –2:00 P.M., WEDNESDAY, NOVEMBER 9, 2016


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## ARTICLE 1 – BID RECIPIENT

1.01 This Bid is submitted to:

City Purchasing Agent
**HAMMOND STREET UTILITY UPGRADES PHASE II**
73 Harlow Street
Bangor, Maine 04401

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

## ARTICLE 2 – BIDDER'S ACKNOWLEDGEMENTS

2.01 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 City or District 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 City or District, 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.

2.02 Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security. This Bid will remain subject to acceptance for 30 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of the City or District.

## ARTICLE 3 – BIDDER'S REPRESENTATIONS

3.01 In submitting this Bid, Bidder represents that:

A. Bidder has examined and carefully studied the Bidding Documents, other related data identified in the Bidding Documents, and the following Addenda, receipt of which is hereby acknowledged by Contractor's signature:

| Addendum No. | Addendum Date | Contractor's Signature |
|---|---|---|
| | | |
| | | |
| | | |

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


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B. Bidder has visited the Site and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

C. Bidder is familiar with and is satisfied as to all Laws and Regulations that may affect cost, progress, and performance of the Work.

D. Bidder has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities) that have been identified in SC-4.02 as containing reliable "technical data," and (2) reports and drawings of Hazardous Environmental Conditions, if any, at the Site that have been identified in SC-4.06 as containing reliable "technical data."

E. Bidder has considered the information known to Bidder; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and the Site-related reports and drawings identified in the Bidding Documents, with respect to the effect of such information, observations, and documents on (1) the cost, progress, and performance of the Work; (2) the means, methods, techniques, sequences, and procedures of construction to be employed by Bidder, including applying the specific means, methods, techniques, sequences, and procedures of construction expressly required by the Bidding Documents; and (3) Bidder's safety precautions and programs.

F. Based on the information and observations referred to in Paragraph 3.01.E above, Bidder does not consider that further examinations, investigations, explorations, tests, studies, or data are necessary for the determination of this Bid for performance of the Work at the price(s) bid and within the times required, and in accordance with the other terms and conditions of the Bidding Documents.

G. Bidder is aware of the general nature of work to be performed by City and District and others at the Site that relates to the Work as indicated in the Bidding Documents.

H. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and the written resolution thereof by Engineer is acceptable to Bidder.

1. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for the performance of the Work for which this Bid is submitted.

## ARTICLE 4 – BIDDER'S CERTIFICATION

4.01 Bidder certifies that:

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


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

C. Bidder has not solicited or induced any individual or entity to refrain from bidding; and

D. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 4.01.D:

1. "corrupt practice" means the offering, giving, receiving, or soliciting of any thing of value likely to influence the action of a public official in the bidding process;

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

3. "collusive practice" means a scheme or arrangement between two or more Bidders, with or without the knowledge of City or District, a purpose of which is to establish bid prices at artificial, non-competitive levels; and

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

## ARTICLE 5 – BASIS OF AWARD

5.01 The Contract shall be awarded to the Lowest Responsive Bidder. The City reserves the right to reject any or all bids and to waive all irregularities in bidding.

## ARTICLE 6 – BASIS OF BID

6.01 Bidder will complete the Work in accordance with the Contract Documents for the following price(s):


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To the City of Bangor, Maine, herein called the City, and the Bangor Water District, herein called the District, acting through its City Manager for the construction of the **HAMMOND STREET UTILITY UPGRADES PHASE II,** together with all related work specified in the specifications, and any other work necessary or incidental thereto.

**I. BASE BID**

| Item No. | Estimated Quantity | Description, Unit or Lump Sum Price Bid In Both Words and Figures | Total Price In Figures |
|---|---|---|---|
| 1. | **1**<br>LS | Traffic Control<br>the Lump Sum Price of<br><br>_____Dollars<br><br>per lump sum ($_____)/LS | **$_____** |
| 2. | **6000**<br>FHR | Flagging Hour<br>Unit Price per Flagger per Hour<br><br>_____Dollars<br><br>per flagger per hour ($_____)/FHR | **$_____** |
| 3. | **1**<br>LS | Mobilization (not to exceed 3% of total project bid)<br>the Lump Sum Price of<br><br>_____Dollars<br><br>per lump sum ($_____)/LS | **$_____** |
| 4. | **100**<br>CY | Rock Removal*<br>Unit Price per cubic yard of<br><br>_____Dollars<br><br>per cubic yard ($_____)/CY | **$_____** |
| 5. | **10**<br>EA | Test Pits<br>Unit Price per each of<br><br>_____Dollars<br><br>per each ($_____)/EA | **$_____** |

| Item | Estimated | Description, Unit or Lump Sum Price Bid | Total Price |
|---|---|---|---|


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| No. | Quantity | In Both Words and Figures | In Figures |
|---|---|---|---|
| 6. | **1**<br>LS | Rodent Control<br>the Lump Sum Price of<br><br>_____Dollars<br><br>per lump sum ($_____)/LS | **$_____** |
| 7. | **1**<br>LS | Maintenance of Sewer Flows<br>the Lump Sum Price of<br><br>_____Dollars<br><br>per lump sum ($_____)/LS | **$_____** |
| 8. | **1**<br>LS | Remove and Install 16" Tide Valve<br>the Lump Sum Price of<br><br>_____Dollars<br><br>per lump sum ($_____)/LS | **$_____** |
| 9. | **30**<br>LF | Clean and CCTV 15" x 12" Brick Sewer<br>Unit Price per linear foot of<br><br>_____Dollars<br><br>per linear foot ($_____)/LF | **$_____** |
| 10. | **300**<br>LF | Clean and CCTV 30" x 24" Brick Sewer<br>Unit Price per linear foot of<br><br>_____Dollars<br><br>per linear foot ($_____)/LF | **$_____** |
| 11. | **60**<br>LF | Clean and CCTV 48" x 36" Stone Sewer<br>Unit Price per linear foot of<br><br>_____Dollars<br><br>per linear foot ($_____)/LF | **$_____** |

| Item | Estimated | Description, Unit or Lump Sum Price Bid | Total Price |
|---|---|---|---|


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| No. | Quantity | In Both Words and Figures | In Figures |
|---|---|---|---|
| 12. | **2**<br>EA | Spot Repair of Sewer Main prior to Trenchless Rehab<br>Unit Price per each of<br><br>_____Dollars<br><br>per each ($_____)/EA | **$_____** |
| 13. | **30**<br>LF | Trenchless Rehab 15" x 12" Brick Sewer<br>Unit Price per linear foot of<br><br>_____Dollars<br><br>per linear foot ($_____)/LF | **$_____** |
| 14. | **300**<br>LF | Trenchless Rehab 30" x 24" Brick Sewer<br>Unit Price per linear foot of<br><br>_____Dollars<br><br>per linear foot ($_____)/LF | **$_____** |
| 15. | **60**<br>LF | Trenchless Rehab 48" x 36" Stone Sewer<br>Unit Price per linear foot of<br><br>_____Dollars<br><br>per linear foot ($_____)/LF | **$_____** |
| 16. | **5**<br>EA | Reinstate Lateral 6" or Less<br>Unit Price per each of<br><br>_____Dollars<br><br>per each ($_____)/EA | **$_____** |
| 17. | **100**<br>LF | Trenchless Rehab Lateral 6" or Less<br>Unit Price per linear foot of<br><br>_____Dollars<br><br>per linear foot ($_____)/LF | **$_____** |

| Item | Estimated | Description, Unit or Lump Sum Price Bid | Total Price |
|---|---|---|---|


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| No. | Quantity | In Both Words and Figures | In Figures |
|---|---|---|---|
| 18. | **5**<br>EA | Reinstate Lateral Greater than 6”<br>Unit Price per each of<br><br>_____Dollars<br><br>per each ($_____)/EA | **$_____** |
| 19. | **100**<br>LF | Trenchless Rehab Lateral Greater than 6”<br>Unit Price per linear foot of<br><br>_____Dollars<br><br>per linear foot ($_____)/LF | **$_____** |
| 20. | **50**<br>LF | 8” Ø PVC Storm Drain or Sewer Main<br>Unit Price per linear foot of<br><br>_____Dollars<br><br>per linear foot ($_____)/LF | **$_____** |
| 21. | **400**<br>LF | 12” Ø PVC Storm Drain or Sewer Main<br>Unit Price per linear foot of<br><br>_____Dollars<br><br>per linear foot ($_____)/LF | **$_____** |
| 22. | **120**<br>LF | 15” Ø PVC Storm Drain or Sewer Main<br>Unit Price per linear foot of<br><br>_____Dollars<br><br>per linear foot ($_____)/LF | **$_____** |
| 23. | **300**<br>LF | 24” Ø PVC Sewer Main<br>Unit Price per linear foot of<br><br>_____Dollars<br><br>per linear foot ($_____)/LF | **$_____** |

| Item | Estimated | Description, Unit or Lump Sum Price Bid | Total Price |
|---|---|---|---|


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| No. | Quantity | In Both Words and Figures | In Figures |
|---|---|---|---|
| 24. | **370**<br>LF | 27" Ø PVC Sewer Main<br>Unit Price per linear foot of<br><br>_____Dollars<br><br>per linear foot ($_____)/LF | **$_____** |
| 25. | **350**<br>LF | 6" Ø Sewer Lateral<br>Unit Price per linear foot of<br><br>_____Dollars<br><br>per linear foot ($_____)/LF | **$_____** |
| 26. | **70**<br>VF | 3' Ø Standard Catch Basin with Trap<br>Unit Price per vertical foot of<br><br>_____Dollars<br><br>per vertical foot ($_____)/VF | **$_____** |
| 27. | **90**<br>VF | 4' Ø Standard Catch Basin with Trap<br>Unit Price per vertical foot of<br><br>_____Dollars<br><br>per vertical foot ($_____)/VF | **$_____** |
| 28. | **40**<br>VF | 4' Ø Standard Sanitary Sewer Manhole<br>Unit Price per vertical foot of<br><br>_____Dollars<br><br>per vertical foot ($_____)/VF | **$_____** |
| 29. | **11**<br>VF | 6' Ø Standard Sanitary Sewer Manhole<br>Unit Price per vertical foot of<br><br>_____Dollars<br><br>per vertical foot ($_____)/VF | **$_____** |

| Item | Estimated | Description, Unit or Lump Sum Price Bid | Total Price |
|---|---|---|---|


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| No. | Quantity | In Both Words and Figures | In Figures |
|---|---|---|---|
| 30. | **25**<br>VF | 8' Ø Standard Sanitary Sewer Manhole<br>Unit Price per vertical foot of<br><br>_____Dollars<br><br>per vertical foot ($_____)/VF | **$_____** |
| 31. | **24**<br>VF | 8' Ø Doghouse Sanitary Sewer Manhole with Boltdown Cover<br>Unit Price per vertical foot of<br><br>_____Dollars<br><br>per vertical foot ($_____)/VF | **$_____** |
| 32. | **12**<br>VF | 10' Ø Doghouse Sanitary Sewer Manhole with Boltdown Cover<br>Unit Price per vertical foot of<br><br>_____Dollars<br><br>per vertical foot ($_____)/VF | **$_____** |
| 33. | **500**<br>SF | 2" Rigid Insulation<br>Unit Price per square foot of<br><br>_____Dollars<br><br>per square foot ($_____)/SF | **$_____** |
| 34. | **1**<br>LS | Abandon Existing Main in Travel Way with Flowable Fill<br>The lump sum price of<br>_____Dollars<br><br>per lump sum ($_____)/LS | **$_____** |
| 35. | **3**<br>EA | Abandon Existing Structure in Place<br>Unit Price per each of<br><br>_____Dollars<br><br>per each ($_____)/EA | **$_____** |

| Item | Estimated | Description, Unit or Lump Sum Price Bid | Total Price |
|---|---|---|---|


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| No. | Quantity | In Both Words and Figures | In Figures |
|---|---|---|---|
| 36. | **700**<br>LF | 2" Schedule 40 PVC Electrical Conduit<br>Unit Price per linear foot of<br><br>_____Dollars<br><br>per linear foot ($_____)/LF | **$_____** |
| 37. | **700**<br>LF | 2" Schedule 80 PVC Electrical Conduit<br>Unit Price per linear foot of<br><br>_____Dollars<br><br>per linear foot ($_____)/LF | **$_____** |
| 38. | **4**<br>EA | Installation of City Provided Handhole<br>Unit Price per each of<br><br>_____Dollars<br><br>per each ($_____)/EA | **$_____** |
| 39. | **2**<br>EA | Remove Abandoned Light Posts<br>Unit Price per each of<br><br>_____Dollars<br><br>per each ($_____)/EA | **$_____** |
| 40. | **1**<br>LS | Connect to Exist. Feed at Exist. Electrical Cabinet<br>The lump sum price of<br>_____Dollars<br><br>per lump sum ($_____)/LS | **$_____** |
| 41. | **515**<br>LF | 16" CLDI Water Main<br>Unit Price per linear foot of<br><br>_____Dollars<br><br>per linear foot ($_____)/LF | **$_____** |

| Item | Estimated | Description, Unit or Lump Sum Price Bid | Total Price |
|---|---|---|---|


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| No. | Quantity | In Both Words and Figures | In Figures |
|---|---|---|---|
| 42. | **640**<br>LF | 12" CLDI Water Main<br>Unit Price per linear foot of<br><br>_____Dollars<br><br>per linear foot ($_____)/LF | **$_____** |
| 43. | **50**<br>LF | 8" CLDI Water Main<br>Unit Price per linear foot of<br><br>_____Dollars<br><br>per linear foot ($_____)/LF | **$_____** |
| 44. | **100**<br>LF | 6" CLDI Water Main<br>Unit Price per linear foot of<br><br>_____Dollars<br><br>per linear foot ($_____)/LF | **$_____** |
| 45. | **30**<br>LF | 4" CLDI Water Main<br>Unit Price per linear foot of<br><br>_____Dollars<br><br>per linear foot ($_____)/LF | **$_____** |
| 46. | **5**<br>EA | 16" Butterfly Valve w/ Box<br>Unit Price per each of<br><br>_____Dollars<br><br>per each ($_____)/EA | **$_____** |
| 47. | **4**<br>EA | 12" Gate Valve w/ Box<br>Unit Price per each of<br><br>_____Dollars<br><br>per each ($_____)/EA | **$_____** |

| Item | Estimated | Description, Unit or Lump Sum Price Bid | Total Price |
|---|---|---|---|


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| No. | Quantity | In Both Words and Figures | In Figures |
|---|---|---|---|
| 48. | **4**<br>EA | 8" Gate Valve w/ Box<br>Unit Price per each of<br><br>_____Dollars<br><br>per each ($_____)/EA | **$_____** |
| 49. | **4**<br>EA | 6" Gate Valve w/ Box<br>Unit Price per each of<br><br>_____Dollars<br><br>per each ($_____)/EA | **$_____** |
| 50. | **2**<br>EA | 4" Gate Valve w/ Box<br>Unit Price per each of<br><br>_____Dollars<br><br>per each ($_____)/EA | **$_____** |
| 51. | **1**<br>EA | Hydrant Assembly New<br>Unit Price per each of<br><br>_____Dollars<br><br>per each ($_____)/EA | **$_____** |
| 52. | **1**<br>EA | 16-inch Cut & Plug<br>Unit Price per each of<br><br>_____Dollars<br><br>per each ($_____)/EA | **$_____** |
| 53. | **2**<br>EA | 12-inch Cut & Plug<br>Unit Price per each of<br><br>_____Dollars<br><br>per each ($_____)/EA | **$_____** |

| Item | Estimated | Description, Unit or Lump Sum Price Bid | Total Price |
|---|---|---|---|


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| No. | Quantity | In Both Words and Figures | In Figures |
|---|---|---|---|
| 54. | **1**<br>EA | 4-inch Temporary Cut & Plug<br>Unit Price per each of<br><br>_____Dollars<br><br>per each ($_____)/EA | **$_____** |
| 55. | **160**<br>LF | 1" Dia. Type K Copper<br>Unit Price per linear foot of<br><br>_____Dollars<br><br>per linear foot ($_____)/LF | **$_____** |
| 56. | **50**<br>LF | 1 ¼ " Dia. Type K Copper<br>Unit Price per linear foot of<br><br>_____Dollars<br><br>per linear foot ($_____)/LF | **$_____** |
| 57. | **55**<br>LF | 1 ½" Dia. Type K Copper<br>Unit Price per linear foot of<br><br>_____Dollars<br><br>per linear foot ($_____)/LF | **$_____** |
| 58. | **40**<br>LF | 2" Dia. Type K Copper<br>Unit Price per linear foot of<br><br>_____Dollars<br><br>per linear foot ($_____)/LF | **$_____** |
| 59. | **4**<br>EA | 1" Dia. Corporation<br>Unit Price per each of<br><br>_____Dollars<br><br>per each ($_____)/EA | **$_____** |

| Item | Estimated | Description, Unit or Lump Sum Price Bid | Total Price |
|---|---|---|---|


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| No. | Quantity | In Both Words and Figures | In Figures |
|---|---|---|---|
| 60. | **2**<br>EA | 1 ¼" Dia. Corporation<br>Unit Price per each of<br><br>_____Dollars<br><br>per each ($_____)/EA | **$_____** |
| 61. | **2**<br>EA | 1 ½" Dia. Corporation<br>Unit Price per each of<br><br>_____Dollars<br><br>per each ($_____)/EA | **$_____** |
| 62. | **1**<br>EA | 2" Dia. Corporation<br>Unit Price per each of<br><br>_____Dollars<br><br>per each ($_____)/EA | **$_____** |
| 63. | **4**<br>EA | 1" Dia. Curb Stop, Box, & Rod<br>Unit Price per each of<br><br>_____Dollars<br><br>per each ($_____)/EA | **$_____** |
| 64. | **2**<br>EA | 1 ¼" Dia. Curb Stop, Box, & Rod<br>Unit Price per each of<br><br>_____Dollars<br><br>per each ($_____)/EA | **$_____** |
| 65. | **2**<br>EA | 1 ½" Dia. Curb Stop, Box, & Rod<br>Unit Price per each of<br><br>_____Dollars<br><br>per each ($_____)/EA | **$_____** |

| Item | Estimated | Description, Unit or Lump Sum Price Bid | Total Price |
|---|---|---|---|


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| No. | Quantity | In Both Words and Figures | In Figures |
|---|---|---|---|
| 66. | **1**<br>EA | 2" Dia. Curb Stop, Box, & Rod<br>Unit Price per each of<br><br>_____Dollars<br><br>per each ($_____)/EA | **$_____** |
| 67. | **1**<br>LS | Temporary Water<br>the Lump Sum Price of<br><br>_____Dollars<br><br>per lump sum ($_____)/LS | **$_____** |
| 68. | **1000**<br>TON | H.M.A. Pavement<br>Unit price per TON of<br><br>_____Dollars<br><br>per TON ($_____)/TON | **$_____** |
| 69. | **400**<br>LF | Remove/Reset Exist. Granite Curb<br>Unit Price per linear foot of<br><br>_____Dollars<br><br>per linear foot ($_____)/LF | **$_____** |
| 70. | **1000**<br>SF | Remove/Reset Exist. Concrete Unit Pavers in Sidewalk or Crosswalk<br>Unit Price per square foot of<br><br>_____Dollars<br><br>per square foot ($_____)/SF | **$_____** |
| 71. | **1**<br>EA | Remove/Reset Exist. Tree Grate<br>Unit Price per each of<br><br>_____Dollars<br><br>per each ($_____)/EA | **$_____** |

| Item | Estimated | Description, Unit or Lump Sum Price Bid | Total Price |
|---|---|---|---|


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| No. | Quantity | In Both Words and Figures | In Figures |
|---|---|---|---|
| 72. | **100**<br>CY | Loam, Seed, and Mulch<br>Unit Price per cubic yard of<br><br>_____Dollars<br><br>per cubic yard ($_____)/CY | **$_____** |
| 73. | **1**<br>LS | Erosion and Sediment Control<br>the Lump Sum Price of<br><br>_____Dollars<br><br>per lump sum ($_____)/LS | **$_____** |

*Indicates indeterminate quantity for bidding purposes

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

TOTAL BASE BID (IN FIGURES):$ _____

TOTAL BASE BID (IN WORDS):_____

_____Dollars

and_____Cents

## II. ALTERNATE BID ITEMS

| Item No. | Estimated Quantity | Description, Unit or Lump Sum Price Bid In Both Words and Figures | Total Price In Figures |
|---|---|---|---|
| Alt 1. | **3**<br>EA | Modify Installed Doghouse Structure to Accept New Pipe<br>Unit Price per each of<br><br>_____Dollars<br><br>per each ($_____)/EA | **$_____** |
| Alt 2. | **30**<br>LF | Open Cut 15" PVC Sewer in Proposed Trenchless Rehab Area Approx. Sta. 2+58 to 2+76 LT.<br>Unit Price per linear foot of<br><br>_____Dollars<br><br>per linear foot ($_____)/LF | **$_____** |


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| Item No. | Estimated Quantity | Description, Unit or Lump Sum Price Bid In Both Words and Figures | Total Price In Figures |
|---|---|---|---|
| Alt 3. | **300** LF | Open Cut 27" PVC Sewer in Proposed Trenchless Rehab Area Approx. Sta. 0+59 to Sta. 3+63<br>Unit Price per linear foot of<br>_____Dollars<br>per linear foot ($_____)/LF | **$_____** |
| Alt 4. | **60** LF | Open Cut 60 x 38 Elliptical RCP Sewer in Proposed Trenchless Rehab Area Sta. 0+00 to Sta. 0+59<br>Unit Price per linear foot of<br>_____Dollars<br>per linear foot ($_____)/LF | **$_____** |
| Alt 5. | **140** TON | H.M.A. Pavement<br>Unit price per TON of<br>_____Dollars<br>per TON ($_____)/TON | **$_____** |
| Alt 6. | **1000** LF | 4" Schedule 80 PVC Electrical Conduit<br>Unit Price per linear foot of<br>_____Dollars<br>per linear foot ($_____)/LF | **$_____** |
| Alt 7. | **10** EA | Handhole<br>Unit Price per each of<br>_____Dollars<br>per each ($_____)/EA | **$_____** |

TOTAL ALTERNATE BID (IN FIGURES): $ _____

TOTAL ALTERNATE BID (IN WORDS):_____

_____ Dollars

and_____Cents


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**TOTAL PROJECT BID (BASE BID PLUS ALTERNATE BID)**

**_____Dollars**
**and _____Cents**

**($_____)**

Unit Prices have been computed in accordance with Paragraph 11.03.B of the General Conditions.

Bidder acknowledges that any estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids, and final payment for all unit price Bid items will be based on actual quantities, determined as provided in the Contract Documents.

## ARTICLE 7 – TIME OF COMPLETION

7.01 Bidder agrees that the Work will be substantially complete on or before **September 2, 2017,** and will be completed and ready for final payment in accordance with Paragraph 14.07 of the General Conditions on or before September 2, 2017.

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

## ARTICLE 8 – ATTACHMENTS TO THIS BID

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

A. Required Bid security in the form of a Bid Bond equal to five percent (5%) of the Bid;

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

## ARTICLE 9 – DEFINED TERMS

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


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## ARTICLE 10 – BID SUBMITTAL

9.01 This Bid is submitted by:

If Bidder is:

An Individual

Name (typed or printed): _____

By: _____
(Individual's signature)

Doing business as: _____

A Partnership

Partnership Name: _____

By: _____
(Signature of general partner -- attach evidence of authority to sign)

Name (typed or printed): _____

A Corporation

Corporation Name: _____ (SEAL)

State of Incorporation: _____
Type (General Business, Professional, Service, Limited Liability):_____

By: _____
(Signature -- attach evidence of authority to sign)

Name (typed or printed): _____

Title: _____
(CORPORATE SEAL)

Attest _____

Date of Qualification to do business in *Maine* is ____/____/____.


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A Joint Venture

Name of Joint Venture: _____

First Joint Venturer Name: _____ (SEAL)

By: _____
(Signature of first joint venture partner -- attach evidence of authority to sign)

Name (typed or printed): _____

Title: _____

Second Joint Venturer Name: _____(SEAL)

By: _____
(Signature of second joint venture partner -- attach evidence of authority to sign)

Name (typed or printed): _____

Title: _____

(Each joint venturer must sign. The manner of signing for each individual, partnership, and corporation that is a party to the joint venture should be in the manner indicated above.)

Bidder's Business Address _____

_____

Phone No. _____ Fax No. _____

E-mail _____ _____

SUBMITTED on _____, 20____.

State Contractor License No. _____. *[If applicable]*


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If this Bid is accepted by the City and District and the Bidder 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 City and District, within 10 days (not including Sundays or legal holidays) to an address given herewith that the Contract is ready for signature, then the City and District 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 City and District.


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# BID BOND

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

---

BIDDER *(Name and Address)*:

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

CITY *(Name and Address)*:
The City of Bangor
73 Harlow Street
Bangor, ME 04401
DISTRICT *(Name and Address)*:
The Bangor Water District
P.O. Box 1129
Bangor, ME 04402-1129
BID
Bid Due Date: November 9, 2016
Description *(Project Name and Include Location)*:
Hammond Street Utility Upgrades Phase II, 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** |
|---|---|
| _____ (Seal) | _____ (Seal) |
| Bidder's Name and Corporate Seal | Surety's Name and Corporate Seal |
| By: _____ | By: _____ |
| Signature | Signature (Attach Power of Attorney) |
| _____ | _____ |
| Print Name | Print Name |
| _____ | _____ |
| Title | Title |
| Attest: _____ | Attest: _____ |
| Signature | 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 City and District 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 City and District'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 City and District) 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 City and District accepts Bidder's Bid and Bidder delivers within the time required by the Bidding Documents (or any extension thereof agreed to in writing by City and District) 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 City and District, or

3.3 City and District fail 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 City and District, 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 City, District, 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

# FORM OF AGREEMENT
# BETWEEN CITY, DISTRICT, AND CONTRACTOR FOR CONSTRUCTION CONTRACT (STIPULATED PRICE)
# FUNDING AGENCY EDITION

*Prepared by*

**ENGINEERS JOINT CONTRACT DOCUMENTS COMMITTEE**

and

Issued and Published Jointly By

PROFESSIONAL ENGINEERS IN PRIVATE PRACTICE
*a practice division of the*
NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS

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AMERICAN SOCIETY OF CIVIL ENGINEERS

This document has been approved and endorsed by

The Associated General Contractors of America

and the

Construction Specification Institute

This document has been accepted by
United States Department of Agriculture
Rural Utilities Service, Water and Waste Programs

This Suggested Form of Agreement has been prepared for use with the Standard General Conditions of the Construction Contract, Funding Agency Edition (No. C-710, 2002 Edition). Their provisions are interrelated, and a change in one may necessitate a change in the other. The language contained in the Suggested Instructions to Bidders (No. C-200, 2002 Edition) is also carefully interrelated with the language of this Agreement. Their usage is discussed in the Commentary on EJCDC Construction Documents. See also Guide to the Preparation of Supplementary Conditions (No. C-800, 2002 Edition).


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# FORM OF AGREEMENT
# BETWEEN CITY, DISTRICT AND CONTRACTOR
# FOR CONSTRUCTION CONTRACT (STIPULATED PRICE)
# FUNDING AGENCY EDITION

THIS AGREEMENT is by and between City of Bangor ("City") and ("District") The Bangor Water District and

("Contractor").

City, District and Contractor, in consideration of the mutual covenants hereinafter set forth, agree as follows:

**ARTICLE 1 – WORK**

1.01 Contractor shall complete all Work as specified or indicated in the Contract Documents.

**ARTICLE 2 – THE PROJECT**

2.01 The Project for which the Work under the Contract Documents may be the whole or only a part is generally described as follows:

Hammond Street Utility Upgrades Phase II

**ARTICLE 3 – ENGINEER**

3.01 The Project has been designed by the City of Bangor and the Bangor Water District. All work is to be performed under the City Engineer who will act as City or District's representative, assume all duties and responsibilities, and have the rights and authority assigned to Engineer in the Contract Documents in connection with the completion of the Work in accordance with the Contract Documents.

**ARTICLE 4 – CONTRACT TIMES**

4.01 *Time of the Essence*

A. All time limits for Milestones, if any, Substantial Completion, and completion and readiness for final payment as stated in the Contract Documents are of the essence of the Contract.

4.02 *Days to Achieve Substantial Completion and Final Payment*

The Work will be substantially completed on or before September 2, 2017.

4.03 *Liquidated Damages*

A. Contractor, City, and District recognize that time is of the essence of this Agreement and that City and District will suffer financial loss if the Work is not completed within the times specified in Paragraph 4.02 above, plus any extensions thereof allowed in accordance with Article 12 of the General Conditions. The parties also recognize the delays, expense, and difficulties involved in proving in a legal or arbitration proceeding the actual loss suffered by City or District if the Work is not completed on time. Accordingly, instead of requiring any such proof, City, District, and Contractor agree that as liquidated damages for delay (but not as a penalty), Contractor shall pay to


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the City or District $1,500 for each day that expires after the time specified in Paragraph 4.02 for Substantial Completion until the Work is substantially complete. After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Time or any proper extension thereof granted by City or District, Contractor shall pay to the City or the District as appropriate $1,500 for each day that expires after the time specified in Paragraph 4.02 for completion and readiness for final payment until the Work is completed and ready for final payment.

## ARTICLE 5 – CONTRACT PRICE

5.01 City and District shall pay Contractor for completion of the Work in accordance with the Contract Documents an amount in current funds equal to the sum of the amounts determined pursuant to Paragraphs 5.01.A, 5.01.B, and 5.01.C below:

A. For all Unit Price and Lump Sum work, an amount equal to the sum of the established unit price for each separately identified item of Unit Price Work times the estimated quantity of that item as indicated in this paragraph 5.01.B:

As provided in Paragraph 11.03 of the General Conditions, estimated quantities are not guaranteed, and determinations of actual quantities and classifications are to be made by Engineer as provided in Paragraph 9.07 of the General Conditions. Unit prices have been computed as provided in Paragraph 11.03 of the General Conditions.

UNIT PRICE WORK

| Item No. | Description | Unit | Estimated Quantity | Unit Price | Total Estimated Price |
|---|---|---|---|---|---|

ESTIMATED TOTAL OF ALL UNIT PRICE WORK $ _____ $(_____)
(use words) (figure)

B. For all Work, at the prices stated in Contractor's Bid, attached hereto as an exhibit.

## ARTICLE 6 – PAYMENT PROCEDURES

6.01 *Submittal and Processing of Payments*

A. Contractor shall submit Applications for Payment in accordance with Article 14 of the General Conditions. Applications for Payment will be processed by Engineer as provided in the General Conditions.


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6.02 *Progress Payments; Retainage*

A. City and District shall make progress payments on account of the Contract Price on the basis of Contractor's Applications for Payment each month during performance of the Work as provided in Paragraphs 6.02.A.1 and 6.02.A.2 below. All such payments will be measured by the schedule of values established as provided in Paragraph 2.07.A of the General Conditions (and in the case of Unit Price Work based on the number of units completed) or, in the event there is no schedule of values, as provided in the General Requirements:

1. Prior to Substantial Completion, progress payments will be made in an amount equal to the percentage indicated below but, in each case, less the aggregate of payments previously made and less such amounts as Engineer may determine or City or District may withhold, including but not limited to liquidated damages, in accordance with Paragraph 14.02 of the General Conditions:

   a. 95 percent of Work completed (with the balance being retainage); and

   b. 95 percent of cost of materials and equipment not incorporated in the Work (with the balance being retainage).

2. Upon Substantial Completion, City and District shall pay an amount sufficient to increase total payments to Contractor to ~~95~~ 98 percent of the Work completed, less such amounts as Engineer shall determine in accordance with Paragraph 14.02.B.5 of the General Conditions and CWSRF Supplementary Conditions. Two percent (2%) of the total Work completed shall be retained for a period of 1 year from the date of substantial completion.

6.03 *Final Payment*

A. Upon final completion and acceptance with the Work ~~receipt of the final Application for Payment accompanied by Engineer's recommendation of payment~~ in accordance with Paragraph 14.07 of the General Conditions and the CWSRF Supplementary Conditions, City and District shall pay the remainder of the Contract Price as recommended by the Engineer ~~Contractor~~ as provided in said Paragraph 14.07. ~~of the General Conditions the remainder of the Contract Price as recommended by Engineer as provided in said Paragraph 14.07, less any sum Owner is entitled to set off against Engineer's recommendation, including but not limited to liquidated damages.~~

**ARTICLE 7 – INTEREST**

7.01 All moneys not paid when due as provided in Article 14 of the General Conditions shall bear interest at the maximum legal rate.

**ARTICLE 8 – CONTRACTOR'S REPRESENTATIONS**

8.01 In order to induce City and District to enter into this Agreement Contractor makes the following representations:

A. Contractor has examined and carefully studied the Contract Documents and the other related data identified in the Bidding Documents.

B. Contractor has visited the Site and become familiar with and is satisfied as to the general, local, and Site conditions that may affect cost, progress, and performance of the Work.

C. Contractor is familiar with and is satisfied as to all federal, state, and local Laws and Regulations that may affect cost, progress, and performance of the Work.

D. Contractor has carefully studied all: (1) reports of explorations and tests of subsurface conditions at or contiguous to the Site and all drawings of physical conditions in or relating to existing surface or subsurface structures at or contiguous to the Site (except Underground Facilities) which have been identified in the General Conditions and


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(2) reports and drawings of a Hazardous Environmental Condition, if any, at the Site which has been identified in the General Conditions.

E. Contractor has obtained and carefully studied (or assumes responsibility for doing so) all additional or supplementary examinations, investigations, explorations, tests, studies, and data concerning conditions (surface, subsurface, and Underground Facilities) at or contiguous to the Site which may affect cost, progress, or performance of the Work or which relate to any aspect of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, including any specific means, methods, techniques, sequences, and procedures of construction expressly required by the Bidding Documents, and safety precautions and programs incident thereto.

F. Contractor does not consider that any further examinations, investigations, explorations, tests, studies, or data are necessary for the performance of the Work at the Contract Price, within the Contract Times, and in accordance with the other terms and conditions of the Contract Documents.

G. Contractor is aware of the general nature of work to be performed by City and District and others at the Site that relates to the Work as indicated in the Contract Documents.

H. Contractor has correlated the information known to Contractor, information and observations obtained from visits to the Site, reports and drawings identified in the Contract Documents, and all additional examinations, investigations, explorations, tests, studies, and data with the Contract Documents.

I. Contractor has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.

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

## ARTICLE 9 – CONTRACT DOCUMENTS

9.01 *Contents*

A. The Contract Documents consist of the following:

1. This Agreement (pages 1 to 16, inclusive).

2. Performance bond

3. Payment bond

4. Notice to Contractor

5. General Conditions

6. Supplementary Conditions

7. Specifications as listed in the table of contents of the Project Manual.

8. Drawings consisting of 11 sheets with each sheet bearing the following general title: Hammond Street Utility Upgrades Phase II.

9. Addenda (numbers _____ to _____, inclusive).

10. Information for Bidders


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11. Exhibits to this Agreement (enumerated as follows):

    a. Contractor's Bid

    b. Documentation submitted by Contractor prior to Notice of Award

12. The following which may be delivered or issued on or after the Effective Date of the Agreement and are not attached hereto:

    a. Notice to Proceed

    b. Work Change Directives.

    c. Change Order(s).

B. The documents listed in Paragraph 9.01.A are attached to this Agreement (except as expressly noted otherwise above).

C. There are no Contract Documents other than those listed above in this Article 9.

D. The Contract Documents may only be amended, modified, or supplemented as provided in Paragraph 3.04 of the General Conditions.

**ARTICLE 10 – MISCELLANEOUS**

10.01 *Terms*

A. Terms used in this Agreement will have the meanings stated in the General Conditions and the Supplementary Conditions.

10.02 *Assignment of Contract*

A. No assignment by a party hereto of any rights under or interests in the Contract will be binding on another party hereto without the written consent of the party sought to be bound; and, specifically but without limitation, moneys that may become due and moneys that are due may not be assigned without such consent (except to the extent that the effect of this restriction may be limited by law), and unless specifically stated to the contrary in any written consent to an assignment, no assignment will release or discharge the assignor from any duty or responsibility under the Contract Documents.

10.03 *Successors and Assigns*

A. City, District, and Contractor each binds itself, its partners, successors, assigns, and legal representatives to the other party hereto, its partners, successors, assigns, and legal representatives in respect to all covenants, agreements, and obligations contained in the Contract Documents.

10.04 *Severability*

A. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation shall be deemed stricken, and all remaining provisions shall continue to be valid and binding upon City, District, and Contractor, who agree that the Contract Documents shall be reformed to replace such stricken provision or part thereof with a valid and enforceable provision that comes as close as possible to expressing the intention of the stricken provision.


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10.05 *Other Provisions – City of Bangor*

**ARTICLE 10.1 - Statement of the Work**

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

**ARTICLE 10.2 – 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:

- City - The City of Bangor, Maine acting through its duly authorized representatives.
- District – The Bangor Water District 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 10.3 - 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 City Engineer. 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 City 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 City or District 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 City or District, and shall indemnify, save harmless, and insure the City and District and City and District'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 City or District against damage or claims occasioned by acts of the City or District.

**ARTICLE 10.4 - Engineer's Authority**

The City Engineer or District 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 City or District and on the part of the Contractor. His estimate and decision will be final and conclusive upon both parties to this Contract.

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

The City 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.


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The order or sequence of execution of the work and the general conduct of the work will be subject to the approval of the City 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 10.5 – 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 City 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 10.6 - 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 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 10.7 - 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 employee |
| b. | Comprehensive General Liability (Public Liability) Insurance including: | |
| | General Liability | $1,000,000. aggregate |
| | Products, Completed Operations | $1,000,000. aggregate |
| | Personal & Advertising Injury | $ 500,000. |
| | Each Occurrence | $ 500,000. |
| | Fire Damage | $ 50,000. any one fire |
| | Medical Expense | $ 5,000. any one person |
| c. | Automobile Liability Insurance (owned, hired & non-owned): | |
| | Bodily Injury & | $1,000,000 combined |


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Property Damage single limit

d. The Contractor shall provide a waiver of any rights of subrogation which the Contractor may have against the City or District, their agents or their 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 City and the District shall receive thirty (30) days notice of cancellation or significant modification of any of the policies which may affect the City or District's interest; and
   (4) The City or District as an additional insured (except Workers' Compensation Insurance).

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**ARTICLE 10.8 - Patents**

The Contractor shall indemnify and save harmless the City and District, and all persons acting for or on behalf of the City and District, 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 City or District.

**ARTICLE 10.9 - 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 City and District and all officers and agents of the City and District r 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 10.10 – 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 10.11 - 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 City and District, 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 City and District and the surety on the bond(s).

**ARTICLE 10.12 - Time of Beginning Work**

Except as herein provided, the Contractor shall commence work at such points as the Engineer may direct or approve, within ten (10) days after the date of the notice to proceed from the City and District. Such time of starting may be postponed but only by written agreement between the City, District, 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 10.13 - Delay by City or District**

The City or District 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 City or District or if necessary materials or equipment to be furnished by the City or District 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.


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**ARTICLE 10.14 - 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 City and District shall deduct from the payments otherwise due the Contractor each month the sum of Fifteen Hundred Dollars ($1,500.00) 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 City or District, as appropriate.

**ARTICLE 10.15 - 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 City or District 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.

**ARTICLE 10.16 - 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 10.17 - 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 10.18 - 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 10.19 - Access to Work**

TheCity, the District, , the Engineer, and their agents and employees shall be permitted access to all parts of the manufacturing 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 10.20 - Examination of Work**

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.


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**ARTICLE 10.21 - 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 City or District 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 City or District which have been, in the opinion of the Engineer, damaged by the Contractor, his agents or employees.

**ARTICLE 10.22 - 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 weather or season may be.

**ARTICLE 10.23 - Mistakes of the Contractor**

The Contractor shall pay to the City or District 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 10.24 - 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 theCity or District.

**ARTICLE 10.25 - 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 City or District 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 10.26 - 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 by 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


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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 10.27 - Extension of Time on Account of Extra Work**

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 10.28 - 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 do 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 City and District to the Contractor, shall in nowise annul, release, or affect the liability and/or surety on the bond or bonds provided by the Contractor.

**ARTICLE 10.29 - 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 10.30 - 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 City or District, 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 City or District 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 City or District may designate, and the City or District may thereupon, by contract or otherwise, as the City or District 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 City or District, or such contractors as the City or District 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 City or District 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 City or District r 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 City or District as appropriate.

**ARTICLE 10.31 - Prices for Work**


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The City and District 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 City and District 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 10.32 - Money may be Retained**

The City or District 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 City or District and determined as herein provided, and may retain, until all claims are settled, so much of such money as, in the City or District's opinion, will be required to settle all claims filed with the City or District relating to this Contract.

**ARTICLE 10.33 - 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 City and District will retain five (5) 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 City and District 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 City or District 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 10.34 - 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.

The City and District will pay to the Contractor the entire sum so found to be due hereunder, including the five (5) 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 City or District, 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 10.35 - 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 City and District suitable notice, the City and District 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 10.36 - Waivers**

Neither inspection by the City or District or any agents thereof, nor any orders, measurement or certificate by the Engineer, nor any order by the City or District 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 City or District, nor any extension of time nor any possession taken by City or


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District or agents thereof shall operate as a waiver of any provision of this Contract, or of any power herein reserved to the City or District, 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 City or District shall also be entitled as of right to a writ of injunction against any breach of any of the provisions of this Contract.

**ARTICLE 10.37 - Indemnification**

The contractor shall indemnify, defend and hold harmless the City or District 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 City or District.

The Contractor hereby expressly agrees that he will defend, indemnify and hold the City and District 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 City and District to answer, investigate, defend and settle all such claims, including but not limited to the City or District'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 City or District in regard to claims made or asserted by such agents, servants or employees.

**ARTICLE 10.38 - Liability of City or District**

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 City or District nor any agent of the City or District 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 City or District, and every agent of the City or District, from all claim and liability to the Contractor for anything done or furnished for, or relating to the work performed under this Contract, or for any act or neglect of the City or District or of any person relating to or affecting said work except the claim against the City or District for the remainder, if any there be, of the amounts kept or retained as provided elsewhere herein.

**ARTICLE 10.39 - 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 City and District will retain, at the time of payment of the final estimate, an amount equal to three (3) percent of the total final Contract amount. 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 City or District 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 City and District within ten (10) calendar days of receipt of such notice, then the City and District 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 City or District 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 City or District or agents thereof, and for any and all expenses, losses, or damages incurred by the City or District by reason of said claims.

**ARTICLE 10.40 - Legal Address of Contractor**


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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 10.41 - 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 City or District.

**ARTICLE 10.42 - 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 City or District 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 City and District assume no responsibility for any conclusions or interpretations made by the Contractor on the basis of the information made available to him.

**ARTICLE 10.43 - 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 City or District 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 888-DIG-SAFE 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 City or District'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 City or District 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 City or District, 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.


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IN WITNESS WHEREOF, City, District, and Contractor have signed this Agreement in five copies. One counterpart each has been delivered to City, District, Contractor, Engineer, and Agency. All portions of the Contract Documents have been signed, initialed, or identified by City and District and Contractor or identified by Engineer on their behalf.

This Agreement is dated _____. ~~This Agreement shall not be effective unless and until Agency's designated representative concurs.~~

CITY:

_____

By: _____

Title: _____

[CORPORATE SEAL]

Attest: _____

Title: _____

Address for giving notices:

_____

_____

_____

DISTRICT:

_____

By: _____

Title: _____

[CORPORATE SEAL]

Attest: _____

Title: _____

Address for giving notices:

_____

_____

_____

Agent for service of process:

_____

(If Contractor is a corporation or a partnership, attach evidence of authority to sign.)

~~Agency Concurrence:~~
~~As lender or insurer of funds to defray the costs of this Contract, and without liability for any payments thereunder, the Agency hereby concurs in the form, content, and execution of this Agreement.~~

~~Agency:~~ _____

~~Date:~~ _____

~~By:~~ _____

~~Title:~~ _____


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CONTRACTOR:

_____

By: _____

Title: _____

[CORPORATE SEAL]

Attest: _____

Title: _____

Address for giving notices:

_____

_____

_____

Agent for service of process:

_____

(If Contractor is a corporation or a partnership, attach evidence of authority to sign.)

~~As lender or insurer of funds to defray the costs of this Contract, and without liability for any payments thereunder, the Agency hereby concurs in the form, content, and execution of this Agreement.~~

~~By:~~ _____


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# 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 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.

### 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. 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

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 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.

## 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-Builts" have been brought up to date.**

## Other Provisions

The work under this project is funded by the Maine CWSRF fund and is subject to special provisions. These have been included as Section F, "SRF Provisions", and Section G, "Standard General Conditions of the Construction Contract". In accordance with the 2014 Consolidated Appropriations Act, all iron and steel materials used as part of this project must be manufactured in the United States.

## 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.

**Night Work**

Night work is required for utility work in areas on and between State Street, Franklin Street, and Columbia Street. The contractor may elect to perform night work in other areas upon receiving approval from the City in advance of beginning work.

**Sequence of Construction**

The Contractor shall submit to the Engineer for review and acceptance a complete schedule of proposed sequence of construction operations prior to commencing work. In general, the following sequence of construction is suggested (note this is not intended to be inclusive of all work required under the contract):

- Submit traffic control plan, bypass pumping plan, and schedule of work
- Conduct test pits required in advance of custom manhole fabrication
- Install doghouse manholes as needed for cleaning and CCTV access or maintenance of flows
- Set up bypass pumping
- Clean and CCTV existing sewer mains to determine method of rehabilitation of select existing sewer mains
- During cleaning and CCTV work, proceed with peripheral tasks for open cut utility work upstream of Sta. 3+63 and Central Street tide valve installation at Contractor's option.
- Permanently pave trenches, complete other surface restoration, and remove signage prior to winter shutdown

Winter Shutdown

- Notify engineer prior to spring start up and update traffic control plan, bypass pumping plan, and schedule of work

Spring Startup

- Proceed with sewer and water utility work
- Proceed with electrical conduit installation
- Permanently pave trenches and complete other surface restoration and cleanup
- Substantial completion

**Traffic Control and Signage**

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. Electronic signboards are required to be instaaled at both ends of work areas in advance of beginning work to notify the public of upcoming traffic pattern changes.

**Coordination with City Events**

The contractor shall be required to coordinate work with City events as deemed necessary, including but not limited to, Independence Day.

**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.

# F. SRF PROVISIONS

# SECTION F

## SRF PROVISIONS

The following provisions, included as Section F, shall be incorporated into and apply to this contract document:

1. DAVIS BACON REQUIREMENTS
2. DBE PARTICIPATION
3. DISCLOSURE OF LOBBYING ACTIVITIES
4. USE OF IRON AND STEEL
5. PROJECT SIGN

General Decision Number: ME160019 09/30/2016 ME19

Superseded General Decision Number: ME20150019

State: Maine

Construction Type: Heavy

County: Penobscot County in Maine.

HEAVY CONSTRUCTION PROJECTS including Water and Sewer Lines

Note: Under Executive Order (EO) 13658, an hourly minimum wage of $10.15 for calendar year 2016 applies to all contracts subject to the Davis-Bacon Act for which the solicitation was issued on or after January 1, 2015. If this contract is covered by the EO, the contractor must pay all workers in any classification listed on this wage determination at least $10.15 (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in calendar year 2016. The EO minimum wage rate will be adjusted annually. Additional information on contractor requirements and worker protections under the EO is available at www.dol.gov/whd/govcontracts.

| Modification Number | Publication Date |
|---|---|
| 0 | 01/08/2016 |
| 1 | 09/30/2016 |

ELEC0567-006 09/01/2015

PENOBSCOT COUNTY (Northen area including the Townships of Auburn, Dedham, Lewiston, Lisbon, Mechanic Falls, Minot and Poland)

| | Rates | Fringes |
|---|---|---|
| ELECTRICIAN..... | $ 30.53 | 15.27 |

---

ELEC1253-010 06/01/2015

PENOBSCOT COUNTY (Southern Area including the Townships of Alton, Argyle, Bangor, Bradford, Bradley, Brewer, Burlington, Carmel, Carroll, Charleston, Chester, Clifton, Corinna, Corinth, Dixmont, Eddington, Edinburg, Enfield, Etna, Exeter, Garland, Glenburn, Grand Falls, Greenbush, Greenfield, Hampden, Hermon, Holden, Howland, Hudson, Kenduskeag, LeGrange, Lakeville, Lee, Levant, Lincoln, Lowell, Mattamiscontis, Maxfield, Milford, Newburg, Newport, Old Town, Orono, Orrington, Passadumkeag, Plymouth, Prentiss, Seboeis, Springfield,Stetson, Summit, Veazie, Webster, Winn, 2R.8, 3R.1, 5R)

| | Rates | Fringes |
|---|---|---|
| ELECTRICIAN..... | $ 28.50 | 14.91 |

---

* PLUM0716-002 08/15/2016

| | Rates | Fringes |
|---|---|---|
| PIPEFITTER (Industrial Work Only) | $ 28.00 | 15.71 |

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SUME2011-014 03/16/2011

| | Rates | Fringes |
|---|---|---|
| CARPENTER, Includes Form Work | $ 18.95 | 1.72 |
| CONCRETE FINISHER | $ 17.29 | 2.51 |
| IRONWORKER, Reinforcing | $ 20.00 | 0.00 |
| LABORER: Common or General | $ 12.29 | 1.38 |
| LABORER: Landscape | $ 15.00 | 0.58 |
| LABORER: Pipelayer | $ 14.42 | 2.38 |
| LINE CONSTRUCTION: Lineman | $ 26.95 | 9.90 |
| OPERATOR: Asphalt Paver | $ 18.12 | 2.83 |
| OPERATOR: Asphalt Roller | $ 16.09 | 1.92 |
| OPERATOR: Backhoe | $ 20.55 | 6.26 |
| OPERATOR: Bulldozer | $ 20.30 | 5.84 |
| OPERATOR: Crane | $ 22.60 | 9.29 |
| OPERATOR: Drill | $ 16.63 | 4.07 |
| OPERATOR: Excavator | $ 19.26 | 3.75 |
| OPERATOR: Loader | $ 17.39 | 4.33 |
| OPERATOR: Mechanic | $ 24.35 | 6.36 |
| OPERATOR: Roller | $ 16.22 | 6.78 |
| TRUCK DRIVER: Dump Truck | $ 12.05 | 2.98 |

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WELDERS - Receive rate prescribed for craft performing operation to which welding is incidental.

==========

Unlisted classifications needed for work not included within the scope of the classifications listed may be added after award only as provided in the labor standards contract clauses (29CFR 5.5 (a) (1) (ii)).

---

The body of each wage determination lists the classification

and wage rates that have been found to be prevailing for the cited type(s) of construction in the area covered by the wage determination. The classifications are listed in alphabetical order of "identifiers" that indicate whether the particular rate is a union rate (current union negotiated rate for local), a survey rate (weighted average rate) or a union average rate (weighted union average rate).

Union Rate Identifiers

A four letter classification abbreviation identifier enclosed in dotted lines beginning with characters other than "SU" or "UAVG" denotes that the union classification and rate were prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2014. PLUM is an abbreviation identifier of the union which prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in processing the wage determination. 07/01/2014 is the effective date of the most current negotiated rate, which in this example is July 1, 2014.

Union prevailing wage rates are updated to reflect all rate changes in the collective bargaining agreement (CBA) governing this classification and rate.

Survey Rate Identifiers

Classifications listed under the "SU" identifier indicate that no one rate prevailed for this classification in the survey and the published rate is derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As this weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SULA2012-007 5/13/2014. SU indicates the rates are survey rates based on a weighted average calculation of rates and are not majority rates. LA indicates the State of Louisiana. 2012 is the year of survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. 5/13/2014 indicates the survey completion date for the classifications and rates under that identifier.

Survey wage rates are not updated and remain in effect until a new survey is conducted.

Union Average Rate Identifiers

Classification(s) listed under the UAVG identifier indicate that no single majority rate prevailed for those classifications; however, 100% of the data reported for the classifications was union data. EXAMPLE: UAVG-OH-0010 08/29/2014. UAVG indicates that the rate is a weighted union average rate. OH indicates the state. The next number, 0010 in the example, is an internal number used in producing the wage determination. 08/29/2014 indicates the survey completion date for the classifications and rates under that identifier.

A UAVG rate will be updated once a year, usually in January of each year, to reflect a weighted average of the current

negotiated/CBA rate of the union locals from which the rate is based.

---

WAGE DETERMINATION APPEALS PROCESS

1.) Has there been an initial decision in the matter? This can be:

* an existing published wage determination
* a survey underlying a wage determination
* a Wage and Hour Division letter setting forth a position on a wage determination matter
* a conformance (additional classification and rate) ruling

On survey related matters, initial contact, including requests for summaries of surveys, should be with the Wage and Hour Regional Office for the area in which the survey was conducted because those Regional Offices have responsibility for the Davis-Bacon survey program. If the response from this initial contact is not satisfactory, then the process described in 2.) and 3.) should be followed.

With regard to any other matter not yet ripe for the formal process described here, initial contact should be with the Branch of Construction Wage Determinations. Write to:

Branch of Construction Wage Determinations
Wage and Hour Division
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

2.) If the answer to the question in 1.) is yes, then an interested party (those affected by the action) can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Write to:

Wage and Hour Administrator
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

The request should be accompanied by a full statement of the interested party's position and by any information (wage payment data, project description, area practice material, etc.) that the requestor considers relevant to the issue.

3.) If the decision of the Administrator is not favorable, an interested party may appeal directly to the Administrative Review Board (formerly the Wage Appeals Board). Write to:

Administrative Review Board
U.S. Department of Labor
200 Constitution Avenue, N.W.
Washington, DC 20210

4.) All decisions by the Administrative Review Board are final.

==========

END OF GENERAL DECISION

# LABOR STANDARDS INTERVIEW

| CONTRACT NUMBER | EMPLOYEE INFORMATION | | |
|---|---|---|---|
| | LAST NAME | FIRST NAME | MI |
| NAME OF PRIME CONTRACTOR | STREET ADDRESS | | |
| NAME OF EMPLOYER | CITY | STATE | ZIP CODE |
| SUPERVISOR'S NAME | | | |
| LAST NAME / FIRST NAME / MI | WORK CLASSIFICATION | WAGE RATE | |

| ACTION | CHECK BELOW YES | NO |
|---|---|---|
| Do you work over 8 hours per day? | | |
| Do you work over 40 hours per week? | | |
| Are you paid at least time and a half for overtime hours? | | |
| Are you receiving any cash payments for fringe benefits required by the posted wage determination decision? | | |

WHAT DEDUCTIONS OTHER THAN TAXES AND SOCIAL SECURITY ARE MADE FROM YOUR PAY?

| | TOOLS YOU USE | |
|---|---|---|
| HOW MANY HOURS DID YOU WORK ON YOUR LAST WORK DAY BEFORE THIS INTERVIEW? | | |
| DATE OF LAST WORK DAY BEFORE INTERVIEW *(YYMMDD)* | | |
| DATE YOU BEGAN WORK ON THIS PROJECT *(YYMMDD)* | | |

THE ABOVE IS CORRECT TO THE BEST OF MY KNOWLEDGE

| EMPLOYEE'S SIGNATURE | | | DATE *(YYMMDD)* |
|---|---|---|---|
| INTERVIEWER | SIGNATURE | TYPED OR PRINTED NAME | DATE *(YYMMDD)* |

## INTERVIEWER'S COMMENTS

| WORK EMPLOYEE WAS DOING WHEN INTERVIEWED | ACTION *(If explanation is needed, use comments section)* | YES | NO |
|---|---|---|---|
| | IS EMPLOYEE PROPERLY CLASSIFIED AND PAID? | | |
| | ARE WAGE RATES AND POSTERS DISPLAYED? | | |

## FOR USE BY PAYROLL CHECKER

IS ABOVE INFORMATION IN AGREEMENT WITH PAYROLL DATA?

☐ YES ☐ NO

COMMENTS

CHECKER

| LAST NAME | FIRST NAME | MI | JOB TITLE |
|---|---|---|---|
| SIGNATURE | | | DATE *(YYMMDD)* |

**U.S. Department of Labor**
Wage and Hour Division

# PAYROLL

**(For Contractor's Optional Use; See Instructions at www.dol.gov/whd/forms/wh347instr.htm)**

*Persons are not required to respond to the collection of information unless it displays a currently valid OMB control number.*

U.S. Wage and Hour Division

Rev. Dec. 2008

OMB No.: 1235-0008
Expires: 01/31/2015

| NAME OF CONTRACTOR ☐ OR SUBCONTRACTOR ☐ | ADDRESS |
|---|---|
| | |

| PAYROLL NO. | FOR WEEK ENDING | PROJECT AND LOCATION | PROJECT OR CONTRACT NO. |
|---|---|---|---|
| | | | |

| (1) NAME AND INDIVIDUAL IDENTIFYING NUMBER (e.g., LAST FOUR DIGITS OF SOCIAL SECURITY NUMBER) OF WORKER | (2) NO. OF WITHHOLDING EXEMPTIONS | (3) WORK CLASSIFICATION | OT. OR ST. | (4) DAY AND DATE / HOURS WORKED EACH DAY | | | | | | | (5) TOTAL HOURS | (6) RATE OF PAY | (7) GROSS AMOUNT EARNED | (8) DEDUCTIONS FICA | WITH-HOLDING TAX | | | OTHER | TOTAL DEDUCTIONS | (9) NET WAGES PAID FOR WEEK |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
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While completion of Form WH-347 is optional, it is mandatory for covered contractors and subcontractors performing work on Federally financed or assisted construction contracts to respond to the information collection contained in 29 C.F.R. §§ 3.3, 5.5(a). The Copeland Act (40 U.S.C. § 3145) contractors and subcontractors performing work on Federally financed or assisted construction contracts to "furnish weekly a statement with respect to the wages paid each employee during the preceding week." U.S. Department of Labor (DOL) regulations at 29 C.F.R. § 5.5(a)(3)(ii) require contractors to submit weekly a copy of all payrolls to the Federal agency contracting for or financing the construction project, accompanied by a signed "Statement of Compliance" indicating that the payrolls are correct and complete and that each laborer or mechanic has been paid not less than the proper Davis-Bacon prevailing wage rate for the work performed. DOL and federal contracting agencies receiving this information review the information to determine that employees have received legally required wages and fringe benefits.

**Public Burden Statement**

We estimate that is will take an average of 55 minutes to complete this collection, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. If you have any comments regarding these estimates or any other aspect of this collection, including suggestions for reducing this burden, send them to the Administrator, Wage and Hour Division, U.S. Department of Labor, Room S3502, 200 Constitution Avenue, N.W. Washington, D.C. 20210

(over)

Date _____

I, _____ _____
(Name of Signatory Party) (Title)

do hereby state:

(1) That I pay or supervise the payment of the persons employed by

_____ on the
(Contractor or Subcontractor)

_____; that during the payroll period commencing on the
(Building or Work)

_____ day of _____, _____, and ending the _____ day of _____, _____,

all persons employed on said project have been paid the full weekly wages earned, that no rebates have been or will be made either directly or indirectly to or on behalf of said

_____ from the full
(Contractor or Subcontractor)

weekly wages earned by any person and that no deductions have been made either directly or indirectly from the full wages earned by any person, other than permissible deductions as defined in Regulations, Part 3 (29 C.F.R. Subtitle A), issued by the Secretary of Labor under the Copeland Act, as amended (48 Stat. 948, 63 Start. 108, 72 Stat. 967; 76 Stat. 357; 40 U.S.C. § 3145), and described below:

_____

_____

_____

_____

(2) That any payrolls otherwise under this contract required to be submitted for the above period are correct and complete; that the wage rates for laborers or mechanics contained therein are not less than the applicable wage rates contained in any wage determination incorporated into the contract; that the classifications set forth therein for each laborer or mechanic conform with the work he performed.

(3) That any apprentices employed in the above period are duly registered in a bona fide apprenticeship program registered with a State apprenticeship agency recognized by the Bureau of Apprenticeship and Training, United States Department of Labor, or if no such recognized agency exists in a State, are registered with the Bureau of Apprenticeship and Training, United States Department of Labor.

(4) That:

(a) WHERE FRINGE BENEFITS ARE PAID TO APPROVED PLANS, FUNDS, OR PROGRAMS

☐ – in addition to the basic hourly wage rates paid to each laborer or mechanic listed in the above referenced payroll, payments of fringe benefits as listed in the contract have been or will be made to appropriate programs for the benefit of such employees, except as noted in section 4(c) below.

(b) WHERE FRINGE BENEFITS ARE PAID IN CASH

☐ – Each laborer or mechanic listed in the above referenced payroll has been paid, as indicated on the payroll, an amount not less than the sum of the applicable basic hourly wage rate plus the amount of the required fringe benefits as listed in the contract, except as noted in section 4(c) below.

(c) EXCEPTIONS

| EXCEPTION (CRAFT) | EXPLANATION |
|---|---|
| | |
| | |
| | |
| | |
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| | |
| | |
| | |

REMARKS:

| NAME AND TITLE | SIGNATURE |
|---|---|
| | |

THE WILLFUL FALSIFICATION OF ANY OF THE ABOVE STATEMENTS MAY SUBJECT THE CONTRACTOR OR SUBCONTRACTOR TO CIVIL OR CRIMINAL PROSECUTION. SEE SECTION 1001 OF TITLE 18 AND SECTION 231 OF TITLE 31 OF THE UNITED STATES CODE.

# EMPLOYEE RIGHTS
# UNDER THE DAVIS-BACON ACT

## FOR LABORERS AND MECHANICS EMPLOYED ON FEDERAL OR FEDERALLY ASSISTED CONSTRUCTION PROJECTS

THE UNITED STATES DEPARTMENT OF LABOR WAGE AND HOUR DIVISION

**PREVAILING WAGES**

You must be paid not less than the wage rate listed in the Davis-Bacon Wage Decision posted with this Notice for the work you perform.

**OVERTIME**

You must be paid not less than one and one-half times your basic rate of pay for all hours worked over 40 in a work week. There are few exceptions.

**ENFORCEMENT**

Contract payments can be withheld to ensure workers receive wages and overtime pay due, and liquidated damages may apply if overtime pay requirements are not met. Davis-Bacon contract clauses allow contract termination and debarment of contractors from future federal contracts for up to three years. A contractor who falsifies certified payroll records or induces wage kickbacks may be subject to civil or criminal prosecution, fines and/or imprisonment.

**APPRENTICES**

Apprentice rates apply only to apprentices properly registered under approved Federal or State apprenticeship programs.

**PROPER PAY**

If you do not receive proper pay, or require further information on the applicable wages, contact the Contracting Officer listed below:

or contact the U.S. Department of Labor's Wage and Hour Division.

For additional information:

**1-866-4-USWAGE**

(1-866-487-9243) TTY: 1-877-889-5627

WHD U.S. Wage and Hour Division

**WWW.WAGEHOUR.DOL.GOV**

AUTHORIZED FOR LOCAL REPRODUCTION

# REQUEST FOR AUTHORIZATION OF ADDITIONAL CLASSIFICATION AND RATE

CHECK APPROPRIATE BOX
☐ SERVICE CONTRACT
☐ CONSTRUCTION CONTRACT

OMB Number: **9000-0089**
Expiration Date: **7/31/2014**

Public reporting burden for this collection of information is estimated to average 15 minutes per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the FAR Secretariat (MVP), Office of Acquisition Policy, GSA, Washington, DC 20405; and to the Office of Management and Budget, Paperwork Reduction Project (9000-0089), Washington, DC 20503.

**INSTRUCTIONS:** THE CONTRACTOR SHALL COMPLETE ITEMS 3 THROUGH 16, KEEP A PENDING COPY, AND SUBMIT THE REQUEST, IN QUADRUPLICATE, TO THE CONTRACTING OFFICER.

1. **TO:**
ADMINISTRATOR, Employment Standards Administration
WAGE AND HOUR DIVISION
U.S. DEPARTMENT OF LABOR
WASHINGTON, D.C. 20210

2. **FROM:** *(REPORTING OFFICE)*

3. CONTRACTOR

4. DATE OF REQUEST

| 5. CONTRACT NUMBER | 6. DATE BID OPENED *(SEALED BIDDING)* | 7. DATE OF AWARD | 8. DATE CONTRACT WORK STARTED | 9. DATE OPTION EXERCISED (If *APPLICABLE) (SCA ONLY)* |
|---|---|---|---|---|
| | | | | |

10. SUBCONTRACTOR *(IF ANY)*

11. PROJECT AND DESCRIPTION OF WORK *(ATTACH ADDITIONAL SHEET IF NEEDED)*

12. LOCATION (*CITY, COUNTY AND STATE)*

13. IN ORDER TO COMPLETE THE WORK PROVIDED FOR UNDER THE ABOVE CONTRACT, IT IS NECESSARY TO ESTABLISH THE FOLLOWING RATE(S) FOR THE INDICATED CLASSIFICATION(S) NOT INCLUDED IN THE DEPARTMENT OF LABOR DETERMINATION

NUMBER: _____ DATED: _____

| a. LIST IN ORDER: PROPOSED CLASSIFICATION TITLE(S); JOB DESCRIPTION(S); DUTIES; AND RATIONALE FOR PROPOSED CLASSIFICATIONS (SCA ONLY) | b. WAGE RATE(S) | c. FRINGE BENEFITS PAYMENTS |
|---|---|---|
| *(Use reverse or attach additional sheets, if necessary)* | | |

14. SIGNATURE AND TITLE OF SUBCONTRACTOR REPRESENTATIVE *(IF ANY)*

15. SIGNATURE AND TITLE OF PRIME CONTRACTOR REPRESENTATIVE

16. SIGNATURE OF EMPLOYEE OR REPRESENTATIVE

TITLE

CHECK APPROPRIATE BOX-REFERENCING BLOCK 13.
☐ **AGREE** ☐ **DISAGREE**

**TO BE COMPLETED BY CONTRACTING OFFICER *(CHECK AS APPROPRIATE - SEE FAR 22.1019 (SCA) OR FAR 22.406-3 (DBA))***

☐ THE INTERESTED PARTIES AGREE AND THE CONTRACTING OFFICER RECOMMENDS APPROVAL BY THE WAGE AND HOUR DIVISION. AVAILABLE INFORMATION AND RECOMMENDATIONS ARE ATTACHED.

☐ THE INTERESTED PARTIES CANNOT AGREE ON THE PROPOSED CLASSIFICATION AND WAGE RATE. A DETERMINATION OF THE QUESTION BY THE WAGE AND HOUR DIVISION IS THEREFORE REQUESTED. AVAILABLE INFORMATION AND RECOMMENDATIONS ARE ATTACHED.

*(Send copies 1, 2, and 3 to Department of Labor)*

| SIGNATURE OF CONTRACTING OFFICER OR REPRESENTATIVE | TITLE AND COMMERCIAL TELEPHONE NO. | DATE SUBMITTED |
|---|---|---|
| | | |

# Owner's Davis-Bacon Compliance Report

State Revolving Loan Fund

**Project Name** _____ **SRF Project** _____

**Project Owner:** _____

**Certified Payrolls Reviewed By:** _____
(Printed name of Owner's Representative)

**Employee interviews have been conducted in accordance with the contract requirements. Yes** ☐ **No** ☐

**Prime Contractor:** _____

**Prime Contractor's Pay Application No:** _____(Note: Only one allowed per Compliance Report)

**Application Period: From** _____ **to** _____

**Check one box and sign below:**

☐ For the application period indicated, there were no certified payrolls reported because there were no workers on the site that were subject to the Davis-Bacon and Related Acts.

☐ For the application period indicated, the certified payrolls are in compliance with the Davis-Bacon and Related Acts.

☐ For the application period indicated, the certified payrolls are not in compliance with the Davis-Bacon and Related Acts. A Compliance Report for the corrective action will be submitted ASAP.

**Summary of noncompliant findings and follow up actions needed:**

_____

_____

_____

_____

_____

_____ _____
**Owner's Representative Signature** **Date**

# Owner's Davis-Bacon Compliance Report

State Revolving Loan Fund

**List all weekly certified payrolls for the application period:**

| Contractor / Subcontractor Name | Week Ending | Compliant (Yes/ No) | Comments |
|---|---|---|---|
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United States Environmental Protection Agency

OMB Control No: 2090-0030
Approved: 8/13/2013
Approval Expires: 8/31/2015

**Disadvantaged Business Enterprise (DBE) Program**
**DBE Subcontractor Participation Form**

An EPA Financial Assistance Agreement Recipient must require its prime contractors to provide this form to its DBE subcontractors. This form gives a DBE[1] subcontractor[2] the opportunity to describe work received and/or report any concerns regarding the EPA-funded project (e.g., in areas such as termination by prime contractor, late payments, etc.). The DBE subcontractor can, as an option, complete and submit this form to the EPA DBE Coordinator at any time during the project period of performance.

| | | |
|---|---|---|
| Subcontractor Name | Project Name | |
| Bid/ Proposal No. | Assistance Agreement ID No. (if known) | Point of Contact |
| Address | | |
| Telephone No. | Email Address | |
| Prime Contractor Name | Issuing/Funding Entity: | |

| Contract Item Number | Description of Work Received from the Prime Contractor Involving Construction, Services , Equipment or Supplies | Amount Received by Prime Contractor |
|---|---|---|
| | | |

[1] A DBE is a Disadvantaged, Minority, or Woman Business Enterprise that has been certified by an entity from which EPA accepts certifications as described in 40 CFR 33.204-33.205 or certified by EPA. EPA accepts certifications from entities that meet or exceed EPA certification standards as described in 40 CFR 33.202.

[2] Subcontractor is defined as a company, firm, joint venture, or individual who enters into an agreement with a contractor to provide services pursuant to an EPA award of financial assistance.

United States Environmental Protection Agency

OMB Control No: 2090-0030
Approved: 8/13/2013
Approval Expires: 8/31/2015

**Disadvantaged Business Enterprise (DBE) Program**
**DBE Subcontractor Participation Form**

Please use the space below to report any concerns regarding the above EPA-funded project:

_____
_____
_____
_____
_____
_____
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_____
_____
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_____
_____
_____

| Subcontractor Signature | Print Name |
|---|---|
| | |
| **Title** | **Date** |
| | |

The public reporting and recordkeeping burden for this collection of information is estimated to average three (3) hours per response. Send comments on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including through the use of automated collection techniques to the Director, Collection Strategies Division, U.S. Environmental Protection Agency (2822T), 1200 Pennsylvania Ave., NW, Washington, D.C. 20460. Include the OMB control number in any correspondence. Do not send the completed form to this address.

United States Environmental Protection Agency

OMB Control No: 2090-0030
Approved: 8/13/2013
Approval Expires: 8/31/2015

**Disadvantaged Business Enterprise (DBE) Program**
**DBE Subcontractor Performance Form**

This form is intended to capture the DBE[1] subcontractor's[2] description of work to be performed and the price of the work submitted to the prime contractor. An EPA Financial Assistance Agreement Recipient must require its prime contractor to have its DBE subcontractors complete this form and include all completed forms in the prime contractors bid or proposal package.

| | | |
|---|---|---|
| Subcontractor Name | Project Name | |
| Bid/ Proposal No. | Assistance Agreement ID No. (if known) | Point of Contact |
| Address | | |
| Telephone No. | Email Address | |
| Prime Contractor Name | Issuing/Funding Entity: | |

| Contract Item Number | Description of Work Submitted to the Prime Contractor Involving Construction, Services , Equipment or Supplies | Price of Work Submitted to the Prime Contractor |
|---|---|---|
| | | |

| | |
|---|---|
| DBE Certified By: ___ DOT ___ SBA<br>___ Other: _____ | Meets/ exceeds EPA certification standards?<br>___ YES ___ NO ___ Unknown |

[1] A DBE is a Disadvantaged, Minority, or Woman Business Enterprise that has been certified by an entity from which EPA accepts certifications as described in 40 CFR 33.204-33.205 or certified by EPA. EPA accepts certifications from entities that meet or exceed EPA certification standards as described in 40 CFR 33.202.

[2] Subcontractor is defined as a company, firm, joint venture, or individual who enters into an agreement with a contractor to provide services pursuant to an EPA award of financial assistance.

United States Environmental Protection Agency

OMB Control No: 2090-0030
Approved: 8/13/2013
Approval Expires: 8/31/2015

**Disadvantaged Business Enterprise (DBE) Program**
**DBE Subcontractor Performance Form**

I certify under penalty of perjury that the forgoing statements are true and correct. Signing this form does not signify a commitment to utilize the subcontractors above. I am aware of that in the event of a replacement of a subcontractor, I will adhere to the replacement requirements set forth in 40 CFR Part 33 Section 33.302 (c).

| Prime Contractor Signature | Print Name |
|---|---|
| | |
| **Title** | **Date** |
| | |

| Subcontractor Signature | Print Name |
|---|---|
| | |
| **Title** | **Date** |
| | |

The public reporting and recordkeeping burden for this collection of information is estimated to average three (3) hours per response. Send comments on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including through the use of automated collection techniques to the Director, Collection Strategies Division, U.S. Environmental Protection Agency (2822T), 1200 Pennsylvania Ave., NW, Washington, D.C. 20460. Include the OMB control number in any correspondence. Do not send the completed form to this address.

United States Environmental Protection Agency

OMB Control No: 2090-0030
Approved: 8/13/2013
Approval Expires: 8/31/2015

**Disadvantaged Business Enterprise (DBE) Program**
**DBE Subcontractor Utilization Form**

This form is intended to capture the prime contractor's actual and/or anticipated use of identified certified DBE[1] subcontractors[2] and the estimated dollar amount of each subcontract. An EPA Financial Assistance Agreement Recipient must require its prime contractors to complete this form and include it in the bid or proposal package. Prime contractors should also maintain a copy of this form on file.

| Prime Contractor Name | | Project Name |
|---|---|---|
| Bid/ Proposal No. | Assistance Agreement ID No. (if known) | Point of Contact |
| Address | | |
| Telephone No. | | Email Address |
| Issuing/Funding Entity: | | |

| I have identified potential DBE certified subcontractors | ___ YES | ___ NO |
|---|---|---|
| If yes, please complete the table below. If no, please explain: | | |
| | | |

| **Subcontractor Name/ Company Name** | **Company Address/ Phone/ Email** | **Est. Dollar Amt** | **Currently DBE Certified?** |
|---|---|---|---|
| | | | |
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Continue on back if needed

[1] A DBE is a Disadvantaged, Minority, or Woman Business Enterprise that has been certified by an entity from which EPA accepts certifications as described in 40 CFR 33.204-33.205 or certified by EPA. EPA accepts certifications from entities that meet or exceed EPA certification standards as described in 40 CFR 33.202.

[2] Subcontractor is defined as a company, firm, joint venture, or individual who enters into an agreement with a contractor to provide services pursuant to an EPA award of financial assistance.

United States Environmental Protection Agency

OMB Control No: 2090-0030
Approved: 8/13/2013
Approval Expires: 8/31/2015

**Disadvantaged Business Enterprise (DBE) Program**
**DBE Subcontractor Utilization Form**

I certify under penalty of perjury that the forgoing statements are true and correct. Signing this form does not signify a commitment to utilize the subcontractors above. I am aware of that in the event of a replacement of a subcontractor, I will adhere to the replacement requirements set forth in 40 CFR Part 33 Section 33.302 (c).

| Prime Contractor Signature | Print Name |
|---|---|
| | |
| **Title** | **Date** |
| | |

The public reporting and recordkeeping burden for this collection of information is estimated to average three (3) hours per response. Send comments on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including through the use of automated collection techniques to the Director, Collection Strategies Division, U.S. Environmental Protection Agency (2822T), 1200 Pennsylvania Ave., NW, Washington, D.C. 20460. Include the OMB control number in any correspondence. Do not send the completed form to this address.

**STATE OF MAINE DEPARTMENT OF ENVIRONMENTAL PROTECTION**
**CWSRF DBE PROGRAM**

## PROGRESS REPORT OF DBE SUBCONTRACTOR UTILIZATION FORM

TO INSURE PROMPT PAYMENT THE FOLLOWING INFORMATION MUST BE SUBMITTED WITH ALL REIMBURSEMENT REQUESTS WHETHER THEY INCLUDE INVOICED AMOUNTS FROM A QUALIFYING WBE OR MBE PARTICIPANT OR NOT:

Municipality/District:_____ SRF #:_____

Name of Project:_____ Contractor:_____

Contractor's Payment Request No._____Period covered by the request_____

The accompanying Reimbursement Request includes the following WBE/MBE participation:

| Name & Address of WBE/MBE firm to be paid | WBE | MBE | Source of Certification, i.e., DOT, EPA or SBA | Amount to be paid this request | Type of Work |
|---|---|---|---|---|---|
| | | | | | |
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This attachment must be signed by an authorized representative of the contractor.

Signature_____ Date_____

Name:_____ Title:_____

Address:_____

Phone:_____ E-Mail:_____

# DISCLOSURE OF LOBBYING ACTIVITIES

Approved by OMB
0348-0046

Complete this form to disclose lobbying activities pursuant to 31 U.S.C. 1352
(See reverse for public burden disclosure.)

| 1. Type of Federal Action: | 2. Status of Federal Action: | 3. Report Type: |
|---|---|---|
| ☐ a. contract<br>b. grant<br>c. cooperative agreement<br>d. loan<br>e. loan guarantee<br>f. loan insurance | ☐ a. bid/offer/application<br>b. initial award<br>c. post-award | ☐ a. initial filing<br>b. material change<br>**For Material Change Only:**<br>year _____ quarter _____<br>date of last report _____ |

| 4. Name and Address of Reporting Entity: | 5. If Reporting Entity in No. 4 is a Subawardee, Enter Name and Address of Prime: |
|---|---|
| ☐ **Prime** ☐ **Subawardee**<br>Tier _____, *if known*:<br><br>**Congressional District**, *if known*: | <br><br><br>**Congressional District**, *if known*: |
| **6. Federal Department/Agency:** | **7. Federal Program Name/Description:**<br><br>CFDA Number, *if applicable*: _____ |
| **8. Federal Action Number,** *if known*: | **9. Award Amount,** *if known*:<br>$ |
| **10. a. Name and Address of Lobbying Registrant**<br>(*if individual, last name, first name, MI*): | **b. Individuals Performing Services** (*including address if different from No. 10a*)<br>(*last name, first name, MI*): |
| **11.** ation requested through this form is authorized by title 31 U.S.C. section 1352. This disclosure of lobbying activities is a material representation of fact upon which reliance was placed by the tier above when this transaction was made or entered into. This disclosure is required pursuant to 31 U.S.C. 1352. This information will be reported to the Congress semi-annually and will be available for public inspection. Any person who fails to file the required disclosure shall be subject to a civil penalty of not less that $10,000 and not more than $100,000 for each such failure. | Signature: _____<br>Print Name: _____<br>Title: _____<br>Telephone No.: _____ Date: _____ |

| **Federal Use Only:** | Authorized for Local Reproduction<br>Standard Form LLL (Rev. 4/2012 |
|---|---|

# INSTRUCTIONS FOR COMPLETION OF SF-LLL, DISCLOSURE OF LOBBYING ACTIVITIES

This disclosure form shall be completed by the reporting entity, whether subawardee or prime Federal recipient, at the initiation or receipt of a covered Federal action, or a material change to a previous filing, pursuant to title 31 U.S.C. section 1352. The filing of a form is required for each payment or agreement to make payment to any lobbying entity for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with a covered Federal action. Complete all items that apply for both the initial filing and material change report. Refer to the implementing guidance published by the Office of Management and Budget for additional information.

1. Identify the type of covered Federal action for which lobbying activity is and/or has been secured to influence the outcome of a covered Federal action.

2. Identify the status of the covered Federal action.

3. Identify the appropriate classification of this report. If this is a followup report caused by a material change to the information previously reported, enter the year and quarter in which the change occurred. Enter the date of the last previously submitted report by this reporting entity for this covered Federal action.

4. Enter the full name, address, city, State and zip code of the reporting entity. Include Congressional District, if known. Check the appropriate classification of the reporting entity that designates if it is, or expects to be, a prime or subaward recipient. Identify the tier of the subawardee, e.g., the first subawardee of the prime is the 1st tier. Subawards include but are not limited to subcontracts, subgrants and contract awards under grants.

5. If the organization filing the report in item 4 checks "Subawardee," then enter the full name, address, city, State and zip code of the prime Federal recipient. Include Congressional District, if known.

6. Enter the name of the Federal agency making the award or loan commitment. Include at least one organizational level below agency name, if known. For example, Department of Transportation, United States Coast Guard.

7. Enter the Federal program name or description for the covered Federal action (item 1). If known, enter the full Catalog of Federal Domestic Assistance (CFDA) number for grants, cooperative agreements, loans, and loan commitments.

8. Enter the most appropriate Federal identifying number available for the Federal action identified in item 1 (e.g., Request for Proposal (RFP) number; Invitation for Bid (IFB) number; grant announcement number; the contract, grant, or loan award number; the application/proposal control number assigned by the Federal agency). Include prefixes, e.g., "RFP-DE-90-001."

9. For a covered Federal action where there has been an award or loan commitment by the Federal agency, enter the Federal amount of the award/loan commitment for the prime entity identified in item 4 or 5.

10. (a) Enter the full name, address, city, State and zip code of the lobbying registrant under the Lobbying Disclosure Act of 1995 engaged by the reporting entity identified in item 4 to influence the covered Federal action.

    (b) Enter the full names of the individual(s) performing services, and include full address if different from 10 (a). Enter Last Name, First Name, and Middle Initial (MI).

11. The certifying official shall sign and date the form, print his/her name, title, and telephone number.

According to the Paperwork Reduction Act, as amended, no persons are required to respond to a collection of information unless it displays a valid OMB Control Number. The valid OMB control number for this information collection is OMB No. 0348-0046. Public reporting burden for this collection of information is estimated to average 10 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Office of Management and Budget, Paperwork Reduction Project (0348-0046), Washington, DC 20503.

United States Environmental Protection Agency

_____
EPA Project Control Number

# CERTIFICATION REGARDING LOBBYING

## CERTIFICATION FOR CONTRACTS, GRANTS, **LOANS AND COOPERATIVE AGREEMENTS**

The undersigned certifies, to the best of his or her knowledge and belief, that:

(1) No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, “Disclosure Form to Report Lobbying,” in accordance with its instructions.

(3) The undersigned shall require that the language of this certification be included in the award documents for all sub-awards at all tiers (including sub-contracts, sub-grants, and contracts under grants, loans, and cooperative agreements) and that all sub-recipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31 U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

_____
Typed Name & Title of Authorized Representative

_____
Signature and Date of Authorized Representative

# From the "Consolidated Appropriations Act, 2014"

H.R. 3547 (PL113-76, enacted 1/17/2014)

**USE OF AMERICAN IRON AND STEEL**

"SEC. 436. (a)(1) None of the funds made available by a State water pollution control revolving fund as authorized by title VI of the Federal Water Pollution Control Act (33 U.S.C. 1381 et seq.) or made available by a drinking water treatment revolving loan fund as authorized by section 1452 of the Safe Drinking Water Act (42 U.S.C. 300j–12) shall be used for a project for the construction, alteration, maintenance, or repair of a public water system or treatment works unless all of the iron and steel products used in the project are produced in the United States.

(2) In this section, the term ''iron and steel products'' means the following products made primarily of iron or steel: lined or unlined pipes and fittings, manhole covers and other municipal castings, hydrants, tanks, flanges, pipe clamps and restraints, valves, structural steel, reinforced precast concrete, and construction materials.

(b) Subsection (a) shall not apply in any case or category of cases in which the Administrator of the Environmental Protection Agency (in this section referred to as the ''Administrator'') finds that—

(1) applying subsection (a) would be inconsistent with the public interest;

(2) iron and steel products are not produced in the United States in sufficient and reasonably available quantities and of a satisfactory quality; or

(3) inclusion of iron and steel products produced in the United States will increase the cost of the overall project by more than 25 percent.

(c) If the Administrator receives a request for a waiver under this section, the Administrator shall make available to the public on an informal basis a copy of the request and information available to the Administrator concerning the request, and shall allow for informal public input on the request for at least 15 days prior to making a finding based on the request. The Administrator shall make the request and accompanying information available by electronic means, including on the official public Internet Web site of the Environmental Protection Agency.

(d) This section shall be applied in a manner consistent with United States obligations under international agreements.

(e) The Administrator may retain up to 0.25 percent of the funds appropriated in this Act for the Clean and Drinking Water State Revolving Funds for carrying out the provisions described in subsection (a)(1) for management and oversight of the requirements of this section.

(f) This section does not apply with respect to a project if a State agency approves the engineering plans and specifications for the project, in that agency's capacity to approve such plans and specifications prior to a project requesting bids, prior to the date of the enactment of this Act."

**CERTIFICATION BY THE OWNER**
OF COMPLIANCE WITH THE
**USE OF AMERICAN IRON AND STEEL LAW**
enacted on 1/17/2014

*(To be attached to each SRF requisition submitted for payment)*

We, the Owner named, _____, having obtained a loan from the State of Maine Clean Water State Revolving Fund (CWSRF), to fund the Project named _____ , hereby submit to the Department of Environmental Protection, certification from each contractor working on the Project that the use of American Iron and Steel in the construction of the Project complies with the law, or that a waiver has been obtained from the U.S. Environmental Protection Agency. Thereby, it is to the best of the Owner's knowledge that the costs being requested with this SRF requisition #_____ are in compliance with the Use of American Iron and Steel Law.

| _____ | _____ | _____ |
|---|---|---|
| Signature of Official | Printed name | Date |

Attachment: Certification by Contractor

# CERTIFICATION BY CONTRACTOR
OF COMPLIANCE WITH THE
## USE OF AMERICAN IRON AND STEEL LAW
enacted on 1/17/2014

*(To be attached to each pay application submitted for payment)*

We, the Prime Contractor and Subcontractors, as named below, hereby certify that the use of American iron and steel in the construction of the Project named _____ _____, being requested in the pay application (or invoice) #_____ and dated _____, complies with the Use of American Iron and Steel Law, or that a waiver been obtained from the U.S. Environmental Protection Agency.

Prime Contractor Name: _____

| _____ | _____ | _____ |
|---|---|---|
| Signature of Official | Printed name | Date |

---

| Subcontractor Name | Signature of Official | Date |
|---|---|---|
| _____ | _____ | _____ |
| _____ | _____ | _____ |
| _____ | _____ | _____ |
| _____ | _____ | _____ |
| _____ | _____ | _____ |
| _____ | _____ | _____ |

# ***Sample Step Manufacturer Certification***

***(Documentation must be provided on company letterhead)***

Date

Company Name

Company Address

City, State Zip

Subject: American Iron and Steel Step Manufacturer Certification for
Project Name _____

I, _____ (company representative), certify that the _____ (melting, bending, coating, galvanizing, cutting, etc.) process for _____ (manufacturing or fabricating) the following products and/or materials shipped or provided for the project is in full compliance with the American Iron and Steel requirement as mandated in EPA's State Revolving Fund Programs.

Item, Products and/or Materials:

1. _____

2. _____

3. _____

Such process took place at the following location: _____(address)

If any of the above compliance statements change while providing material to this project we will immediately notify the prime contractor and the engineer.

| _____ | _____ | _____ |
|---|---|---|
| Ccompany representative | Signature | Date |

## Covered Iron and Steel Products

(Guidance taken from EPA Memorandum dated March 20, 2014)

### 1) What is an iron or steel product?

For purposes of the CWSRF and DWSRF projects that must comply with the AIS requirement, an iron or steel product is one of the following made primarily of iron or steel that is permanently incorporated into the public water system or treatment works:

Lined or unlined pipes or fittings;
Manhole Covers;
Municipal Castings (defined in more detail below);
Hydrants;
Tanks;
Flanges;
Pipe clamps and restraints;
Valves;
Structural steel (defined in more detail below);
Reinforced precast concrete; and
Construction materials (defined in more detail below).

### 2) What does the term 'primarily iron or steel' mean?

'Primarily iron or steel' places constraints on the list of products above. For one of the listed products to be considered subject to the AIS requirements, it must be made of greater than 50% iron or steel, measured by cost. The cost should be based on the material costs.

### 3) Can you provide an example of how to perform a cost determination?

For example, the iron portion of a fire hydrant would likely be the bonnet, body and shoe, and the cost then would include the pouring and casting to create those components. The other material costs would include non-iron and steel internal workings of the fire hydrant (i.e., stem, coupling, valve, seals, etc). However, the assembly of the internal workings into the hydrant body would not be included in this cost calculation. If one of the listed products is not made primarily of iron or steel, United States (US) provenance is not required. An exception to this definition is reinforced precast concrete, which is addressed in a later question.

**4) If a product is composed of more than 50% iron or steel, but is not listed in the above list of items, must the item be produced in the US? Alternatively, must the iron or steel in such a product be produced in the US?**

The answer to both question is no. Only items on the above list must be produced in the US. Additionally, the iron or steel in a non-listed item can be sourced from outside the US.

**5) What is the definition of steel?**

Steel means an alloy that includes at least 50 percent iron, between .02 and 2 percent carbon, and may include other elements. Metallic elements such as chromium, nickel, molybdenum, manganese, and silicon may be added during the melting of steel for the purpose of enhancing properties such as corrosion resistance, hardness, or strength. The definition of steel covers carbon steel, alloy steel, stainless steel, tool steel and other specialty steels.

**6) What does 'produced in the United States' mean?**

Production in the United States of the iron or steel products used in the project requires that all manufacturing processes, including application of coatings, must take place in the United States, with the exception of metallurgical processes involving refinement of steel additives. All manufacturing processes includes processes such as melting, refining, forming, rolling, drawing, finishing, fabricating and coating. Further, if a domestic iron and steel product is taken out of the US for any part of the manufacturing process, it becomes foreign source material. However, raw materials such as iron ore, limestone and iron and steel scrap are not covered by the AIS requirement, and the material(s), if any, being applied as a coating are similarly not covered. Non-iron or steel components of an iron and steel product may come from non-US sources. For example, for products such as valves and hydrants, the individual non-iron and steel components do not have to be of domestic origin.

**7) Are the raw materials used in the production of iron or steel required to come from US sources?**

No. Raw materials, such as iron ore, limestone, scrap iron, and scrap steel, can come from non-US sources.

**8) If an above listed item is primarily made of iron or steel, but is only at the construction site temporarily, must such an item be produced in the US?**

No. Only the above listed products made primarily of iron or steel, permanently incorporated into the project must be produced in the US. For example trench boxes, scaffolding or equipment, which are removed from the project site upon completion of the project, are not required to be made of U.S. Iron or Steel.

**9) What is the definition of 'municipal castings'?**

Municipal castings are cast iron or steel infrastructure products that are melted and cast. They typically provide access, protection, or housing for components incorporated into utility owned drinking water, storm water, wastewater, and surface infrastructure. They are typically made of grey or ductile iron, or steel. Examples of municipal castings are:

Access Hatches;
Ballast Screen;
Benches (Iron or Steel);
Bollards;
Cast Bases;
Cast Iron Hinged Hatches, Square and Rectangular;
Cast Iron Riser Rings;
Catch Basin Inlet;
Cleanout/Monument Boxes;
Construction Covers and Frames;
Curb and Corner Guards;
Curb Openings;
Detectable Warning Plates;
Downspout Shoes (Boot, Inlet);
Drainage Grates, Frames and Curb Inlets;
Inlets;
Junction Boxes;
Lampposts;
Manhole Covers, Rings and Frames, Risers;
Meter Boxes;
Service Boxes;
Steel Hinged Hatches, Square and Rectangular;
Steel Riser Rings;
Trash receptacles;
Tree Grates;
Tree Guards;
Trench Grates; and
Valve Boxes, Covers and Risers.

**10) What is 'structural steel'?**

Structural steel is rolled flanged shapes, having at least one dimension of their cross-section three inches or greater, which are used in the construction of bridges, buildings, ships, railroad rolling stock, and for numerous other constructional purposes. Such shapes are designated as wide-flange shapes, standard I-beams, channels, angles, tees and zees. Other shapes include H-piles, sheet piling, tie plates, cross ties, and those for other special purposes.

**11) What is a 'construction material' for purposes of the AIS requirement?**

Construction materials are those articles, materials, or supplies made primarily of iron and steel, that are permanently incorporated into the project, not including mechanical and/or electrical components, equipment and systems. Some of these products may overlap with what is also considered "structural steel". This includes, but is not limited to, the following products: wire rod, bar, angles, concrete reinforcing bar, wire, wire cloth, wire rope and cables, tubing, framing, joists, trusses, fasteners (i.e., nuts and bolts), welding rods, decking, grating, railings, stairs, access ramps, fire escapes, ladders, wall panels, dome structures, roofing, ductwork, surface drains, cable hanging systems, manhole steps, fencing and fence tubing, guardrails, doors, and stationary screens.

**12) What is not considered a 'construction material' for purposes of the AIS requirement?**

Mechanical and electrical components, equipment and systems are not considered construction materials. Mechanical equipment is typically that which has motorized parts and/or is powered by a motor. Electrical equipment is typically any machine powered by electricity and includes components that are part of the electrical distribution system.

The following examples (including their appurtenances necessary for their intended use and operation) are NOT considered construction materials: pumps, motors, gear reducers, drives (including variable frequency drives (VFDs)), electric/pneumatic/manual accessories used to operate valves (such as electric valve actuators), mixers, gates, motorized screens (such as traveling screens), blowers/aeration equipment, compressors, meters, sensors, controls and switches, supervisory control and data acquisition (SCADA), membrane bioreactor systems, membrane filtration systems, filters, clarifiers and clarifier mechanisms, rakes, grinders, disinfection systems, presses (including belt presses), conveyors, cranes, HVAC (excluding ductwork), water heaters, heat exchangers, generators, cabinetry and housings (such as electrical boxes/enclosures), lighting fixtures, electrical conduit, emergency life systems, metal office furniture, shelving, laboratory equipment, analytical instrumentation, and dewatering equipment.

**13) If the iron or steel is produced in the US, may other steps in the manufacturing process take place outside of the US, such as assembly?**

No. Production in the US of the iron or steel used in a listed product requires that all manufacturing processes must take place in the United States, except metallurgical processes involving refinement of steel additives.

**14) What processes must occur in the US to be compliant with the AIS requirement for reinforced precast concrete?**

While reinforced precast concrete may not be at least 50% iron or steel, in this particular case, the reinforcing bar and wire must be produced in the US and meet the same standards as for any other iron or steel product. Additionally, the casting of the concrete product must take place in the US. The cement and other raw materials used in concrete production are not required to be of domestic origin. If the reinforced concrete is cast at the construction site, the reinforcing bar and wire are considered to be a construction material and must be produced in the US.

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# STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

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## ARTICLE 1 – DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

A. Wherever used in the Bidding Requirements or Contract Documents, a term printed with initial capital letters, including the term's singular and plural forms, will have the meaning indicated in the definitions below. In addition to terms specifically defined, terms with initial capital letters in the Contract Documents include references to identified articles and paragraphs, and the titles of other documents or forms.

1. *Addenda*—Written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Bidding Requirements or the proposed Contract Documents.

2. *Agreement*—The written instrument, executed by City, District, and Contractor, that sets forth the Contract Price and Contract Times, identifies the parties and the Engineer, and designates the specific items that are Contract Documents.

3. *Application for Payment*—The form acceptable to Engineer which is to be used by Contractor during the course of the Work in requesting progress or final payments and which is to be accompanied by such supporting documentation as is required by the Contract Documents.

4. *Bid*—The offer of a Bidder submitted on the prescribed form setting forth the prices for the Work to be performed.

5. *Bidder*—An individual or entity that submits a Bid to City and District.

6. *Bidding Documents*—The Bidding Requirements, the proposed Contract Documents, and all Addenda.

7. *Bidding Requirements*—The advertisement or invitation to bid, Instructions to Bidders, Bid Bond or other Bid security, if any, the Bid Form, and the Bid with any attachments.

8. *Change Order*—A document which is signed by Contractor and City or District as appropriate and authorizes an addition, deletion, or revision in the Work or an adjustment in the Contract Price or the Contract Times, or other revision to the Contract, issued on or after the Effective Date of the Contract.

9. *Change Proposal*—A written request by Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment in Contract Price or Contract Times, or both; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; challenging a set-off against payments due; or seeking other relief with respect to the terms of the Contract.

10. *Claim*—(a) A demand or assertion by City or District directly to Contractor, duly submitted in compliance with the procedural requirements set forth herein: seeking an adjustment of Contract Price or Contract Times, or both; contesting an initial decision by Engineer concerning the requirements of the Contract Documents or the acceptability of Work under the Contract Documents; contesting Engineer's decision regarding a Change Proposal; seeking resolution of a contractual issue that Engineer has declined to address; or seeking other relief with respect to the terms of the Contract; or (b) a demand or assertion by Contractor directly to City or District, duly

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submitted in compliance with the procedural requirements set forth herein, contesting Engineer's decision regarding a Change Proposal; or seeking resolution of a contractual issue that Engineer has declined to address. A demand for money or services by a third party is not a Claim.

11. *City*—The individual or entity with which Contractor has contracted regarding the Work, in conjunction with the District, and which has agreed to pay Contractor for the performance of the Work, pursuant to the terms of the Contract.

12. *Constituent of Concern*—Asbestos, petroleum, radioactive materials, polychlorinated biphenyls (PCBs), hazardous waste, and any substance, product, waste, or other material of any nature whatsoever that is or becomes listed, regulated, or addressed pursuant to (a) the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. §§9601 et seq. ("CERCLA"); (b) the Hazardous Materials Transportation Act, 49 U.S.C. §§5501 et seq.; (c) the Resource Conservation and Recovery Act, 42 U.S.C. §§6901 et seq. ("RCRA"); (d) the Toxic Substances Control Act, 15 U.S.C. §§2601 et seq.; (e) the Clean Water Act, 33 U.S.C. §§1251 et seq.; (f) the Clean Air Act, 42 U.S.C. §§7401 et seq.; or (g) any other federal, state, or local statute, law, rule, regulation, ordinance, resolution, code, order, or decree regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, or material.

13. *Contract*—The entire and integrated written contract between the City, District, and Contractor concerning the Work.

14. *Contract Documents*—Those items so designated in the Agreement, and which together comprise the Contract.

15. *Contract Price*—The money that City and District have agreed to pay Contractor for completion of the Work in accordance with the Contract Documents. .

16. *Contract Times*—The number of days or the dates by which Contractor shall: (a) achieve Milestones, if any; (b) achieve Substantial Completion; and (c) complete the Work.

17. *Contractor*—The individual or entity with which City and District has contracted for performance of the Work.

18. *Cost of the Work*—See Paragraph 13.01 for definition.

19. *District*—The individual or entity with which Contractor has contracted regarding the Work, in conjunction with the City, and which has agreed to pay Contractor for the performance of the Work, pursuant to the terms of the Contract.

20. *Drawings*—The part of the Contract that graphically shows the scope, extent, and character of the Work to be performed by Contractor.

21. *Effective Date of the Contract*—The date, indicated in the Agreement, on which the Contract becomes effective.

22. *Engineer*—The individual or entity named as such in the Agreement.

23. *Field Order*—A written order issued by Engineer which requires minor changes in the Work but does not change the Contract Price or the Contract Times.

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24. *Geotechnical Baseline Report (GBR)* – The interpretive report prepared by or for City or District regarding subsurface conditions at the Site, and containing specific baseline geotechnical conditions that may be anticipated or relied upon for bidding and contract administration purposes, subject to the controlling provisions of the Contract, including the GBR's own terms. The GBR is a Contract Document.

25. Geotechnical Data Report (GDR) – The factual report that collects and presents data regarding actual subsurface conditions at or adjacent to the Site, including Technical Data and other geotechnical data, prepared by or for the City or District in support of the Geotechnical Baseline Report. The GDR's content may include logs of borings, trenches, and other site investigations, recorded measurements of subsurface water levels, the results of field and laboratory testing, and descriptions of the investigative and testing programs. The GDR does not include an interpretation of the data. If opinions, or interpretive or speculative non-factual comments or statements appear in a document that is labeled a GDR, such opinions, comments, or statements are not operative parts of the GDR and do not have contractual standing. Subject to that exception, the GDR is a Contract Document.

26. *Hazardous Environmental Condition*—The presence at the Site of Constituents of Concern in such quantities or circumstances that may present a danger to persons or property exposed thereto. The presence at the Site of materials that are necessary for the execution of the Work, or that are to be incorporated in the Work, and that are controlled and contained pursuant to industry practices, Laws and Regulations, and the requirements of the Contract, does not establish a Hazardous Environmental Condition.

27. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, statutes, rules, regulations, ordinances, codes, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.

28. *Liens*—Charges, security interests, or encumbrances upon Contract-related funds, real property, or personal property.

29. *Milestone*—A principal event in the performance of the Work that the Contract requires Contractor to achieve by an intermediate completion date or by a time prior to Substantial Completion of all the Work.

30. *Notice of Award*—The written notice by City and District to a Bidder of City and District's acceptance of the Bid.

31. *Notice to Proceed*—A written notice by City and District to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work.

32. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising the Contractor's plan to accomplish the Work within the Contract Times.

33. *Project*—The total undertaking to be accomplished for City and District by engineers, contractors, and others, including planning, study, design, construction, testing, commissioning, and start-up, and of which the Work to be performed under the Contract Documents is a part.

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34. *Project Manual*—The written documents prepared for, or made available for, procuring and constructing the Work, including but not limited to the Bidding Documents or other construction procurement documents, geotechnical and existing conditions information, the Agreement, bond forms, General Conditions, Supplementary Conditions, and Specifications. The contents of the Project Manual may be bound in one or more volumes.

35. *Resident Project Representative*—The authorized representative of Engineer assigned to assist Engineer at the Site. As used herein, the term Resident Project Representative or "RPR" includes any assistants or field staff of Resident Project Representative.

36. *Samples*—Physical examples of materials, equipment, or workmanship that are representative of some portion of the Work and that establish the standards by which such portion of the Work will be judged.

37. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements for Engineer's review of the submittals and the performance of related construction activities.

38. *Schedule of Values*—A schedule, prepared and maintained by Contractor, allocating portions of the Contract Price to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

39. *Shop Drawings*—All drawings, diagrams, illustrations, schedules, and other data or information that are specifically prepared or assembled by or for Contractor and submitted by Contractor to illustrate some portion of the Work. Shop Drawings, whether approved or not, are not Drawings and are not Contract Documents.

40. *Site*—Lands or areas indicated in the Contract Documents as being furnished by City and District upon which the Work is to be performed, including rights-of-way and easements, and such other lands furnished by City or District which are designated for the use of Contractor.

41. *Specifications*—The part of the Contract that consists of written requirements for materials, equipment, systems, standards, and workmanship as applied to the Work, and certain administrative requirements and procedural matters applicable to the Work.

42. *Subcontractor*—An individual or entity having a direct contract with Contractor or with any other Subcontractor for the performance of a part of the Work.

43. *Substantial Completion*—The time at which the Work (or a specified part thereof) has progressed to the point where, in the opinion of Engineer, the Work (or a specified part thereof) is sufficiently complete, in accordance with the Contract Documents, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. The terms "substantially complete" and "substantially completed" as applied to all or part of the Work refer to Substantial Completion thereof.

44. *Successful Bidder*—The Bidder whose Bid the City or District accepts, and to which the City or District makes an award of contract, subject to stated conditions.

45. *Supplementary Conditions*—The part of the Contract that amends or supplements these General Conditions.

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46. *Supplier*—A manufacturer, fabricator, supplier, distributor, materialman, or vendor having a direct contract with Contractor or with any Subcontractor to furnish materials or equipment to be incorporated in the Work by Contractor or a Subcontractor.

47. *Technical Data*—Those items expressly identified as Technical Data in the Supplementary Conditions, with respect to either (a) subsurface conditions at the Site, or physical conditions relating to existing surface or subsurface structures at the Site (except Underground Facilities) or (b) Hazardous Environmental Conditions at the Site. If no such express identifications of Technical Data have been made with respect to conditions at the Site, then the data contained in boring logs, recorded measurements of subsurface water levels, laboratory test results, and other factual, objective information regarding conditions at the Site that are set forth in any geotechnical or environmental report prepared for the Project and made available to Contractor are hereby defined as Technical Data with respect to conditions at the Site under Paragraphs 5.03, 5.04, and 5.06.

48. *Underground Facilities*—All underground pipelines, conduits, ducts, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or attachments, and any encasements containing such facilities, including but not limited to those that convey electricity, gases, steam, liquid petroleum products, telephone or other communications, fiber optic transmissions, cable television, water, wastewater, storm water, other liquids or chemicals, or traffic or other control systems.

49. *Unit Price Work*—Work to be paid for on the basis of unit prices.

50. *Work*—The entire construction or the various separately identifiable parts thereof required to be provided under the Contract Documents. Work includes and is the result of performing or providing all labor, services, and documentation necessary to produce such construction; furnishing, installing, and incorporating all materials and equipment into such construction; and may include related services such as testing, start-up, and commissioning, all as required by the Contract Documents.

51. *Work Change Directive*—A written directive to Contractor issued on or after the Effective Date of the Contract, signed by City and District as appropriate and recommended by Engineer, ordering an addition, deletion, or revision in the Work.

1.02 *Terminology*

A. The words and terms discussed in the following paragraphs are not defined but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.

B. *Intent of Certain Terms or Adjectives*:

1. The Contract Documents include the terms “as allowed,” “as approved,” “as ordered,” “as directed” or terms of like effect or import to authorize an exercise of professional judgment by Engineer. In addition, the adjectives “reasonable,” “suitable,” “acceptable,” “proper,” “satisfactory,” or adjectives of like effect or import are used to describe an action or determination of Engineer as to the Work. It is intended that such exercise of professional judgment, action, or determination will be solely to evaluate, in general, the Work for compliance with the information in the Contract Documents and with the design concept of the Project as a functioning whole as shown or indicated in the Contract Documents (unless there is a specific statement indicating otherwise). The use of any such term or adjective is not intended to and

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shall not be effective to assign to Engineer any duty or authority to supervise or direct the performance of the Work, or any duty or authority to undertake responsibility contrary to the provisions of Article 10 or any other provision of the Contract Documents.

C. *Day*:

1. The word "day" means a calendar day of 24 hours measured from midnight to the next midnight.

D. *Defective*:

1. The word "defective," when modifying the word "Work," refers to Work that is unsatisfactory, faulty, or deficient in that it:

   a. does not conform to the Contract Documents; or

   b. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or

   c. has been damaged prior to Engineer's recommendation of final payment (unless responsibility for the protection thereof has been assumed by City and District at Substantial Completion in accordance with Paragraph 15.03 or 15.04).

E. *Furnish, Install, Perform, Provide*:

1. The word "furnish," when used in connection with services, materials, or equipment, shall mean to supply and deliver said services, materials, or equipment to the Site (or some other specified location) ready for use or installation and in usable or operable condition.

2. The word "install," when used in connection with services, materials, or equipment, shall mean to put into use or place in final position said services, materials, or equipment complete and ready for intended use.

3. The words "perform" or "provide," when used in connection with services, materials, or equipment, shall mean to furnish and install said services, materials, or equipment complete and ready for intended use.

4. If the Contract Documents establish an obligation of Contractor with respect to specific services, materials, or equipment, but do not expressly use any of the four words "furnish," "install," "perform," or "provide," then Contractor shall furnish and install said services, materials, or equipment complete and ready for intended use.

F. Unless stated otherwise in the Contract Documents, words or phrases that have a well-known technical or construction industry or trade meaning are used in the Contract Documents in accordance with such recognized meaning.

## ARTICLE 2 – PRELIMINARY MATTERS

### 2.01 *Delivery of Bonds and Evidence of Insurance*

A. *Bonds*: When Contractor delivers the executed counterparts of the Agreement to City and District, Contractor shall also deliver to City and District such bonds as Contractor may be required to furnish.

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B. *Evidence of Contractor's Insurance*: When Contractor delivers the executed counterparts of the Agreement toCity or District, , Contractor shall also deliver to City or District, with copies to each named insured and additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract), the certificates and other evidence of insurance required to be provided by Contractor in accordance with Article 6.

C. *Evidence of City and District's Insurance*: After receipt of the executed counterparts of the Agreement and all required bonds and insurance documentation, City and District shall promptly deliver to Contractor, with copies to each named insured and additional insured (as identified in the Supplementary Conditions or otherwise), the certificates and other evidence of insurance required to be provided by City and District under Article 6.

2.02 *Copies of Documents*

A. City and District shall furnish to Contractor one printed copy of the Contract (including one fully executed counterpart of the Agreement), and one copy in electronic portable document format (PDF). Additional printed copies will be furnished upon request at the cost of reproduction.

B. City and District shall maintain and safeguard at least one original printed record version of the Contract, including Drawings and Specifications signed and sealed by Engineer and other design professionals. City and District shall make such original printed record version of the Contract available to Contractor for review. City and District may delegate the responsibilities under this provision to Engineer.

2.03 *Before Starting Construction*

A. *Preliminary Schedules*: Within 10 days after the Effective Date of the Contract (or as otherwise specifically required by the Contract Documents), Contractor shall submit to Engineer for timely review:

1. a preliminary Progress Schedule indicating the times (numbers of days or dates) for starting and completing the various stages of the Work, including any Milestones specified in the Contract;

2. a preliminary Schedule of Submittals; and

3. a preliminary Schedule of Values for all of the Work which includes quantities and prices of items which when added together equal the Contract Price and subdivides the Work into component parts in sufficient detail to serve as the basis for progress payments during performance of the Work. Such prices will include an appropriate amount of overhead and profit applicable to each item of Work.

2.04 *Preconstruction Conference; Designation of Authorized Representatives*

A. Before any Work at the Site is started, a conference attended by City, District, Contractor, Engineer, and others as appropriate will be held to establish a working understanding among the parties as to the Work and to discuss the schedules referred to in Paragraph 2.03.A, procedures for handling Shop Drawings, Samples, and other submittals, processing Applications for Payment, electronic or digital transmittals, and maintaining required records.

B. At this conference City, District, and Contractor each shall designate, in writing, a specific individual to act as its authorized representative with respect to the services and responsibilities under the Contract. Such individuals shall have the authority to transmit

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and receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.05 *Initial Acceptance of Schedules*

A. At least 10 days before submission of the first Application for Payment a conference, attended by Contractor, Engineer, and others as appropriate, will be held to review for acceptability to Engineer as provided below the schedules submitted in accordance with Paragraph 2.03.A. Contractor shall have an additional 10 days to make corrections and adjustments and to complete and resubmit the schedules. No progress payment shall be made to Contractor until acceptable schedules are submitted to Engineer.

1. The Progress Schedule will be acceptable to Engineer if it provides an orderly progression of the Work to completion within the Contract Times. Such acceptance will not impose on Engineer responsibility for the Progress Schedule, for sequencing, scheduling, or progress of the Work, nor interfere with or relieve Contractor from Contractor's full responsibility therefor.

2. Contractor's Schedule of Submittals will be acceptable to Engineer if it provides a workable arrangement for reviewing and processing the required submittals.

3. Contractor's Schedule of Values will be acceptable to Engineer as to form and substance if it provides a reasonable allocation of the Contract Price to the component parts of the Work.

2.06 *Electronic Transmittals*

A. Except as otherwise stated elsewhere in the Contract, the City, District, Engineer, and Contractor may transmit, and shall accept, Project-related correspondence, text, data, documents, drawings, information, and graphics, including but not limited to Shop Drawings and other submittals, in electronic media or digital format, either directly, or through access to a secure Project website.

B. If the Contract does not establish protocols for electronic or digital transmittals, then City, District, Engineer, and Contractor shall jointly develop such protocols.

C. When transmitting items in electronic media or digital format, the transmitting party makes no representations as to long term compatibility, usability, or readability of the items resulting from the recipient's use of software application packages, operating systems, or computer hardware differing from those used in the drafting or transmittal of the items, or from those established in applicable transmittal protocols.

## ARTICLE 3 – DOCUMENTS: INTENT, REQUIREMENTS, REUSE

3.01 *Intent*

A. The Contract Documents are complementary; what is required by one is as binding as if required by all.

B. It is the intent of the Contract Documents to describe a functionally complete project (or part thereof) to be constructed in accordance with the Contract Documents.

C. Unless otherwise stated in the Contract Documents, if there is a discrepancy between the electronic or digital versions of the Contract Documents (including any printed copies

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derived from such electronic or digital versions) and the printed record version, the printed record version shall govern.

D. The Contract supersedes prior negotiations, representations, and agreements, whether written or oral.

E. Engineer will issue clarifications and interpretations of the Contract Documents as provided herein.

3.02 *Reference Standards*

A. Standards Specifications, Codes, Laws and Regulations

1. Reference in the Contract Documents to standard specifications, manuals, reference standards, or codes of any technical society, organization, or association, or to Laws or Regulations, whether such reference be specific or by implication, shall mean the standard specification, manual, reference standard, code, or Laws or Regulations in effect at the time of opening of Bids (or on the Effective Date of the Contract if there were no Bids), except as may be otherwise specifically stated in the Contract Documents.

2. No provision of any such standard specification, manual, reference standard, or code, or any instruction of a Supplier, shall be effective to change the duties or responsibilities of City, District, Contractor, or Engineer, or any of their subcontractors, consultants, agents, or employees, from those set forth in the part of the Contract Documents prepared by or for Engineer. No such provision or instruction shall be effective to assign to City, District, Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, any duty or authority to supervise or direct the performance of the Work or any duty or authority to undertake responsibility inconsistent with the provisions of the part of the Contract Documents prepared by or for Engineer.

3.03 *Reporting and Resolving Discrepancies*

A. *Reporting Discrepancies*:

1. *Contractor's Verification of Figures and Field Measurements*: Before undertaking each part of the Work, Contractor shall carefully study the Contract Documents, and check and verify pertinent figures and dimensions therein, particularly with respect to applicable field measurements. Contractor shall promptly report in writing to Engineer any conflict, error, ambiguity, or discrepancy that Contractor discovers, or has actual knowledge of, and shall not proceed with any Work affected thereby until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or interpretation by Engineer, or by an amendment or supplement to the Contract Documents issued pursuant to Paragraph 11.01.

2. *Contractor's Review of Contract Documents*: If, before or during the performance of the Work, Contractor discovers any conflict, error, ambiguity, or discrepancy within the Contract Documents, or between the Contract Documents and (a) any applicable Law or Regulation, (b) actual field conditions, (c) any standard specification, manual, reference standard, or code, or (d) any instruction of any Supplier, then Contractor shall promptly report it to Engineer in writing. Contractor shall not proceed with the Work affected thereby (except in an emergency as required by Paragraph 7.15) until the conflict, error, ambiguity, or discrepancy is resolved, by a clarification or

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interpretation by Engineer, or by an amendment or supplement to the Contract Documents issued pursuant to Paragraph 11.01.

3. Contractor shall not be liable to City, District, or Engineer for failure to report any conflict, error, ambiguity, or discrepancy in the Contract Documents unless Contractor had actual knowledge thereof.

B. *Resolving Discrepancies*:

1. Except as may be otherwise specifically stated in the Contract Documents, the provisions of the part of the Contract Documents prepared by or for Engineer shall take precedence in resolving any conflict, error, ambiguity, or discrepancy between such provisions of the Contract Documents and:

a. the provisions of any standard specification, manual, reference standard, or code, or the instruction of any Supplier (whether or not specifically incorporated by reference as a Contract Document); or

b. the provisions of any Laws or Regulations applicable to the performance of the Work (unless such an interpretation of the provisions of the Contract Documents would result in violation of such Law or Regulation).

3.04 *Requirements of the Contract Documents*

A. During the performance of the Work and until final payment, Contractor and City and District shall submit to the Engineer all matters in question concerning the requirements of the Contract Documents (sometimes referred to as requests for information or interpretation—RFIs), or relating to the acceptability of the Work under the Contract Documents, as soon as possible after such matters arise. Engineer will be the initial interpreter of the requirements of the Contract Documents, and judge of the acceptability of the Work thereunder.

B. Engineer will, with reasonable promptness, render a written clarification, interpretation, or decision on the issue submitted, or initiate an amendment or supplement to the Contract Documents. Engineer's written clarification, interpretation, or decision will be final and binding on Contractor, unless it appeals by submitting a Change Proposal, and on City or District, unless it appeals by filing a Claim.

C. If a submitted matter in question concerns terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work under the Contract Documents, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, then Engineer will promptly give written notice to City, District, and Contractor that Engineer is unable to provide a decision or interpretation. If City, District, and Contractor are unable to agree on resolution of such a matter in question, either party may pursue resolution as provided in Article 12.

3.05 *Reuse of Documents*

A. Contractor and its Subcontractors and Suppliers shall not:

1. have or acquire any title to or ownership rights in any of the Drawings, Specifications, or other documents (or copies of any thereof) prepared by or bearing the seal of Engineer or its consultants, including electronic media editions, or reuse any such Drawings, Specifications, other documents, or copies thereof on extensions of the

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Project or any other project without written consent of City, District, and Engineer and specific written verification or adaptation by Engineer; or

2. have or acquire any title or ownership rights in any other Contract Documents, reuse any such Contract Documents for any purpose withoutCity or District's's express written consent, or violate any copyrights pertaining to such Contract Documents.

B. The prohibitions of this Paragraph 3.05 will survive final payment, or termination of the Contract. Nothing herein shall preclude Contractor from retaining copies of the Contract Documents for record purposes.

## ARTICLE 4 – COMMENCEMENT AND PROGRESS OF THE WORK

4.01 *Commencement of Contract Times; Notice to Proceed*

A. The Contract Times will commence to run on the thirtieth day after the Effective Date of the Contract or, if a Notice to Proceed is given, on the day indicated in the Notice to Proceed. A Notice to Proceed may be given at any time within 30 days after the Effective Date of the Contract. In no event will the Contract Times commence to run later than the sixtieth day after the day of Bid opening or the thirtieth day after the Effective Date of the Contract, whichever date is earlier.

4.02 *Starting the Work*

A. Contractor shall start to perform the Work on the date when the Contract Times commence to run. No Work shall be done at the Site prior to such date.

4.03 *Reference Points*

A. City and District shall provide engineering surveys to establish reference points for construction which in Engineer's judgment are necessary to enable Contractor to proceed with the Work. Contractor shall be responsible for laying out the Work, shall protect and preserve the established reference points and property monuments, and shall make no changes or relocations without the prior written approval of City or District. Contractor shall report to Engineer whenever any reference point or property monument is lost or destroyed or requires relocation because of necessary changes in grades or locations, and shall be responsible for the accurate replacement or relocation of such reference points or property monuments by professionally qualified personnel.

4.04 *Progress Schedule*

A. Contractor shall adhere to the Progress Schedule established in accordance with Paragraph 2.05 as it may be adjusted from time to time as provided below.

1. Contractor shall submit to Engineer for acceptance (to the extent indicated in Paragraph 2.05) proposed adjustments in the Progress Schedule that will not result in changing the Contract Times.

2. Proposed adjustments in the Progress Schedule that will change the Contract Times shall be submitted in accordance with the requirements of Article 11.

B. Contractor shall carry on the Work and adhere to the Progress Schedule during all disputes or disagreements with City or District. No Work shall be delayed or postponed pending resolution of any disputes or disagreements, or during any appeal process, except as

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permitted by Paragraph 16.04, or as City, District, and Contractor may otherwise agree in writing.

4.05 *Delays in Contractor's Progress*

A. If City, District, Engineer, or anyone for whom City or District is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in the Contract Times and Contract Price. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.

B. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for delay, disruption, or interference caused by or within the control of Contractor. Delay, disruption, and interference attributable to and within the control of a Subcontractor or Supplier shall be deemed to be within the control of Contractor.

C. If Contractor's performance or progress is delayed, disrupted, or interfered with by unanticipated causes not the fault of and beyond the control of City, District, Contractor, and those for which they are responsible, then Contractor shall be entitled to an equitable adjustment in Contract Times. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times. Such an adjustment shall be Contractor's sole and exclusive remedy for the delays, disruption, and interference described in this paragraph. Causes of delay, disruption, or interference that may give rise to an adjustment in Contract Times under this paragraph include but are not limited to the following:

1. severe and unavoidable natural catastrophes such as fires, floods, epidemics, and earthquakes;

2. abnormal weather conditions;

3. acts or failures to act of utility owners (other than those performing other work at or adjacent to the Site by arrangement with the City or District, as contemplated in Article 8); and

4. acts of war or terrorism.

D. Delays, disruption, and interference to the performance or progress of the Work resulting from the existence of a differing subsurface or physical condition, an Underground Facility that was not shown or indicated by the Contract Documents, or not shown or indicated with reasonable accuracy, and those resulting from Hazardous Environmental Conditions, are governed by Article 5.

E. Paragraph 8.03 governs delays, disruption, and interference to the performance or progress of the Work resulting from the performance of certain other work at or adjacent to the Site.

F. Contractor shall not be entitled to an adjustment in Contract Price or Contract Times for any delay, disruption, or interference if such delay is concurrent with a delay, disruption, or interference caused by or within the control of Contractor.

G. Contractor must submit any Change Proposal seeking an adjustment in Contract Price or Contract Times under this paragraph within 30 days of the commencement of the delaying, disrupting, or interfering event.

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## ARTICLE 5 – AVAILABILITY OF LANDS; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS

5.01 *Availability of Lands*

A. City and District shall furnish the Site. City and District shall notify Contractor of any encumbrances or restrictions not of general application but specifically related to use of the Site with which Contractor must comply in performing the Work.

B. Upon reasonable written request, City and District shall furnish Contractor with a current statement of record legal title and legal description of the lands upon which permanent improvements are to be made and City and District's interest therein as necessary for giving notice of or filing a mechanic's or construction lien against such lands in accordance with applicable Laws and Regulations.

C. Contractor shall provide for all additional lands and access thereto that may be required for temporary construction facilities or storage of materials and equipment.

5.02 *Use of Site and Other Areas*

A. *Limitation on Use of Site and Other Areas*:

1. Contractor shall confine construction equipment, temporary construction facilities, the storage of materials and equipment, and the operations of workers to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas permitted by Laws and Regulations, and shall not unreasonably encumber the Site and such other adjacent areas with construction equipment or other materials or equipment. Contractor shall assume full responsibility for (a) damage to the Site; (b) damage to any such other adjacent areas used for Contractor's operations; (c) damage to any other adjacent land or areas; and (d) for injuries and losses sustained by the owners or occupants of any such land or areas; provided that such damage or injuries result from the performance of the Work or from other actions or conduct of the Contractor or those for which Contractor is responsible.

2. If a damage or injury claim is made by the owner or occupant of any such land or area because of the performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible, Contractor shall (a) take immediate corrective or remedial action as required by Paragraph 7.12, or otherwise; (b) promptly attempt to settle the claim as to all parties through negotiations with such owner or occupant, or otherwise resolve the claim by arbitration or other dispute resolution proceeding, or at law; and (c) to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless City, District, and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against any such claim, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any claim or action, legal or equitable, brought by any such owner or occupant against City, District, Engineer, or any other party indemnified hereunder to the extent caused directly or indirectly, in whole or in part by, or based upon, Contractor's performance of the Work, or because of other actions or conduct of the Contractor or those for which Contractor is responsible.

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B. *Removal of Debris During Performance of the Work*: During the progress of the Work the Contractor shall keep the Site and other adjacent areas free from accumulations of waste materials, rubbish, and other debris. Removal and disposal of such waste materials, rubbish, and other debris shall conform to applicable Laws and Regulations.

C. *Cleaning*: Prior to Substantial Completion of the Work Contractor shall clean the Site and the Work and make it ready for utilization by City and District. At the completion of the Work Contractor shall remove from the Site and adjacent areas all tools, appliances, construction equipment and machinery, and surplus materials and shall restore to original condition all property not designated for alteration by the Contract Documents.

D. *Loading of Structures*: Contractor shall not load nor permit any part of any structure to be loaded in any manner that will endanger the structure, nor shall Contractor subject any part of the Work or adjacent structures or land to stresses or pressures that will endanger them.

5.03 *Subsurface and Physical Conditions*

A. No reports of explorations or tests of subsurface conditions at or adjacent to the Site, or drawings of physical conditions relating to existing surface or subsurface structures at the Site, are known to City and District.

5.04 *Differing Subsurface or Physical Conditions*

A. *Notice by Contractor*: If Contractor believes that any subsurface or physical condition that is uncovered or revealed at the Site either:

1. is of such a nature as to establish that any Technical Data on which Contractor is entitled to rely as provided in Paragraph 5.03 is materially inaccurate; or
2. is of such a nature as to require a change in the Drawings or Specifications; or
3. differs materially from that shown or indicated in the Contract Documents; or
4. is of an unusual nature, and differs materially from conditions ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents;

then Contractor shall, promptly after becoming aware thereof and before further disturbing the subsurface or physical conditions or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), notify City, District, and Engineer in writing about such condition. Contractor shall not further disturb such condition or perform any Work in connection therewith (except with respect to an emergency) until receipt of a written statement permitting Contractor to do so.

B. *Engineer's Review*: After receipt of written notice as required by the preceding paragraph, Engineer will promptly review the subsurface or physical condition in question; determine the necessity of City or District's obtaining additional exploration or tests with respect to the condition; conclude whether the condition falls within any one or more of the differing site condition categories in Paragraph 5.04.A above; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to City and District regarding the Contractor's resumption of Work in connection with the subsurface or physical condition in question and the need for any change in the Drawings or Specifications; and advise City and District in writing of Engineer's findings, conclusions, and recommendations.

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C. *City or District's Statement to Contractor Regarding Site Condition*: After receipt of Engineer's written findings, conclusions, and recommendations, City or District shall issue a written statement to Contractor (with a copy to Engineer) regarding the subsurface or physical condition in question, addressing the resumption of Work in connection with such condition, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations, in whole or in part.

D. *Possible Price and Times Adjustments*:

1. Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times, or both, to the extent that the existence of a differing subsurface or physical condition, or any related delay, disruption, or interference, causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

   a. such condition must fall within any one or more of the categories described in Paragraph 5.04.A;

   b. with respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03; and,

   c. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.

2. Contractor shall not be entitled to any adjustment in the Contract Price or Contract Times with respect to a subsurface or physical condition if:

   a. Contractor knew of the existence of such condition at the time Contractor made a commitment to City and District with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract, or otherwise; or

   b. the existence of such condition reasonably could have been discovered or revealed as a result of any examination, investigation, exploration, test, or study of the Site and contiguous areas expressly required by the Bidding Requirements or Contract Documents to be conducted by or for Contractor prior to Contractor's making such commitment; or

   c. Contractor failed to give the written notice as required by Paragraph 5.04.A.

3. If City, District, and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, or both, then any such adjustment shall be set forth in a Change Order.

4. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, or both, no later than 30 days after City or District's issuance of the City or District's written statement to Contractor regarding the subsurface or physical condition in question.

5.05 *Underground Facilities*

A. *Contractor's Responsibilities*: The information and data shown or indicated in the Contract Documents with respect to existing Underground Facilities at or adjacent to the Site is based on information and data furnished to City, District, or Engineer by the owners of such

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Underground Facilities, including City or District, or by others. Unless it is otherwise expressly provided in the Supplementary Conditions:

1. City, District, and Engineer do not warrant or guarantee the accuracy or completeness of any such information or data provided by others; and
2. the cost of all of the following will be included in the Contract Price, and Contractor shall have full responsibility for:
    a. reviewing and checking all information and data regarding existing Underground Facilities at the Site;
    b. locating all Underground Facilities shown or indicated in the Contract Documents as being at the Site;
    c. coordination of the Work with the owners (including City and District) of such Underground Facilities, during construction; and
    d. the safety and protection of all existing Underground Facilities at the Site, and repairing any damage thereto resulting from the Work.

B. *Notice by Contractor*: If Contractor believes that an Underground Facility that is uncovered or revealed at the Site was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy, then Contractor shall, promptly after becoming aware thereof and before further disturbing conditions affected thereby or performing any Work in connection therewith (except in an emergency as required by Paragraph 7.15), identify the owner of such Underground Facility and give written notice to that owner and to City, District and Engineer.

C. *Engineer's Review*: Engineer will promptly review the Underground Facility and conclude whether such Underground Facility was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to City or District regarding the Contractor's resumption of Work in connection with the Underground Facility in question; determine the extent, if any, to which a change is required in the Drawings or Specifications to reflect and document the consequences of the existence or location of the Underground Facility; and advise City or District in writing of Engineer's findings, conclusions, and recommendations. During such time, Contractor shall be responsible for the safety and protection of such Underground Facility.

D. *City and District's Statement to Contractor Regarding Underground Facility*: After receipt of Engineer's written findings, conclusions, and recommendations, City and District shall issue a written statement to Contractor (with a copy to Engineer) regarding the Underground Facility in question, addressing the resumption of Work in connection with such Underground Facility, indicating whether any change in the Drawings or Specifications will be made, and adopting or rejecting Engineer's written findings, conclusions, and recommendations in whole or in part.

E. *Possible Price and Times Adjustments*:

1. Contractor shall be entitled to an equitable adjustment in the Contract Price or Contract Times, or both, to the extent that any existing Underground Facility at the Site that was not shown or indicated in the Contract Documents, or was not shown or indicated with reasonable accuracy, or any related delay, disruption, or interference,

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causes an increase or decrease in Contractor's cost of, or time required for, performance of the Work; subject, however, to the following:

a. Contractor did not know of and could not reasonably have been expected to be aware of or to have anticipated the existence or actual location of the Underground Facility in question;

b. With respect to Work that is paid for on a unit price basis, any adjustment in Contract Price will be subject to the provisions of Paragraph 13.03;

c. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times; and

d. Contractor gave the notice required in Paragraph 5.05.B.

2. If City, District, and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, or both, then any such adjustment shall be set forth in a Change Order.

3. Contractor may submit a Change Proposal regarding its entitlement to or the amount or extent of any adjustment in the Contract Price or Contract Times, or both, no later than 30 days after City or District's issuance of the City or Distric's written statement to Contractor regarding the Underground Facility in question.

5.06 *Hazardous Environmental Conditions at Site*

A. No reports or drawings related to Hazardous Environmental Conditons at the Site are known to City or District. *Reports and Drawings*: The Supplementary Conditions identify:

B. Not used.

C. Contractor shall not be responsible for removing or remediating any Hazardous Environmental Condition encountered, uncovered, or revealed at the Site unless such removal or remediation is expressly identified in the Contract Documents to be within the scope of the Work.

D. Contractor shall be responsible for controlling, containing, and duly removing all Constituents of Concern brought to the Site by Contractor, Subcontractors, Suppliers, or anyone else for whom Contractor is responsible, and for any associated costs; and for the costs of removing and remediating any Hazardous Environmental Condition created by the presence of any such Constituents of Concern.

E. If Contractor encounters, uncovers, or reveals a Hazardous Environmental Condition whose removal or remediation is not expressly identified in the Contract Documents as being within the scope of the Work, or if Contractor or anyone for whom Contractor is responsible creates a Hazardous Environmental Condition, then Contractor shall immediately: (1) secure or otherwise isolate such condition; (2) stop all Work in connection with such condition and in any area affected thereby (except in an emergency as required by Paragraph 7.15); and (3) notify City, District, and Engineer (and promptly thereafter confirm such notice in writing). City and District shall promptly consult with Engineer concerning the necessity for City or District to retain a qualified expert to evaluate such condition or take corrective action, if any. Promptly after consulting with Engineer, City and District shall take such actions as are necessary to permit City and District to timely obtain required permits and provide Contractor the written notice required by Paragraph 5.06.F. If

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Contractor or anyone for whom Contractor is responsible created the Hazardous Environmental Condition in question, then City or District may remove and remediate the Hazardous Environmental Condition, and impose a set-off against payments to account for the associated costs.

F. Contractor shall not resume Work in connection with such Hazardous Environmental Condition or in any affected area until after City or District has obtained any required permits related thereto, and delivered written notice to Contractor either (1) specifying that such condition and any affected area is or has been rendered safe for the resumption of Work, or (2) specifying any special conditions under which such Work may be resumed safely.

G. If City, District, and Contractor cannot agree as to entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times, or both, as a result of such Work stoppage or such special conditions under which Work is agreed to be resumed by Contractor, then within 30 days of City or District's written notice regarding the resumption of Work, Contractor may submit a Change Proposal, or City or District may impose a set-off.

H. If after receipt of such written notice Contractor does not agree to resume such Work based on a reasonable belief it is unsafe, or does not agree to resume such Work under such special conditions, then City or District may order the portion of the Work that is in the area affected by such condition to be deleted from the Work, following the contractual change procedures in Article 11. City or District may have such deleted portion of the Work performed by City or District's own forces or others in accordance with Article 8.

I. To the fullest extent permitted by Laws and Regulations, City and District shall indemnify and hold harmless Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to a Hazardous Environmental Condition, provided that such Hazardous Environmental Condition (1) was not shown or indicated in the Drawings, Specifications, or other Contract Documents, identified as Technical Data entitled to limited reliance pursuant to Paragraph 5.06.B, or identified in the Contract Documents to be included within the scope of the Work, and (2) was not created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.H shall obligate City or District to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

J. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless City, District, and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the failure to control, contain, or remove a Constituent of Concern brought to the Site by Contractor or by anyone for whom Contractor is responsible, or to a Hazardous Environmental Condition created by Contractor or by anyone for whom Contractor is responsible. Nothing in this Paragraph 5.06.J shall obligate Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

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K. The provisions of Paragraphs 5.03, 5.04, and 5.05 do not apply to the presence of Constituents of Concern or to a Hazardous Environmental Condition uncovered or revealed at the Site.

## ARTICLE 6 – BONDS AND INSURANCE

6.01 *Performance, Payment, and Other Bonds*

A. Contractor shall furnish a performance bond and a payment bond, each in an amount at least equal to the Contract Price, as security for the faithful performance and payment of all of Contractor's obligations under the Contract. These bonds shall remain in effect until one year after the date when final payment becomes due or until completion of the correction period specified in Paragraph 15.08, whichever is later, except as provided otherwise by Laws or Regulations, the Supplementary Conditions, or other specific provisions of the Contract. Contractor shall also furnish such other bonds as are required by the Supplementary Conditions or other specific provisions of the Contract.

B. All bonds shall be in the form prescribed by the Contract except as provided otherwise by Laws or Regulations, and shall be executed by such sureties as are named in "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Circular 570 (as amended and supplemented) by the Financial Management Service, Surety Bond Branch, U.S. Department of the Treasury. A bond signed by an agent or attorney-in-fact must be accompanied by a certified copy of that individual's authority to bind the surety. The evidence of authority shall show that it is effective on the date the agent or attorney-in-fact signed the accompanying bond.

C. Contractor shall obtain the required bonds from surety companies that are duly licensed or authorized in the jurisdiction in which the Project is located to issue bonds in the required amounts.

D. If the surety on a bond furnished by Contractor is declared bankrupt or becomes insolvent, or its right to do business is terminated in any state or jurisdiction where any part of the Project is located, or the surety ceases to meet the requirements above, then Contractor shall promptly notify City, District, and Engineer and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which shall comply with the bond and surety requirements above.

E. If Contractor has failed to obtain a required bond, City or District may exclude the Contractor from the Site and exercise City and District's termination rights under Article 16.

F. Upon request, City or District shall provide a copy of the payment bond to any Subcontractor, Supplier, or other person or entity claiming to have furnished labor or materials used in the performance of the Work.

6.02 *Insurance—General Provisions*

A. City, District, and Contractor shall obtain and maintain insurance as required in this Article and in the Supplementary Conditions.

B. All insurance required by the Contract to be purchased and maintained by City, District, or Contractor shall be obtained from insurance companies that are duly licensed or authorized, in the state or jurisdiction in which the Project is located, to issue insurance policies for the required limits and coverages. Unless a different standard is indicated in the

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Supplementary Conditions, all companies that provide insurance policies required under this Contract shall have an A.M. Best rating of A-VII or better.

C. Contractor shall deliver to City and District, with copies to each named insured and additional insured (as identified in this Article, in the Supplementary Conditions, or elsewhere in the Contract), certificates of insurance establishing that Contractor has obtained and is maintaining the policies, coverages, and endorsements required by the Contract. Upon request by City, District, or any other insured, Contractor shall also furnish other evidence of such required insurance, including but not limited to copies of policies and endorsements, and documentation of applicable self-insured retentions and deductibles. Contractor may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.

D. City and District shall deliver to Contractor, with copies to each named insured and additional insured (as identified in this Article, the Supplementary Conditions, or elsewhere in the Contract), certificates of insurance establishing that City and District has obtained and is maintaining the policies, coverages, and endorsements required of City or District by the Contract (if any). Upon request by Contractor or any other insured, City and District shall also provide other evidence of such required insurance (if any), including but not limited to copies of policies and endorsements, and documentation of applicable self-insured retentions and deductibles. City or District may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.

E. Failure of City, District, or Contractor to demand such certificates or other evidence of the other party's full compliance with these insurance requirements, or failure of City, District or Contractor to identify a deficiency in compliance from the evidence provided, shall not be construed as a waiver of the other party's obligation to obtain and maintain such insurance.

F. If either party does not purchase or maintain all of the insurance required of such party by the Contract, such party shall notify the other party in writing of such failure to purchase prior to the start of the Work, or of such failure to maintain prior to any change in the required coverage.

G. If Contractor has failed to obtain and maintain required insurance, City or District may exclude the Contractor from the Site, impose an appropriate set-off against payment, and exercise their termination rights under Article 16.

H. Without prejudice to any other right or remedy, if a party has failed to obtain required insurance, the other party may elect to obtain equivalent insurance to protect such other party's interests at the expense of the party who was required to provide such coverage, and the Contract Price shall be adjusted accordingly.

I. City and District do not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor or Contractor's interests.

J. The insurance and insurance limits required herein shall not be deemed as a limitation on Contractor's liability under the indemnities granted to City, District, and other individuals and entities in the Contract.

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6.03 *Contractor's Insurance*

A. *Workers' Compensation*: Contractor shall purchase and maintain workers' compensation and employer's liability insurance for:

1. claims under workers' compensation, disability benefits, and other similar employee benefit acts.

2. United States Longshoreman and Harbor Workers' Compensation Act and Jones Act coverage (if applicable).

3. claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees (by stop-gap endorsement in monopolist worker's compensation states).

4. Foreign voluntary worker compensation (if applicable).

B. *Commercial General Liability—Claims Covered*: Contractor shall purchase and maintain commercial general liability insurance, covering all operations by or on behalf of Contractor, on an occurrence basis, against:

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

2. claims for damages insured by reasonably available personal injury liability coverage.

3. claims for damages, other than to the Work itself, because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom.

C. *Commercial General Liability—Form and Content*: Contractor's commercial liability policy shall be written on a 1996 (or later) ISO commercial general liability form (occurrence form) and include the following coverages and endorsements:

1. Products and completed operations coverage:

a. Such insurance shall be maintained for three years after final payment.

b. Contractor shall furnish City, District, and each other additional insured (as identified in the Supplementary Conditions or elsewhere in the Contract) evidence of continuation of such insurance at final payment and three years thereafter.

2. Blanket contractual liability coverage, to the extent permitted by law, including but not limited to coverage of Contractor's contractual indemnity obligations in Paragraph 7.18.

3. Broad form property damage coverage.

4. Severability of interest.

5. Underground, explosion, and collapse coverage.

6. Personal injury coverage.

7. Additional insured endorsements that include both ongoing operations and products and completed operations coverage through ISO Endorsements CG 20 10 10 01 and CG 20 37 10 01 (together); or CG 20 10 07 04 and CG 20 37 07 04 (together); or their equivalent.

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8. For design professional additional insureds, ISO Endorsement CG 20 32 07 04, "Additional Insured—Engineers, Architects or Surveyors Not Engaged by the Named Insured" or its equivalent.

D. *Automobile liability*: Contractor shall purchase and maintain automobile liability insurance against claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance, or use of any motor vehicle. The automobile liability policy shall be written on an occurrence basis.

E. *Umbrella or excess liability*: Contractor shall purchase and maintain umbrella or excess liability insurance written over the underlying employer's liability, commercial general liability, and automobile liability insurance described in the paragraphs above. Subject to industry-standard exclusions, the coverage afforded shall follow form as to each and every one of the underlying policies.

F. *Contractor's pollution liability insurance*: Contractor shall purchase and maintain a policy covering third-party injury and property damage claims, including clean-up costs, as a result of pollution conditions arising from Contractor's operations and completed operations. This insurance shall be maintained for no less than three years after final completion.

G. *Additional insureds*: The Contractor's commercial general liability, automobile liability, umbrella or excess, and pollution liability policies shall include and list as additional insureds City, District, and Engineer, and any individuals or entities identified in the Supplementary Conditions; include coverage for the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of all such additional insureds; and the insurance afforded to these additional insureds shall provide primary coverage for all claims covered thereby (including as applicable those arising from both ongoing and completed operations) on a non-contributory basis. Contractor shall obtain all necessary endorsements to support these requirements.

H. *Contractor's professional liability insurance*: If Contractor will provide or furnish professional services under this Contract, through a delegation of professional design services or otherwise, then Contractor shall be responsible for purchasing and maintaining applicable professional liability insurance. This insurance shall provide protection against claims arising out of performance of professional design or related services, and caused by a negligent error, omission, or act for which the insured party is legally liable. It shall be maintained throughout the duration of the Contract and for a minimum of two years after Substantial Completion. If such professional design services are performed by a Subcontractor, and not by Contractor itself, then the requirements of this paragraph may be satisfied through the purchasing and maintenance of such insurance by such Subcontractor.

I. *General provisions*: The policies of insurance required by this Paragraph 6.03 shall:

1. include at least the specific coverages provided in this Article.

2. be written for not less than the limits of liability provided in this Article and in the Supplementary Conditions, or required by Laws or Regulations, whichever is greater.

3. contain a provision or endorsement that the coverage afforded will not be canceled, materially changed, or renewal refused until at least 10 days prior written notice has been given to Contractor. Within three days of receipt of any such written notice,

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Contractor shall provide a copy of the notice to City, District, Engineer, and each other insured under the policy.

4. remain in effect at least until final payment (and longer if expressly required in this Article) and at all times thereafter when Contractor may be correcting, removing, or replacing defective Work as a warranty or correction obligation, or otherwise, or returning to the Site to conduct other tasks arising from the Contract Documents.

5. be appropriate for the Work being performed and provide protection from claims that may arise out of or result from Contractor's performance of the Work and Contractor's other obligations under the Contract Documents, whether it is to be performed by Contractor, any Subcontractor or Supplier, or by anyone directly or indirectly employed by any of them to perform any of the Work, or by anyone for whose acts any of them may be liable.

J. The coverage requirements for specific policies of insurance must be met by such policies, and not by reference to excess or umbrella insurance provided in other policies.

K. The limits of liability for the insurance required by Paragraph 6.03 of the General Conditions shall provide coverage for not less than the following amounts or greater where required by Laws and Regulations:

1. Workers' Compensation, and related coverages under Paragraphs 6.03.A.1 and A.2 of the General Conditions:

| | |
|---|---|
| Workers' Compensation Insurance | Statutory |
| Employer's Liability Insurance | $100,000 each accident<br>$500,000. disease - policy unit<br>$100,000. disease - each employee |

Comprehensive General Liability (Public Liability) Insurance including:

| | |
|---|---|
| General Liability | $1,000,000. Aggregate |
| Products, Completed Operations | $1,000,000. Aggregate |
| Personal & Advertising Injury | $ 500,000. |
| Each Occurrence | $ 500,000. |
| Fire Damage | $ 50,000. any one fire |
| Medical Expense | $ 5,000. any one person |

Automobile Liability Insurance (owned, hired & non-owned):

| | |
|---|---|
| Bodily Injury &<br>Property Damage | $1,000,000 combined<br>single limit |

6.04 *City and District's Liability Insurance*

A. In addition to the insurance required to be provided by Contractor under Paragraph 6.03, City or District, at City or District's option, may purchase and maintain at their expense their own liability insurance as will protect them against claims which may arise from operations under the Contract Documents.

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B. City or District's liability policies, if any, operate separately and independently from policies required to be provided by Contractor, and Contractor cannot rely upon City or District's liability policies for any of Contractor's obligations to the City, District, Engineer, or third parties.

6.05 *Property Insurance*

A. *Builder's Risk*: Unless otherwise provided in the Supplementary Conditions, Contractor shall purchase and maintain builder's risk insurance upon the Work on a completed value basis, in the amount of the full insurable replacement cost thereof (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). This insurance shall:

1. include the City, District, and Contractor as named insureds, and all Subcontractors, and any individuals or entities required by the Supplementary Conditions to be insured under such builder's risk policy, as insureds or named insureds. For purposes of the remainder of this Paragraph 6.05, Paragraphs 6.06 and 6.07, and any corresponding Supplementary Conditions, the parties required to be insured shall collectively be referred to as "insureds."

2. be written on a builder's risk "all risk" policy form that shall at least include insurance for physical loss or damage to the Work, temporary buildings, falsework, and materials and equipment in transit, and shall insure against at least the following perils or causes of loss: fire; lightning; windstorm; riot; civil commotion; terrorism; vehicle impact; aircraft; smoke; theft; vandalism and malicious mischief; mechanical breakdown, boiler explosion, and artificially generated electric current; earthquake; volcanic activity, and other earth movement; flood; collapse; explosion; debris removal; demolition occasioned by enforcement of Laws and Regulations; water damage (other than that caused by flood); and such other perils or causes of loss as may be specifically required by the Supplementary Conditions. If insurance against mechanical breakdown, boiler explosion, and artificially generated electric current; earthquake; volcanic activity, and other earth movement; or flood, are not commercially available under builder's risk policies, by endorsement or otherwise, such insurance may be provided through other insurance policies acceptable to City, District, and Contractor.

3. cover, as insured property, at least the following: (a) the Work and all materials, supplies, machinery, apparatus, equipment, fixtures, and other property of a similar nature that are to be incorporated into or used in the preparation, fabrication, construction, erection, or completion of the Work, including City- or District-furnished or assigned property; (b) spare parts inventory required within the scope of the Contract; and (c) temporary works which are not intended to form part of the permanent constructed Work but which are intended to provide working access to the Site, or to the Work under construction, or which are intended to provide temporary support for the Work under construction, including scaffolding, form work, fences, shoring, falsework, and temporary structures.

4. cover expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of engineers and architects).

5. extend to cover damage or loss to insured property while in temporary storage at the Site or in a storage location outside the Site (but not including property stored at the premises of a manufacturer or Supplier).

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6. extend to cover damage or loss to insured property while in transit.
7. allow for partial occupation or use of the Work by City or District, such that those portions of the Work that are not yet occupied or used by City or District shall remain covered by the builder's risk insurance.
8. allow for the waiver of the insurer's subrogation rights, as set forth below.
9. provide primary coverage for all losses and damages caused by the perils or causes of loss covered.
10. not include a co-insurance clause.
11. include an exception for ensuing losses from physical damage or loss with respect to any defective workmanship, design, or materials exclusions.
12. include performance/hot testing and start-up.
13. be maintained in effect, subject to the provisions herein regarding Substantial Completion and partial occupancy or use of the Work by City or District, until the Work is complete.

B. *Notice of Cancellation or Change*: All the policies of insurance (and the certificates or other evidence thereof) required to be purchased and maintained in accordance with this Paragraph 6.05 will contain a provision or endorsement that the coverage afforded will not be canceled or materially changed or renewal refused until at least 10 days prior written notice has been given to the purchasing policyholder. Within three days of receipt of any such written notice, the purchasing policyholder shall provide a copy of the notice to each other insured.

C. *Deductibles*: The purchaser of any required builder's risk or property insurance shall pay for costs not covered because of the application of a policy deductible.

D. *Partial Occupancy or Use by City or District*: If City or District will occupy or use a portion or portions of the Work prior to Substantial Completion of all the Work as provided in Paragraph 15.04, then City or District (directly, if it is the purchaser of the builder's risk policy, or through Contractor) will provide notice of such occupancy or use to the builder's risk insurer. The builder's risk insurance shall not be canceled or permitted to lapse on account of any such partial use or occupancy; rather, those portions of the Work that are occupied or used by City or District may come off the builder's risk policy, while those portions of the Work not yet occupied or used by City or District shall remain covered by the builder's risk insurance.

E. *Additional Insurance*: If Contractor elects to obtain other special insurance to be included in or supplement the builder's risk or property insurance policies provided under this Paragraph 6.05, it may do so at Contractor's expense.

F. *Insurance of Other Property*: If the express insurance provisions of the Contract do not require or address the insurance of a property item or interest, such as tools, construction equipment, or other personal property owned by Contractor, a Subcontractor, or an employee of Contractor or a Subcontractor, then the entity or individual owning such property item will be responsible for deciding whether to insure it, and if so in what amount.

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6.06 *Waiver of Rights*

A. All policies purchased in accordance with Paragraph 6.05, expressly including the builder's risk policy, shall contain provisions to the effect that in the event of payment of any loss or damage the insurers will have no rights of recovery against any insureds thereunder, or against Engineer or its consultants, or their officers, directors, members, partners, employees, agents, consultants, or subcontractors. City, District, and Contractor waive all rights against each other and the respective officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, or resulting from any of the perils or causes of loss covered by such policies and any other property insurance applicable to the Work; and, in addition, waive all such rights against Engineer, its consultants, all Subcontractors, all individuals or entities identified in the Supplementary Conditions as insureds, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, under such policies for losses and damages so caused. None of the above waivers shall extend to the rights that any party making such waiver may have to the proceeds of insurance held by City, District, or Contractor as trustee or fiduciary, or otherwise payable under any policy so issued.

B. City and District waive all rights against Contractor, Subcontractors, and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, for:

1. loss due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to City or District's property or the Work caused by, arising out of, or resulting from fire or other perils whether or not insured by City or District; and

2. loss or damage to the completed Project or part thereof caused by, arising out of, or resulting from fire or other insured peril or cause of loss covered by any property insurance maintained on the completed Project or part thereof by City or District during partial occupancy or use pursuant to Paragraph 15.04, after Substantial Completion pursuant to Paragraph 15.03, or after final payment pursuant to Paragraph 15.06.

C. Any insurance policy maintained by City or District covering any loss, damage or consequential loss referred to in Paragraph 6.06.B shall contain provisions to the effect that in the event of payment of any such loss, damage, or consequential loss, the insurers will have no rights of recovery against Contractor, Subcontractors, or Engineer, or the officers, directors, members, partners, employees, agents, consultants, or subcontractors of each and any of them.

D. Contractor shall be responsible for assuring that the agreement under which a Subcontractor performs a portion of the Work contains provisions whereby the Subcontractor waives all rights against City, District, Contractor, all individuals or entities identified in the Supplementary Conditions as insureds, the Engineer and its consultants, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them, for all losses and damages caused by, arising out of, relating to, or resulting from any of the perils or causes of loss covered by builder's risk insurance and any other property insurance applicable to the Work.

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6.07 *Receipt and Application of Property Insurance Proceeds*

A. Any insured loss under the builder's risk and other policies of insurance required by Paragraph 6.05 will be adjusted and settled with the named insured that purchased the policy. Such named insured shall act as fiduciary for the other insureds, and give notice to such other insureds that adjustment and settlement of a claim is in progress. Any other insured may state its position regarding a claim for insured loss in writing within 15 days after notice of such claim.

B. Proceeds for such insured losses may be made payable by the insurer either jointly to multiple insureds, or to the named insured that purchased the policy in its own right and as fiduciary for other insureds, subject to the requirements of any applicable mortgage clause. A named insured receiving insurance proceeds under the builder's risk and other policies of insurance required by Paragraph 6.05 shall distribute such proceeds in accordance with such agreement as the parties in interest may reach, or as otherwise required under the dispute resolution provisions of this Contract or applicable Laws and Regulations.

C. If no other special agreement is reached, the damaged Work shall be repaired or replaced, the money so received applied on account thereof, and the Work and the cost thereof covered by Change Order, if needed.

## ARTICLE 7 – CONTRACTOR'S RESPONSIBILITIES

7.01 *Supervision and Superintendence*

A. Contractor shall supervise, inspect, and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction.

B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who shall not be replaced without written notice to City, District, and Engineer except under extraordinary circumstances.

7.02 *Labor; Working Hours*

A. Contractor shall provide competent, suitably qualified personnel to survey and lay out the Work and perform construction as required by the Contract Documents. Contractor shall at all times maintain good discipline and order at the Site.

B. Except as otherwise required for the safety or protection of persons or the Work or property at the Site or adjacent thereto, and except as otherwise stated in the Contract Documents, all Work at the Site shall be performed during regular working hours, Monday through Friday. Contractor will not perform Work on a Saturday, Sunday, or any legal holiday. Contractor may perform Work outside regular working hours or on Saturdays, Sundays, or legal holidays only with City and District's written consent, which will not be unreasonably withheld.

1. Regular working hours will be 7:00 a.m. to sunset, Monday through Friday.

7.03 *Services, Materials, and Equipment*

A. Unless otherwise specified in the Contract Documents, Contractor shall provide and assume full responsibility for all services, materials, equipment, labor, transportation,

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construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, temporary facilities, and all other facilities and incidentals necessary for the performance, testing, start up, and completion of the Work, whether or not such items are specifically called for in the Contract Documents.

B. All materials and equipment incorporated into the Work shall be of good quality and new, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications shall expressly run to the benefit of City or District. If required by Engineer, Contractor shall furnish satisfactory evidence (including reports of required tests) as to the source, kind, and quality of materials and equipment.

C. All materials and equipment shall be stored, applied, installed, connected, erected, protected, used, cleaned, and conditioned in accordance with instructions of the applicable Supplier, except as otherwise may be provided in the Contract Documents.

7.04 *"Or Equals"*

A. Whenever an item of material or equipment is specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular Supplier, the Contract Price has been based upon Contractor furnishing such item as specified. The specification or description of such an item is intended to establish the type, function, appearance, and quality required. Unless the specification or description contains or is followed by words reading that no like, equivalent, or "or equal" item is permitted, Contractor may request that Engineer authorize the use of other items of material or equipment, or items from other proposed suppliers under the circumstances described below.

1. If Engineer in its sole discretion determines that an item of material or equipment proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, Engineer shall deem it an "or equal" item. For the purposes of this paragraph, a proposed item of material or equipment will be considered functionally equal to an item so named if:

a. in the exercise of reasonable judgment Engineer determines that:

1) it is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;

2) it will reliably perform at least equally well the function and achieve the results imposed by the design concept of the completed Project as a functioning whole;

3) it has a proven record of performance and availability of responsive service; and

4) it is not objectionable to the City or District.

b. Contractor certifies that, if approved and incorporated into the Work:

1) there will be no increase in cost to the City or District or increase in Contract Times; and

2) it will conform substantially to the detailed requirements of the item named in the Contract Documents.

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B. *Contractor's Expense*: Contractor shall provide all data in support of any proposed "or equal" item at Contractor's expense.

C. *Engineer's Evaluation and Determination*: Engineer will be allowed a reasonable time to evaluate each "or-equal" request. Engineer may require Contractor to furnish additional data about the proposed "or-equal" item. Engineer will be the sole judge of acceptability. No "or-equal" item will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an "or-equal", which will be evidenced by an approved Shop Drawing or other written communication. Engineer will advise Contractor in writing of any negative determination.

D. *Effect of Engineer's Determination*: Neither approval nor denial of an "or-equal" request shall result in any change in Contract Price. The Engineer's denial of an "or-equal" request shall be final and binding, and may not be reversed through an appeal under any provision of the Contract Documents.

E. *Treatment as a Substitution Request*: If Engineer determines that an item of material or equipment proposed by Contractor does not qualify as an "or-equal" item, Contractor may request that Engineer considered the proposed item as a substitute pursuant to Paragraph 7.05.

7.05 *Substitutes*

A. Unless the specification or description of an item of material or equipment required to be furnished under the Contract Documents contains or is followed by words reading that no substitution is permitted, Contractor may request that Engineer authorize the use of other items of material or equipment under the circumstances described below. To the extent possible such requests shall be made before commencement of related construction at the Site.

1. Contractor shall submit sufficient information as provided below to allow Engineer to determine if the item of material or equipment proposed is functionally equivalent to that named and an acceptable substitute therefor. Engineer will not accept requests for review of proposed substitute items of material or equipment from anyone other than Contractor.

2. The requirements for review by Engineer will be as set forth in Paragraph 7.05.B, as supplemented by the Specifications, and as Engineer may decide is appropriate under the circumstances.

3. Contractor shall make written application to Engineer for review of a proposed substitute item of material or equipment that Contractor seeks to furnish or use. The application:

a. shall certify that the proposed substitute item will:

1) perform adequately the functions and achieve the results called for by the general design,

2) be similar in substance to that specified, and

3) be suited to the same use as that specified.

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b. will state:

1) the extent, if any, to which the use of the proposed substitute item will necessitate a change in Contract Times,

2) whether use of the proposed substitute item in the Work will require a change in any of the Contract Documents (or in the provisions of any other direct contract with City or District for other work on the Project) to adapt the design to the proposed substitute item, and

3) whether incorporation or use of the proposed substitute item in connection with the Work is subject to payment of any license fee or royalty.

c. will identify:

1) all variations of the proposed substitute item from that specified, and

2) available engineering, sales, maintenance, repair, and replacement services.

d. shall contain an itemized estimate of all costs or credits that will result directly or indirectly from use of such substitute item, including but not limited to changes in Contract Price, shared savings, costs of redesign, and claims of other contractors affected by any resulting change.

B. *Engineer's Evaluation and Determination*: Engineer will be allowed a reasonable time to evaluate each substitute request, and to obtain comments and direction from City or District. Engineer may require Contractor to furnish additional data about the proposed substitute item. Engineer will be the sole judge of acceptability. No substitute will be ordered, furnished, installed, or utilized until Engineer's review is complete and Engineer determines that the proposed item is an acceptable substitute. Engineer's determination will be evidenced by a Field Order or a proposed Change Order accounting for the substitution itself and all related impacts, including changes in Contract Price or Contract Times. Engineer will advise Contractor in writing of any negative determination.

C. *Special Guarantee*: City or District may require Contractor to furnish at Contractor's expense a special performance guarantee or other surety with respect to any substitute.

D. *Reimbursement of Engineer's Cost*: Engineer will record Engineer's costs in evaluating a substitute proposed or submitted by Contractor. Whether or not Engineer approves a substitute so proposed or submitted by Contractor, Contractor shall reimburse City or District r for the reasonable charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse City or District for the reasonable charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with City or District) resulting from the acceptance of each proposed substitute.

E. *Contractor's Expense*: Contractor shall provide all data in support of any proposed substitute at Contractor's expense.

F. *Effect of Engineer's Determination*: If Engineer approves the substitution request, Contractor shall execute the proposed Change Order and proceed with the substitution. The Engineer's denial of a substitution request shall be final and binding, and may not be reversed through an appeal under any provision of the Contract Documents. Contractor may challenge the scope of reimbursement costs imposed under Paragraph 7.05.D, by timely submittal of a Change Proposal.

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7.06 *Concerning Subcontractors, Suppliers, and Others*

A. Contractor may retain Subcontractors and Suppliers for the performance of parts of the Work. Such Subcontractors and Suppliers must be acceptable to City and District.

B. Contractor shall retain specific Subcontractors, Suppliers, or other individuals or entities for the performance of designated parts of the Work if required by the Contract to do so.

C. Subsequent to the submittal of Contractor's Bid or final negotiation of the terms of the Contract, City or District may not require Contractor to retain any Subcontractor, Supplier, or other individual or entity to furnish or perform any of the Work against which Contractor has reasonable objection.

D. Prior to entry into any binding subcontract or purchase order, Contractor shall submit to City or District, as appropriate, the identity of the proposed Subcontractor or Supplier (unless City or District has already deemed such proposed Subcontractor or Supplier acceptable, during the bidding process or otherwise). Such proposed Subcontractor or Supplier shall be deemed acceptable unless City or District raises a substantive, reasonable objection within five days.

E. City or District may require the replacement of any Subcontractor, Supplier, or other individual or entity retained by Contractor to perform any part of the Work. City or District also may require Contractor to retain specific replacements; provided, however, that City or District may not require a replacement to which Contractor has a reasonable objection. If Contractor has submitted the identity of certain Subcontractors, Suppliers, or other individuals or entities for acceptance by City or District, and City or District has accepted it (either in writing or by failing to make written objection thereto), then City or District may subsequently revoke the acceptance of any such Subcontractor, Supplier, or other individual or entity so identified solely on the basis of substantive, reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor, Supplier, or other individual or entity.

F. If City or District requires the replacement of any Subcontractor, Supplier, or other individual or entity retained by Contractor to perform any part of the Work, then Contractor shall be entitled to an adjustment in Contract Price or Contract Times, or both, with respect to the replacement; and Contractor shall initiate a Change Proposal for such adjustment within 30 days of City or District's requirement of replacement.

G. No acceptance by City or District of any such Subcontractor, Supplier, or other individual or entity, whether initially or as a replacement, shall constitute a waiver of the right of City or District to the completion of the Work in accordance with the Contract Documents.

H. On a monthly basis Contractor shall submit to Engineer a complete list of all Subcontractors and Suppliers having a direct contract with Contractor, and of all other Subcontractors and Suppliers known to Contractor at the time of submittal.

I. Contractor shall be fully responsible to City, District, and Engineer for all acts and omissions of the Subcontractors, Suppliers, and other individuals or entities performing or furnishing any of the Work just as Contractor is responsible for Contractor's own acts and omissions.

J. Contractor shall be solely responsible for scheduling and coordinating the work of Subcontractors, Suppliers, and all other individuals or entities performing or furnishing any of the Work.

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K. Contractor shall restrict all Subcontractors, Suppliers, and such other individuals or entities performing or furnishing any of the Work from communicating with Engineer, City, or District, except through Contractor or in case of an emergency, or as otherwise expressly allowed herein.

L. The divisions and sections of the Specifications and the identifications of any Drawings shall not control Contractor in dividing the Work among Subcontractors or Suppliers or delineating the Work to be performed by any specific trade.

M. All Work performed for Contractor by a Subcontractor or Supplier shall be pursuant to an appropriate contractual agreement that specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract Documents for the benefit of City, District, and Engineer.

N. City or District may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor on account of Work performed for Contractor by the particular Subcontractor or Supplier.

O. Nothing in the Contract Documents:

1. shall create for the benefit of any such Subcontractor, Supplier, or other individual or entity any contractual relationship between City, District, or Engineer and any such Subcontractor, Supplier, or other individual or entity; nor

2. shall create any obligation on the part of City, District, or Engineer to pay or to see to the payment of any money due any such Subcontractor, Supplier, or other individual or entity except as may otherwise be required by Laws and Regulations.

7.07 *Patent Fees and Royalties*

A. Contractor shall pay all license fees and royalties and assume all costs incident to the use in the performance of the Work or the incorporation in the Work of any invention, design, process, product, or device which is the subject of patent rights or copyrights held by others. If a particular invention, design, process, product, or device is specified in the Contract Documents for use in the performance of the Work and if, to the actual knowledge of City, District, or Engineer, its use is subject to patent rights or copyrights calling for the payment of any license fee or royalty to others, the existence of such rights shall be disclosed by City or District in the Contract Documents.

B. To the fullest extent permitted by Laws and Regulations, City and District shall indemnify and hold harmless Contractor, and its officers, directors, members, partners, employees, agents, consultants, and subcontractors from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device specified in the Contract Documents, but not identified as being subject to payment of any license fee or royalty to others required by patent rights or copyrights.

C. To the fullest extent permitted by Laws and Regulations, Contractor shall indemnify and hold harmless City, District, and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and

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charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to any infringement of patent rights or copyrights incident to the use in the performance of the Work or resulting from the incorporation in the Work of any invention, design, process, product, or device not specified in the Contract Documents.

7.08 *Permits*

A. Unless otherwise provided in the Contract Documents, Contractor shall obtain and pay for all construction permits and licenses. City and District shall assist Contractor, when necessary, in obtaining such permits and licenses. Contractor shall pay all governmental charges and inspection fees necessary for the prosecution of the Work which are applicable at the time of the submission of Contractor's Bid (or when Contractor became bound under a negotiated contract). City or District shall pay all charges of utility owners for connections for providing permanent service to the Work

7.09 *Taxes*

A. Contractor shall pay all sales, consumer, use, and other similar taxes required to be paid by Contractor in accordance with the Laws and Regulations of the place of the Project which are applicable during the performance of the Work.

B. City and District are exempt from payment of sales and compensating use taxes of the State of Maine and of cities and counties thereof on all materials to be incorporated into the Work.

1. City and District will furnish the required certificates of tax exemption to the Contractor for use in the purchase of supplies and materials to be incorporated into the Work.

2. City and District's exemption does not apply to construction tools, machinery, equipment, or other property purchased by or leased by Contractor, or to supplies or materials not incorporated into the Work.

7.10 *Laws and Regulations*

A. Contractor shall give all notices required by and shall comply with all Laws and Regulations applicable to the performance of the Work. Except where otherwise expressly required by applicable Laws and Regulations, neither City, District, nor Engineer shall be responsible for monitoring Contractor's compliance with any Laws or Regulations.

B. If Contractor performs any Work or takes any other action knowing or having reason to know that it is contrary to Laws or Regulations, Contractor shall bear all resulting costs and losses, and shall indemnify and hold harmless City, District, and Engineer, and the officers, directors, members, partners, employees, agents, consultants, and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such Work or other action. It shall not be Contractor's responsibility to make certain that the Work described in the Contract Documents is in accordance with Laws and Regulations, but this shall not relieve Contractor of Contractor's obligations under Paragraph 3.03.

C. City, District, or Contractor may give notice to the other party of any changes after the submission of Contractor's Bid (or after the date when Contractor became bound under a negotiated contract) in Laws or Regulations having an effect on the cost or time of

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performance of the Work, including but not limited to changes in Laws or Regulations having an effect on procuring permits and on sales, use, value-added, consumption, and other similar taxes. If City, District, and Contractor are unable to agree on entitlement to or on the amount or extent, if any, of any adjustment in Contract Price or Contract Times resulting from such changes, then within 30 days of such notice Contractor may submit a Change Proposal, or City or District may initiate a Claim.

7.11 *Record Documents*

A. Contractor shall maintain in a safe place at the Site one printed record copy of all Drawings, Specifications, Addenda, Change Orders, Work Change Directives, Field Orders, written interpretations and clarifications, and approved Shop Drawings. Contractor shall keep such record documents in good order and annotate them to show changes made during construction. These record documents, together with all approved Samples, will be available to Engineer for reference. Upon completion of the Work, Contractor shall deliver these record documents to Engineer.

7.12 *Safety and Protection*

A. Contractor shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. Such responsibility does not relieve Subcontractors of their responsibility for the safety of persons or property in the performance of their work, nor for compliance with applicable safety Laws and Regulations. Contractor shall take all necessary precautions for the safety of, and shall provide the necessary protection to prevent damage, injury, or loss to:

1. all persons on the Site or who may be affected by the Work;
2. all the Work and materials and equipment to be incorporated therein, whether in storage on or off the Site; and
3. other property at the Site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures, other work in progress, utilities, and Underground Facilities not designated for removal, relocation, or replacement in the course of construction.

B. Contractor shall comply with all applicable Laws and Regulations relating to the safety of persons or property, or to the protection of persons or property from damage, injury, or loss; and shall erect and maintain all necessary safeguards for such safety and protection. Contractor shall notify City or District; the owners of adjacent property, Underground Facilities, and other utilities; and other contractors and utility owners performing work at or adjacent to the Site, when prosecution of the Work may affect them, and shall cooperate with them in the protection, removal, relocation, and replacement of their property or work in progress.

C. Contractor shall comply with the applicable requirements of City or District's safety programs, if any. The Supplementary Conditions identify any City or District's safety programs that are applicable to the Work.

D. Contractor shall inform City, District, and Engineer of the specific requirements of Contractor's safety program with which City or District's and Engineer's employees and representatives must comply while at the Site.

E. All damage, injury, or loss to any property referred to in Paragraph 7.12.A.2 or 7.12.A.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor,

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Supplier, or any other individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, shall be remedied by Contractor at its expense (except damage or loss attributable to the fault of Drawings or Specifications or to the acts or omissions of City, District, or Engineer or anyone employed by any of them, or anyone for whose acts any of them may be liable, and not attributable, directly or indirectly, in whole or in part, to the fault or negligence of Contractor or any Subcontractor, Supplier, or other individual or entity directly or indirectly employed by any of them).

F. Contractor's duties and responsibilities for safety and protection shall continue until such time as all the Work is completed and Engineer has issued a notice to City and District and Contractor in accordance with Paragraph 15.06.B that the Work is acceptable (except as otherwise expressly provided in connection with Substantial Completion).

G. Contractor's duties and responsibilities for safety and protection shall resume whenever Contractor or any Subcontractor or Supplier returns to the Site to fulfill warranty or correction obligations, or to conduct other tasks arising from the Contract Documents.

7.13 *Safety Representative*

A. Contractor shall designate a qualified and experienced safety representative at the Site whose duties and responsibilities shall be the prevention of accidents and the maintaining and supervising of safety precautions and programs.

7.14 *Hazard Communication Programs*

A. Contractor shall be responsible for coordinating any exchange of material safety data sheets or other hazard communication information required to be made available to or exchanged between or among employers at the Site in accordance with Laws or Regulations.

7.15 *Emergencies*

A. In emergencies affecting the safety or protection of persons or the Work or property at the Site or adjacent thereto, Contractor is obligated to act to prevent threatened damage, injury, or loss. Contractor shall give Engineer prompt written notice if Contractor believes that any significant changes in the Work or variations from the Contract Documents have been caused thereby or are required as a result thereof. If Engineer determines that a change in the Contract Documents is required because of the action taken by Contractor in response to such an emergency, a Work Change Directive or Change Order will be issued.

7.16 *Shop Drawings, Samples, and Other Submittals*

A. *Shop Drawing and Sample Submittal Requirements*:

1. Before submitting a Shop Drawing or Sample, Contractor shall have:

a. reviewed and coordinated the Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;

b. determined and verified all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect thereto;

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c. determined and verified the suitability of all materials and equipment offered with respect to the indicated application, fabrication, shipping, handling, storage, assembly, and installation pertaining to the performance of the Work; and

d. determined and verified all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto.

2. Each submittal shall bear a stamp or specific written certification that Contractor has satisfied Contractor's obligations under the Contract Documents with respect to Contractor's review of that submittal, and that Contractor approves the submittal.

3. With each submittal, Contractor shall give Engineer specific written notice of any variations that the Shop Drawing or Sample may have from the requirements of the Contract Documents. This notice shall be set forth in a written communication separate from the Shop Drawings or Sample submittal; and, in addition, in the case of Shop Drawings by a specific notation made on each Shop Drawing submitted to Engineer for review and approval of each such variation.

B. *Submittal Procedures for Shop Drawings and Samples*: Contractor shall submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals. Each submittal will be identified as Engineer may require.

1. *Shop Drawings*:

a. Contractor shall submit the number of copies required in the Specifications.

b. Data shown on the Shop Drawings will be complete with respect to quantities, dimensions, specified performance and design criteria, materials, and similar data to show Engineer the services, materials, and equipment Contractor proposes to provide and to enable Engineer to review the information for the limited purposes required by Paragraph 7.16.D.

2. *Samples*:

a. Contractor shall submit the number of Samples required in the Specifications.

b. Contractor shall clearly identify each Sample as to material, Supplier, pertinent data such as catalog numbers, the use for which intended and other data as Engineer may require to enable Engineer to review the submittal for the limited purposes required by Paragraph 7.16.D.

3. Where a Shop Drawing or Sample is required by the Contract Documents or the Schedule of Submittals, any related Work performed prior to Engineer's review and approval of the pertinent submittal will be at the sole expense and responsibility of Contractor.

C. *Other Submittals*: Contractor shall submit other submittals to Engineer in accordance with the accepted Schedule of Submittals, and pursuant to the applicable terms of the Specifications.

D. *Engineer's Review*:

1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the Schedule of Submittals acceptable to Engineer. Engineer's review and approval will be only to determine if the items covered by the submittals will, after installation or

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incorporation in the Work, conform to the information given in the Contract Documents and be compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents.

2. Engineer's review and approval will not extend to means, methods, techniques, sequences, or procedures of construction or to safety precautions or programs incident thereto.

3. Engineer's review and approval of a separate item as such will not indicate approval of the assembly in which the item functions.

4. Engineer's review and approval of a Shop Drawing or Sample shall not relieve Contractor from responsibility for any variation from the requirements of the Contract Documents unless Contractor has complied with the requirements of Paragraph 7.16.A.3 and Engineer has given written approval of each such variation by specific written notation thereof incorporated in or accompanying the Shop Drawing or Sample. Engineer will document any such approved variation from the requirements of the Contract Documents in a Field Order.

5. Engineer's review and approval of a Shop Drawing or Sample shall not relieve Contractor from responsibility for complying with the requirements of Paragraph 7.16.A and B.

6. Engineer's review and approval of a Shop Drawing or Sample, or of a variation from the requirements of the Contract Documents, shall not, under any circumstances, change the Contract Times or Contract Price, unless such changes are included in a Change Order.

7. Neither Engineer's receipt, review, acceptance or approval of a Shop Drawing, Sample, or other submittal shall result in such item becoming a Contract Document.

8. Contractor shall perform the Work in compliance with the requirements and commitments set forth in approved Shop Drawings and Samples, subject to the provisions of Paragraph 7.16.D.4.

E. *Resubmittal Procedures*:

1. Contractor shall make corrections required by Engineer and shall return the required number of corrected copies of Shop Drawings and submit, as required, new Samples for review and approval. Contractor shall direct specific attention in writing to revisions other than the corrections called for by Engineer on previous submittals.

2. Contractor shall furnish required submittals with sufficient information and accuracy to obtain required approval of an item with no more than three submittals. Engineer will record Engineer's time for reviewing a fourth or subsequent submittal of a Shop Drawings, sample, or other item requiring approval, and Contractor shall be responsible for Engineer's charges to City or District for such time. City or District may impose a set-off against payments due to Contractor to secure reimbursement for such charges.

3. If Contractor requests a change of a previously approved submittal item, Contractor shall be responsible for Engineer's charges to City or District for its review time, and City or District may impose a set-off against payments due to Contractor to secure reimbursement for such charges, unless the need for such change is beyond the control of Contractor.

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7.17 *Contractor's General Warranty and Guarantee*

A. Contractor warrants and guarantees to City and District that all Work will be in accordance with the Contract Documents and will not be defective. Engineer and its officers, directors, members, partners, employees, agents, consultants, and subcontractors shall be entitled to rely on Contractor's warranty and guarantee.

B. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:

1. abuse, modification, or improper maintenance or operation by persons other than Contractor, Subcontractors, Suppliers, or any other individual or entity for whom Contractor is responsible; or

2. normal wear and tear under normal usage.

C. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents shall be absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents or a release of Contractor's obligation to perform the Work in accordance with the Contract Documents:

1. observations by Engineer;

2. recommendation by Engineer or payment by City or District of any progress or final payment;

3. the issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by City or District;

4. use or occupancy of the Work or any part thereof by City or District;

5. any review and approval of a Shop Drawing or Sample submittal;

6. the issuance of a notice of acceptability by Engineer;

7. any inspection, test, or approval by others; or

8. any correction of defective Work by City or District.

D. If the Contract requires the Contractor to accept the assignment of a contract entered into by City or District, then the specific warranties, guarantees, and correction obligations contained in the assigned contract shall govern with respect to Contractor's performance obligations to City or District for the Work described in the assigned contract.

7.18 *Indemnification*

A. To the fullest extent permitted by Laws and Regulations, and in addition to any other obligations of Contractor under the Contract or otherwise, Contractor shall indemnify and hold harmless City, District, and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to the performance of the Work, provided that any such claim, cost, loss, or damage is attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property (other than the Work itself), including the loss of use resulting therefrom but only to the extent caused by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or

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any individual or entity directly or indirectly employed by any of them to perform any of the Work or anyone for whose acts any of them may be liable.

B. In any and all claims against City, District, or Engineer or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors by any employee (or the survivor or personal representative of such employee) of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform any of the Work, or anyone for whose acts any of them may be liable, the indemnification obligation under Paragraph 7.18.A shall not be limited in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for Contractor or any such Subcontractor, Supplier, or other individual or entity under workers' compensation acts, disability benefit acts, or other employee benefit acts.

C. The indemnification obligations of Contractor under Paragraph 7.18.A shall not extend to the liability of Engineer and Engineer's officers, directors, members, partners, employees, agents, consultants and subcontractors arising out of:

1. the preparation or approval of, or the failure to prepare or approve maps, Drawings, opinions, reports, surveys, Change Orders, designs, or Specifications; or

2. giving directions or instructions, or failing to give them, if that is the primary cause of the injury or damage.

7.19 *Delegation of Professional Design Services*

A. Contractor will not be required to provide professional design services unless such services are specifically required by the Contract Documents for a portion of the Work or unless such services are required to carry out Contractor's responsibilities for construction means, methods, techniques, sequences and procedures. Contractor shall not be required to provide professional services in violation of applicable Laws and Regulations.

B. If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of Contractor by the Contract Documents, City, District, and Engineer will specify all performance and design criteria that such services must satisfy. Contractor shall cause such services or certifications to be provided by a properly licensed professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, and other submittals prepared by such professional. Shop Drawings and other submittals related to the Work designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to Engineer.

C. City, District, and Engineer shall be entitled to rely upon the adequacy, accuracy, and completeness of the services, certifications, or approvals performed by such design professionals, provided City, District, and Engineer have specified to Contractor all performance and design criteria that such services must satisfy.

D. Pursuant to this paragraph, Engineer's review and approval of design calculations and design drawings will be only for the limited purpose of checking for conformance with performance and design criteria given and the design concept expressed in the Contract Documents. Engineer's review and approval of Shop Drawings and other submittals (except design calculations and design drawings) will be only for the purpose stated in Paragraph 7.16.D.1.

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E. Contractor shall not be responsible for the adequacy of the performance or design criteria specified by City, District, or Engineer.

## ARTICLE 8 – OTHER WORK AT THE SITE

8.01 *Other Work*

A. In addition to and apart from the Work under the Contract Documents, the City or District may perform other work at or adjacent to the Site. Such other work may be performed by City or District's employees, or through contracts between the City or District and third parties. City or District may also arrange to have third-party utility owners perform work on their utilities and facilities at or adjacent to the Site.

B. If City or District performs other work at or adjacent to the Site with City or District's employees, or through contracts for such other work, then City or District shall give Contractor written notice thereof prior to starting any such other work. If City or District has advance information regarding the start of any utility work at or adjacent to the Site, City or District shall provide such information to Contractor.

C. Contractor shall afford each other contractor that performs such other work, each utility owner performing other work, and City or District, if performing other work with City or District's employees, proper and safe access to the Site, and provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work. Contractor shall do all cutting, fitting, and patching of the Work that may be required to properly connect or otherwise make its several parts come together and properly integrate with such other work. Contractor shall not endanger any work of others by cutting, excavating, or otherwise altering such work; provided, however, that Contractor may cut or alter others' work with the written consent of Engineer and the others whose work will be affected.

D. If the proper execution or results of any part of Contractor's Work depends upon work performed by others under this Article 8, Contractor shall inspect such other work and promptly report to Engineer in writing any delays, defects, or deficiencies in such other work that render it unavailable or unsuitable for the proper execution and results of Contractor's Work. Contractor's failure to so report will constitute an acceptance of such other work as fit and proper for integration with Contractor's Work except for latent defects and deficiencies in such other work.

8.02 *Coordination*

A. If City or District intends to contract with others for the performance of other work at or adjacent to the Site, to perform other work at or adjacent to the Site with City or District's employees, or to arrange to have utility owners perform work at or adjacent to the Site, the following will be set forth in the Supplementary Conditions or provided to Contractor prior to the start of any such other work:

1. the identity of the individual or entity that will have authority and responsibility for coordination of the activities among the various contractors;

2. an itemization of the specific matters to be covered by such authority and responsibility; and

3. the extent of such authority and responsibilities.

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B. Unless otherwise provided in the Supplementary Conditions, City or District shall have sole authority and responsibility for such coordination.

8.03 *Legal Relationships*

A. If, in the course of performing other work at or adjacent to the Site for City or District, their employees, any other contractor working for City or District, or any utility owner causes damage to the Work or to the property of Contractor or its Subcontractors, or delays, disrupts, interferes with, or increases the scope or cost of the performance of the Work, through actions or inaction, then Contractor shall be entitled to an equitable adjustment in the Contract Price or the Contract Times, or both. Contractor must submit any Change Proposal seeking an equitable adjustment in the Contract Price or the Contract Times under this paragraph within 30 days of the damaging, delaying, disrupting, or interfering event. The entitlement to, and extent of, any such equitable adjustment shall take into account information (if any) regarding such other work that was provided to Contractor in the Contract Documents prior to the submittal of the Bid or the final negotiation of the terms of the Contract. When applicable, any such equitable adjustment in Contract Price shall be conditioned on Contractor assigning to City or District all Contractor's rights against such other contractor or utility owner with respect to the damage, delay, disruption, or interference that is the subject of the adjustment. Contractor's entitlement to an adjustment of the Contract Times is conditioned on such adjustment being essential to Contractor's ability to complete the Work within the Contract Times.

B. Contractor shall take reasonable and customary measures to avoid damaging, delaying, disrupting, or interfering with the work of City or District, any other contractor, or any utility owner performing other work at or adjacent to the Site. If Contractor fails to take such measures and as a result damages, delays, disrupts, or interferes with the work of any such other contractor or utility owner, then City or District may impose a set-off against payments due to Contractor, and assign to such other contractor or utility owner the City or District's contractual rights against Contractor with respect to the breach of the obligations set forth in this paragraph.

C. When City or District is performing other work at or adjacent to the Site with their employees, Contractor shall be liable to City or District for damage to such other work, and for the reasonable direct delay, disruption, and interference costs incurred by City or District as a result of Contractor's failure to take reasonable and customary measures with respect to City or District's other work. In response to such damage, delay, disruption, or interference, City or District may impose a set-off against payments due to Contractor.

D. If Contractor damages, delays, disrupts, or interferes with the work of any other contractor, or any utility owner performing other work at or adjacent to the Site, through Contractor's failure to take reasonable and customary measures to avoid such impacts, or if any claim arising out of Contractor's actions, inactions, or negligence in performance of the Work at or adjacent to the Site is made by any such other contractor or utility owner against Contractor, City, District, or Engineer, then Contractor shall (1) promptly attempt to settle the claim as to all parties through negotiations with such other contractor or utility owner, or otherwise resolve the claim by arbitration or other dispute resolution proceeding or at law, and (2) indemnify and hold harmless City, District, and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them from and against any such claims, and against all costs, losses, and damages (including but not limited to all fees and charges of engineers, architects,

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attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such damage, delay, disruption, or interference.

## ARTICLE 9 – CITY AND DISTRICT'S RESPONSIBILITIES

9.01 *Communications to Contractor*

A. Except as otherwise provided in these General Conditions, City or District shall issue all communications to Contractor through Engineer.

9.02 *Replacement of Engineer*

A. City or District may at its discretion appoint an engineer to replace Engineer, provided Contractor makes no reasonable objection to the replacement engineer. The replacement engineer's status under the Contract Documents shall be that of the former Engineer.

9.03 *Furnish Data*

A. City and District shall promptly furnish the data required of City and District under the Contract Documents.

9.04 *Pay When Due*

A. City and District shall make payments to Contractor when they are due as provided in the Agreement.

9.05 *Lands and Easements; Reports, Tests, and Drawings*

A. City and District's duties with respect to providing lands and easements are set forth in Paragraph 5.01.

B. City and District's duties with respect to providing engineering surveys to establish reference points are set forth in Paragraph 4.03.

C. Article 5 refers to City and District's identifying and making available to Contractor copies of reports of explorations and tests of conditions at the Site, and drawings of physical conditions relating to existing surface or subsurface structures at the Site.

9.06 *Insurance*

A. City and District's responsibilities, if any, with respect to purchasing and maintaining liability and property insurance are set forth in Article 6.

9.07 *Change Orders*

A. City and District's responsibilities with respect to Change Orders are set forth in Article 11.

9.08 *Inspections, Tests, and Approvals*

A. City and District's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 14.02.B.

9.09 *Limitations on City and District's Responsibilities*

A. The City or District shall not supervise, direct, or have control or authority over, nor be responsible for, Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the

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Work. City or District will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

9.10 *Undisclosed Hazardous Environmental Condition*

A. City or District's responsibility in respect to an undisclosed Hazardous Environmental Condition is set forth in Paragraph 5.06.

9.11 *Evidence of Financial Arrangements*

A. Upon request of Contractor, City or District shall furnish Contractor reasonable evidence that financial arrangements have been made to satisfy City or District's obligations under the Contract Documents (including obligations under proposed changes in the Work).

9.12 *Safety Programs*

A. While at the Site,City or District's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which City or District has been informed.

B. City or District shall furnish copies of any applicable City or District safety programs to Contractor.

9.13 City or District will furnish an "Site Representative" to represent City or District at the Site and assist City or District in observing the progress and quality of the Work.

**ARTICLE 10 – ENGINEER'S STATUS DURING CONSTRUCTION**

10.01 *City or District's Representative*

A. Engineer will be City or District's representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as City or District's representative during construction are set forth in the Contract.

10.02 *Visits to Site*

A. Engineer will make visits to the Site at intervals appropriate to the various stages of construction as Engineer deems necessary in order to observe as an experienced and qualified design professional the progress that has been made and the quality of the various aspects of Contractor's executed Work. Based on information obtained during such visits and observations, Engineer, for the benefit of City or District, will determine, in general, if the Work is proceeding in accordance with the Contract Documents. Engineer will not be required to make exhaustive or continuous inspections on the Site to check the quality or quantity of the Work. Engineer's efforts will be directed toward providing for City or District a greater degree of confidence that the completed Work will conform generally to the Contract Documents. On the basis of such visits and observations, Engineer will keep City and District informed of the progress of the Work and will endeavor to guard City or District against defective Work.

B. Engineer's visits and observations are subject to all the limitations on Engineer's authority and responsibility set forth in Paragraph 10.08. Particularly, but without limitation, during or as a result of Engineer's visits or observations of Contractor's Work, Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions

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and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work.

10.03 *Project Representative*

A. If City, District, and Engineer have agreed that Engineer will furnish a Resident Project Representative to represent Engineer at the Site and assist Engineer in observing the progress and quality of the Work, then the authority and responsibilities of any such Resident Project Representative will be as provided in the Supplementary Conditions, and limitations on the responsibilities thereof will be as provided in Paragraph 10.08. If City or District designates another representative or agent to represent City or District at the Site who is not Engineer's consultant, agent, or employee, the responsibilities and authority and limitations thereon of such other individual or entity will be as provided in the Supplementary Conditions.

10.04 *Rejecting Defective Work*

A. Engineer has the authority to reject Work in accordance with Article 14.

10.05 *Shop Drawings, Change Orders and Payments*

A. Engineer's authority, and limitations thereof, as to Shop Drawings and Samples, are set forth in Paragraph 7.16.

B. Engineer's authority, and limitations thereof, as to design calculations and design drawings submitted in response to a delegation of professional design services, if any, are set forth in Paragraph 7.19.

C. Engineer's authority as to Change Orders is set forth in Article 11.

D. Engineer's authority as to Applications for Payment is set forth in Article 15.

10.06 *Determinations for Unit Price Work*

A. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor as set forth in Paragraph 13.03.

10.07 *Decisions on Requirements of Contract Documents and Acceptability of Work*

A. Engineer will render decisions regarding the requirements of the Contract Documents, and judge the acceptability of the Work, pursuant to the specific procedures set forth herein for initial interpretations, Change Proposals, and acceptance of the Work. In rendering such decisions and judgments, Engineer will not show partiality to City, District, or Contractor, and will not be liable to City, District, Contractor, or others in connection with any proceedings, interpretations, decisions, or judgments conducted or rendered in good faith.

10.08 *Limitations on Engineer's Authority and Responsibilities*

A. Neither Engineer's authority or responsibility under this Article 10 or under any other provision of the Contract, nor any decision made by Engineer in good faith either to exercise or not exercise such authority or responsibility or the undertaking, exercise, or performance of any authority or responsibility by Engineer, shall create, impose, or give rise to any duty in contract, tort, or otherwise owed by Engineer to Contractor, any Subcontractor, any Supplier, any other individual or entity, or to any surety for or employee or agent of any of them.

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B. Engineer will not supervise, direct, control, or have authority over or be responsible for Contractor's means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or for any failure of Contractor to comply with Laws and Regulations applicable to the performance of the Work. Engineer will not be responsible for Contractor's failure to perform the Work in accordance with the Contract Documents.

C. Engineer will not be responsible for the acts or omissions of Contractor or of any Subcontractor, any Supplier, or of any other individual or entity performing any of the Work.

D. Engineer's review of the final Application for Payment and accompanying documentation and all maintenance and operating instructions, schedules, guarantees, bonds, certificates of inspection, tests and approvals, and other documentation required to be delivered by Paragraph 15.06.A will only be to determine generally that their content complies with the requirements of, and in the case of certificates of inspections, tests, and approvals, that the results certified indicate compliance with the Contract Documents.

E. The limitations upon authority and responsibility set forth in this Paragraph 10.08 shall also apply to the Resident Project Representative, if any.

10.09 *Compliance with Safety Program*

A. While at the Site, Engineer's employees and representatives will comply with the specific applicable requirements of City, District's and Contractor's safety programs (if any) of which Engineer has been informed.

## ARTICLE 11 – AMENDING THE CONTRACT DOCUMENTS; CHANGES IN THE WORK

11.01 *Amending and Supplementing Contract Documents*

A. The Contract Documents may be amended or supplemented by a Change Order, a Work Change Directive, or a Field Order.

1. *Change Orders*:

a. If an amendment or supplement to the Contract Documents includes a change in the Contract Price or the Contract Times, such amendment or supplement must be set forth in a Change Order. A Change Order also may be used to establish amendments and supplements of the Contract Documents that do not affect the Contract Price or Contract Times.

b. City, District, and Contractor may amend those terms and conditions of the Contract Documents that do not involve (1) the performance or acceptability of the Work, (2) the design (as set forth in the Drawings, Specifications, or otherwise), or (3) other engineering or technical matters, without the recommendation of the Engineer. Such an amendment shall be set forth in a Change Order.

2. *Work Change Directives*: A Work Change Directive will not change the Contract Price or the Contract Times but is evidence that the parties expect that the modification ordered or documented by a Work Change Directive will be incorporated in a subsequently issued Change Order, following negotiations by the parties as to the Work Change Directive's effect, if any, on the Contract Price and Contract Times; or, if

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negotiations are unsuccessful, by a determination under the terms of the Contract Documents governing adjustments, expressly including Paragraph 11.04 regarding change of Contract Price. Contractor must submit any Change Proposal seeking an adjustment of the Contract Price or the Contract Times, or both, no later than 30 days after the completion of the Work set out in the Work Change Directive. City or District must submit any Claim seeking an adjustment of the Contract Price or the Contract Times, or both, no later than 60 days after issuance of the Work Change Directive.

3. *Field Orders*: Engineer may authorize minor changes in the Work if the changes do not involve an adjustment in the Contract Price or the Contract Times and are compatible with the design concept of the completed Project as a functioning whole as indicated by the Contract Documents. Such changes will be accomplished by a Field Order and will be binding on City or District and also on Contractor, which shall perform the Work involved promptly. If Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, or both, then before proceeding with the Work at issue, Contractor shall submit a Change Proposal as provided herein.

11.02 *City- or District- Authorized Changes in the Work*

A. Without invalidating the Contract and without notice to any surety, City or District may, at any time or from time to time, order additions, deletions, or revisions in the Work. Such changes shall be supported by Engineer's recommendation, to the extent the change involves the design (as set forth in the Drawings, Specifications, or otherwise), or other engineering or technical matters. Such changes may be accomplished by a Change Order, if City, District, and Contractor have agreed as to the effect, if any, of the changes on Contract Times or Contract Price; or by a Work Change Directive. Upon receipt of any such document, Contractor shall promptly proceed with the Work involved; or, in the case of a deletion in the Work, promptly cease construction activities with respect to such deleted Work. Added or revised Work shall be performed under the applicable conditions of the Contract Documents. Nothing in this paragraph shall obligate Contractor to undertake work that Contractor reasonably concludes cannot be performed in a manner consistent with Contractor's safety obligations under the Contract Documents or Laws and Regulations.

11.03 *Unauthorized Changes in the Work*

A. Contractor shall not be entitled to an increase in the Contract Price or an extension of the Contract Times with respect to any work performed that is not required by the Contract Documents, as amended, modified, or supplemented, except in the case of an emergency as provided in Paragraph 7.15 or in the case of uncovering Work as provided in Paragraph 14.05.

11.04 *Change of Contract Price*

A. The Contract Price may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Price shall comply with the provisions of Paragraph 11.06. Any Claim for an adjustment of Contract Price shall comply with the provisions of Article 12.

B. An adjustment in the Contract Price will be determined as follows:

1. where the Work involved is covered by unit prices contained in the Contract Documents, then by application of such unit prices to the quantities of the items involved (subject to the provisions of Paragraph 13.03); or

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2. where the Work involved is not covered by unit prices contained in the Contract Documents, then by a mutually agreed lump sum (which may include an allowance for overhead and profit not necessarily in accordance with Paragraph 11.04.C.2); or

3. where the Work involved is not covered by unit prices contained in the Contract Documents and the parties do not reach mutual agreement to a lump sum, then on the basis of the Cost of the Work (determined as provided in Paragraph 13.01) plus a Contractor's fee for overhead and profit (determined as provided in Paragraph 11.04.C).

C. *Contractor's Fee*: When applicable, the Contractor's fee for overhead and profit shall be determined as follows:

1. a mutually acceptable fixed fee; or

2. if a fixed fee is not agreed upon, then a fee based on the following percentages of the various portions of the Cost of the Work:

a. for costs incurred under Paragraphs 13.01.B.1 and 13.01.B.2, the Contractor's fee shall be 15 percent;

b. for costs incurred under Paragraph 13.01.B.3, the Contractor's fee shall be five percent;

c. where one or more tiers of subcontracts are on the basis of Cost of the Work plus a fee and no fixed fee is agreed upon, the intent of Paragraphs 11.01.C.2.a and 11.01.C.2.b is that the Contractor's fee shall be based on: (1) a fee of 15 percent of the costs incurred under Paragraphs 13.01.A.1 and 13.01.A.2 by the Subcontractor that actually performs the Work, at whatever tier, and (2) with respect to Contractor itself and to any Subcontractors of a tier higher than that of the Subcontractor that actually performs the Work, a fee of five percent of the amount (fee plus underlying costs incurred) attributable to the next lower tier Subcontractor; provided, however, that for any such subcontracted work the maximum total fee to be paid by City or District shall be no greater than 27 percent of the costs incurred by the Subcontractor that actually performs the work;

d. no fee shall be payable on the basis of costs itemized under Paragraphs 13.01.B.4, 13.01.B.5, and 13.01.C;

e. the amount of credit to be allowed by Contractor to City or District for any change which results in a net decrease in cost will be the amount of the actual net decrease in cost plus a deduction in Contractor's fee by an amount equal to five percent of such net decrease; and

f. when both additions and credits are involved in any one change, the adjustment in Contractor's fee shall be computed on the basis of the net change in accordance with Paragraphs 11.04.C.2.a through 11.04.C.2.e, inclusive.

11.05 *Change of Contract Times*

A. The Contract Times may only be changed by a Change Order. Any Change Proposal for an adjustment in the Contract Times shall comply with the provisions of Paragraph 11.06. Any Claim for an adjustment in the Contract Times shall comply with the provisions of Article 12.

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B. An adjustment of the Contract Times shall be subject to the limitations set forth in Paragraph 4.05, concerning delays in Contractor's progress.

11.06 *Change Proposals*

A. Contractor shall submit a Change Proposal to Engineer to request an adjustment in the Contract Times or Contract Price; appeal an initial decision by Engineer concerning the requirements of the Contract Documents or relating to the acceptability of the Work under the Contract Documents; contest a set-off against payment due; or seek other relief under the Contract. The Change Proposal shall specify any proposed change in Contract Times or Contract Price, or both, or other proposed relief, and explain the reason for the proposed change, with citations to any governing or applicable provisions of the Contract Documents.

1. *Procedures*: Contractor shall submit each Change Proposal to Engineer promptly (but in no event later than 30 days) after the start of the event giving rise thereto, or after such initial decision. The Contractor shall submit supporting data, including the proposed change in Contract Price or Contract Time (if any), to the Engineer and City or District within 15 days after the submittal of the Change Proposal. The supporting data shall be accompanied by a written statement that the supporting data are accurate and complete, and that any requested time or price adjustment is the entire adjustment to which Contractor believes it is entitled as a result of said event. Engineer will advise City or District regarding the Change Proposal, and consider any comments or response from City or District regarding the Change Proposal.

2. *Engineer's Action*: Engineer will review each Change Proposal and, within 30 days after receipt of the Contractor's supporting data, either deny the Change Proposal in whole, approve it in whole, or deny it in part and approve it in part. Such actions shall be in writing, with a copy provided to City, District, and Contractor. If Engineer does not take action on the Change Proposal within 30 days, then either City, District, or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of Engineer's inaction the Change Proposal is deemed denied, thereby commencing the time for appeal of the denial under Article 12.

3. *Binding Decision*: Engineer's decision will be final and binding upon City, District, and Contractor, unless City, District, or Contractor appeals the decision by filing a Claim under Article 12.

B. *Resolution of Certain Change Proposals*: If the Change Proposal does not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters, then Engineer will notify the parties that the Engineer is unable to resolve the Change Proposal. For purposes of further resolution of such a Change Proposal, such notice shall be deemed a denial, and Contractor may choose to seek resolution under the terms of Article 12.

11.07 *Execution of Change Orders*

A. City, District, and Contractor shall execute appropriate Change Orders covering:

1. changes in the Contract Price or Contract Times which are agreed to by the parties, including any undisputed sum or amount of time for Work actually performed in accordance with a Work Change Directive;

2. changes in Contract Price resulting from a City or District set-off, unless Contractor has duly contested such set-off;

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3. changes in the Work which are: (a) ordered by City or District pursuant to Paragraph 11.02, (b) required because of City or District's acceptance of defective Work under Paragraph 14.04 or City or District's correction of defective Work under Paragraph 14.07, or (c) agreed to by the parties, subject to the need for Engineer's recommendation if the change in the Work involves the design (as set forth in the Drawings, Specifications, or otherwise), or other engineering or technical matters; and

4. changes in the Contract Price or Contract Times, or other changes, which embody the substance of any final and binding results under Paragraph 11.06, or Article 12.

B. If City, District, or Contractor refuses to execute a Change Order that is required to be executed under the terms of this Paragraph 11.07, it shall be deemed to be of full force and effect, as if fully executed.

11.08 *Notification to Surety*

A. If the provisions of any bond require notice to be given to a surety of any change affecting the general scope of the Work or the provisions of the Contract Documents (including, but not limited to, Contract Price or Contract Times), the giving of any such notice will be Contractor's responsibility. The amount of each applicable bond will be adjusted to reflect the effect of any such change.

**ARTICLE 12 – CLAIMS**

12.01 *Claims*

A. *Claims Process*: The following disputes between City or District and Contractor shall be submitted to the Claims process set forth in this Article:

1. Appeals by City, District, or Contractor of Engineer's decisions regarding Change Proposals;

2. City or District demands for adjustments in the Contract Price or Contract Times, or other relief under the Contract Documents; and

3. Disputes that Engineer has been unable to address because they do not involve the design (as set forth in the Drawings, Specifications, or otherwise), the acceptability of the Work, or other engineering or technical matters.

B. *Submittal of Claim*: The party submitting a Claim shall deliver it directly to the other party to the Contract promptly (but in no event later than 30 days) after the start of the event giving rise thereto; in the case of appeals regarding Change Proposals within 30 days of the decision under appeal. The party submitting the Claim shall also furnish a copy to the Engineer, for its information only. The responsibility to substantiate a Claim shall rest with the party making the Claim. In the case of a Claim by Contractor seeking an increase in the Contract Times or Contract Price, or both, Contractor shall certify that the Claim is made in good faith, that the supporting data are accurate and complete, and that to the best of Contractor's knowledge and belief the amount of time or money requested accurately reflects the full amount to which Contractor is entitled.

C. *Review and Resolution*: The party receiving a Claim shall review it thoroughly, giving full consideration to its merits. The two parties shall seek to resolve the Claim through the exchange of information and direct negotiations. The parties may extend the time for

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resolving the Claim by mutual agreement. All actions taken on a Claim shall be stated in writing and submitted to the other party, with a copy to Engineer.

D. *Mediation*:

1. At any time after initiation of a Claim, City, District, and Contractor may mutually agree to mediation of the underlying dispute. The agreement to mediate shall stay the Claim submittal and response process.

2. If City, District, and Contractor agree to mediation, then after 60 days from such agreement, either City, District, or Contractor may unilaterally terminate the mediation process, and the Claim submittal and decision process shall resume as of the date of the termination. If the mediation proceeds but is unsuccessful in resolving the dispute, the Claim submittal and decision process shall resume as of the date of the conclusion of the mediation, as determined by the mediator.

3. City, District, and Contractor shall each pay one-half of the mediator's fees and costs.

E. *Partial Approval*: If the party receiving a Claim approves the Claim in part and denies it in part, such action shall be final and binding unless within 30 days of such action the other party invokes the procedure set forth in Article 17 for final resolution of disputes.

F. *Denial of Claim*: If efforts to resolve a Claim are not successful, the party receiving the Claim may deny it by giving written notice of denial to the other party. If the receiving party does not take action on the Claim within 90 days, then either City, District, or Contractor may at any time thereafter submit a letter to the other party indicating that as a result of the inaction, the Claim is deemed denied, thereby commencing the time for appeal of the denial. A denial of the Claim shall be final and binding unless within 30 days of the denial the other party invokes the procedure set forth in Article 17 for the final resolution of disputes.

G. *Final and Binding Results*: If the parties reach a mutual agreement regarding a Claim, whether through approval of the Claim, direct negotiations, mediation, or otherwise; or if a Claim is approved in part and denied in part, or denied in full, and such actions become final and binding; then the results of the agreement or action on the Claim shall be incorporated in a Change Order to the extent they affect the Contract, including the Work, the Contract Times, or the Contract Price.

## ARTICLE 13 – COST OF THE WORK; ALLOWANCES; UNIT PRICE WORK

### 13.01 *Cost of the Work*

A. *Purposes for Determination of Cost of the Work*: The term Cost of the Work means the sum of all costs necessary for the proper performance of the Work at issue, as further defined below. The provisions of this Paragraph 13.01 are used for two distinct purposes:

1. To determine Cost of the Work when Cost of the Work is a component of the Contract Price, under cost-plus-fee, time-and-materials, or other cost-based terms; or

2. To determine the value of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price. When the value of any such adjustment is determined on the basis of Cost of the Work, Contractor is entitled only to those additional or incremental costs required because of the change in the Work or because of the event giving rise to the adjustment.

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B. *Costs Included*: Except as otherwise may be agreed to in writing by City and District, costs included in the Cost of the Work shall be in amounts no higher than those prevailing in the locality of the Project, shall not include any of the costs itemized in Paragraph 13.01.C, and shall include only the following items:

1. Payroll costs for employees in the direct employ of Contractor in the performance of the Work under schedules of job classifications agreed upon by City, District, and Contractor. Such employees shall include, without limitation, superintendents, foremen, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work shall be apportioned on the basis of their time spent on the Work. Payroll costs shall include, but not be limited to, salaries and wages plus the cost of fringe benefits, which shall include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, bonuses, sick leave, and vacation and holiday pay applicable thereto. The expenses of performing Work outside of regular working hours, on Saturday, Sunday, or legal holidays, shall be included in the above to the extent authorized by City or District.

2. Cost of all materials and equipment furnished and incorporated in the Work, including costs of transportation and storage thereof, and Suppliers' field services required in connection therewith. All cash discounts shall accrue to Contractor unless City or District as appropriate deposits funds with Contractor with which to make payments, in which case the cash discounts shall accrue to City or District. All trade discounts, rebates, and refunds and returns from sale of surplus materials and equipment shall accrue to City or District as appropriate, and Contractor shall make provisions so that they may be obtained.

3. Payments made by Contractor to Subcontractors for Work performed by Subcontractors. If required by City or District, Contractor shall obtain competitive bids from subcontractors acceptable to City, District, and Contractor and shall deliver such bids to City or District, who will then determine, with the advice of Engineer, which bids, if any, will be acceptable. If any subcontract provides that the Subcontractor is to be paid on the basis of Cost of the Work plus a fee, the Subcontractor's Cost of the Work and fee shall be determined in the same manner as Contractor's Cost of the Work and fee as provided in this Paragraph 13.01.

4. Costs of special consultants (including but not limited to engineers, architects, testing laboratories, surveyors, attorneys, and accountants) employed for services specifically related to the Work.

5. Supplemental costs including the following:

   a. The proportion of necessary transportation, travel, and subsistence expenses of Contractor's employees incurred in discharge of duties connected with the Work.

   b. Cost, including transportation and maintenance, of all materials, supplies, equipment, machinery, appliances, office, and temporary facilities at the Site, and hand tools not owned by the workers, which are consumed in the performance of the Work, and cost, less market value, of such items used but not consumed which remain the property of Contractor.

   c. Rentals of all construction equipment and machinery, and the parts thereof, whether rented from Contractor or others in accordance with rental agreements

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approved by City or District with the advice of Engineer, and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs shall be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts shall cease when the use thereof is no longer necessary for the Work.

d. Sales, consumer, use, and other similar taxes related to the Work, and for which Contractor is liable, as imposed by Laws and Regulations.

e. Deposits lost for causes other than negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, and royalty payments and fees for permits and licenses.

f. Losses and damages (and related expenses) caused by damage to the Work, not compensated by insurance or otherwise, sustained by Contractor in connection with the performance of the Work (except losses and damages within the deductible amounts of property insurance established in accordance with Paragraph 6.05), provided such losses and damages have resulted from causes other than the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable. Such losses shall include settlements made with the written consent and approval of City or District. No such losses, damages, and expenses shall be included in the Cost of the Work for the purpose of determining Contractor's fee.

g. The cost of utilities, fuel, and sanitary facilities at the Site.

h. Minor expenses such as communication service at the Site, express and courier services, and similar petty cash items in connection with the Work.

i. The costs of premiums for all bonds and insurance that Contractor is required by the Contract Documents to purchase and maintain.

C. *Costs Excluded*: The term Cost of the Work shall not include any of the following items:

1. Payroll costs and other compensation of Contractor's officers, executives, principals (of partnerships and sole proprietorships), general managers, safety managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expediters, timekeepers, clerks, and other personnel employed by Contractor, whether at the Site or in Contractor's principal or branch office for general administration of the Work and not specifically included in the agreed upon schedule of job classifications referred to in Paragraph 13.01.B.1 or specifically covered by Paragraph 13.01.B.4. The payroll costs and other compensation excluded here are to be considered administrative costs covered by the Contractor's fee.

2. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.

3. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.

4. Costs due to the negligence of Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or for whose acts any of them may be liable, including but not limited to, the correction of defective Work, disposal of materials or equipment wrongly supplied, and making good any damage to property.

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5. Other overhead or general expense costs of any kind and the costs of any item not specifically and expressly included in Paragraph 13.01.B.

D. *Contractor's Fee*: When the Work as a whole is performed on the basis of cost-plus, Contractor's fee shall be determined as set forth in the Agreement. When the value of any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price is determined on the basis of Cost of the Work, Contractor's fee shall be determined as set forth in Paragraph 11.04.C.

E. *Documentation*: Whenever the Cost of the Work for any purpose is to be determined pursuant to this Article 13, Contractor will establish and maintain records thereof in accordance with generally accepted accounting practices and submit in a form acceptable to Engineer an itemized cost breakdown together with supporting data.

13.02 *Allowances*

A. It is understood that Contractor has included in the Contract Price all allowances so named in the Contract Documents and shall cause the Work so covered to be performed for such sums and by such persons or entities as may be acceptable to City, District, and Engineer.

B. *Cash Allowances*: Contractor agrees that:

1. the cash allowances include the cost to Contractor (less any applicable trade discounts) of materials and equipment required by the allowances to be delivered at the Site, and all applicable taxes; and

2. Contractor's costs for unloading and handling on the Site, labor, installation, overhead, profit, and other expenses contemplated for the cash allowances have been included in the Contract Price and not in the allowances, and no demand for additional payment on account of any of the foregoing will be valid.

C. *Contingency Allowance*: Contractor agrees that a contingency allowance, if any, is for the sole use of City or District to cover unanticipated costs.

D. Prior to final payment, an appropriate Change Order will be issued as recommended by Engineer to reflect actual amounts due Contractor on account of Work covered by allowances, and the Contract Price shall be correspondingly adjusted.

13.03 *Unit Price Work*

A. Where the Contract Documents provide that all or part of the Work is to be Unit Price Work, initially the Contract Price will be deemed to include for all Unit Price Work an amount equal to the sum of the unit price for each separately identified item of Unit Price Work times the estimated quantity of each item as indicated in the Agreement.

B. The estimated quantities of items of Unit Price Work are not guaranteed and are solely for the purpose of comparison of Bids and determining an initial Contract Price. Payments to Contractor for Unit Price Work will be based on actual quantities.

C. Each unit price will be deemed to include an amount considered by Contractor to be adequate to cover Contractor's overhead and profit for each separately identified item.

D. Engineer will determine the actual quantities and classifications of Unit Price Work performed by Contractor. Engineer will review with Contractor the Engineer's preliminary determinations on such matters before rendering a written decision thereon (by recommendation of an Application for Payment or otherwise). Engineer's written decision

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thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon City, District, and Contractor, subject to the provisions of the following paragraph.

E. Within 30 days of Engineer's written decision under the preceding paragraph, Contractor may submit a Change Proposal, or City or District may file a Claim, seeking an adjustment in the Contract Price if:

1. the quantity of any item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement;

2. there is no corresponding adjustment with respect to any other item of Work; and

3. Contractor believes that it is entitled to an increase in Contract Price as a result of having incurred additional expense or City or District believes that City or District is entitled to a decrease in Contract Price, and the parties are unable to agree as to the amount of any such increase or decrease.

## ARTICLE 14 – TESTS AND INSPECTIONS; CORRECTION, REMOVAL OR ACCEPTANCE OF DEFECTIVE WORK

14.01 *Access to Work*

A. City, District, Engineer, their consultants and other representatives and personnel of City or District, independent testing laboratories, and authorities having jurisdiction will have access to the Site and the Work at reasonable times for their observation, inspection, and testing. Contractor shall provide them proper and safe conditions for such access and advise them of Contractor's safety procedures and programs so that they may comply therewith as applicable.

14.02 *Tests, Inspections, and Approvals*

A. Contractor shall give Engineer timely notice of readiness of the Work (or specific parts thereof) for all required inspections and tests, and shall cooperate with inspection and testing personnel to facilitate required inspections and tests.

B. City or District shall retain and pay for the services of an independent inspector, testing laboratory, or other qualified individual or entity to perform all inspections and tests expressly required by the Contract Documents to be furnished and paid for by City or District, except that costs incurred in connection with tests or inspections of covered Work shall be governed by the provisions of Paragraph 14.05.

C. If Laws or Regulations of any public body having jurisdiction require any Work (or part thereof) specifically to be inspected, tested, or approved by an employee or other representative of such public body, Contractor shall assume full responsibility for arranging and obtaining such inspections, tests, or approvals, pay all costs in connection therewith, and furnish Engineer the required certificates of inspection or approval.

D. Contractor shall be responsible for arranging, obtaining, and paying for all inspections and tests required:

1. by the Contract Documents, unless the Contract Documents expressly allocate responsibility for a specific inspection or test to City or District;

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2. to attain City, District's and Engineer's acceptance of materials or equipment to be incorporated in the Work;

3. by manufacturers of equipment furnished under the Contract Documents;

4. for testing, adjusting, and balancing of mechanical, electrical, and other equipment to be incorporated into the Work; and

5. for acceptance of materials, mix designs, or equipment submitted for approval prior to Contractor's purchase thereof for incorporation in the Work.

Such inspections and tests shall be performed by independent inspectors, testing laboratories, or other qualified individuals or entities acceptable to City, District, and Engineer.

E. If the Contract Documents require the Work (or part thereof) to be approved by City, District, , Engineer, or another designated individual or entity, then Contractor shall assume full responsibility for arranging and obtaining such approvals.

F. If any Work (or the work of others) that is to be inspected, tested, or approved is covered by Contractor without written concurrence of Engineer, Contractor shall, if requested by Engineer, uncover such Work for observation. Such uncovering shall be at Contractor's expense unless Contractor had given Engineer timely notice of Contractor's intention to cover the same and Engineer had not acted with reasonable promptness in response to such notice.

14.03 *Defective Work*

A. *Contractor's Obligation*: It is Contractor's obligation to assure that the Work is not defective.

B. *Engineer's Authority*: Engineer has the authority to determine whether Work is defective, and to reject defective Work.

C. *Notice of Defects*: Prompt notice of all defective Work of which City, District, or Engineer has actual knowledge will be given to Contractor.

D. *Correction, or Removal and Replacement*: Promptly after receipt of written notice of defective Work, Contractor shall correct all such defective Work, whether or not fabricated, installed, or completed, or, if Engineer has rejected the defective Work, remove it from the Project and replace it with Work that is not defective.

E. *Preservation of Warranties*: When correcting defective Work, Contractor shall take no action that would void or otherwise impair City or District's special warranty and guarantee, if any, on said Work.

F. *Costs and Damages*: In addition to its correction, removal, and replacement obligations with respect to defective Work, Contractor shall pay all claims, costs, losses, and damages arising out of or relating to defective Work, including but not limited to the cost of the inspection, testing, correction, removal, replacement, or reconstruction of such defective Work, fines levied against City or District by governmental authorities because the Work is defective, and the costs of repair or replacement of work of others resulting from defective Work. Prior to final payment, if City, District, and Contractor are unable to agree as to the measure of such claims, costs, losses, and damages resulting from defective Work, then City or District may impose a reasonable set-off against payments due under Article 15.

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14.04 *Acceptance of Defective Work*

A. If, instead of requiring correction or removal and replacement of defective Work, City or District prefers to accept it, City or District may do so (subject, if such acceptance occurs prior to final payment, to Engineer's confirmation that such acceptance is in general accord with the design intent and applicable engineering principles, and will not endanger public safety). Contractor shall pay all claims, costs, losses, and damages attributable to City or District's evaluation of and determination to accept such defective Work (such costs to be approved by Engineer as to reasonableness), and for the diminished value of the Work to the extent not otherwise paid by Contractor. If any such acceptance occurs prior to final payment, the necessary revisions in the Contract Documents with respect to the Work shall be incorporated in a Change Order. If the parties are unable to agree as to the decrease in the Contract Price, reflecting the diminished value of Work so accepted, then City or District may impose a reasonable set-off against payments due under Article 15. If the acceptance of defective Work occurs after final payment, Contractor shall pay an appropriate amount to City or District.

14.05 *Uncovering Work*

A. Engineer has the authority to require special inspection or testing of the Work, whether or not the Work is fabricated, installed, or completed.

B. If any Work is covered contrary to the written request of Engineer, then Contractor shall, if requested by Engineer, uncover such Work for Engineer's observation, and then replace the covering, all at Contractor's expense.

C. If Engineer considers it necessary or advisable that covered Work be observed by Engineer or inspected or tested by others, then Contractor, at Engineer's request, shall uncover, expose, or otherwise make available for observation, inspection, or testing as Engineer may require, that portion of the Work in question, and provide all necessary labor, material, and equipment.

1. If it is found that the uncovered Work is defective, Contractor shall be responsible for all claims, costs, losses, and damages arising out of or relating to such uncovering, exposure, observation, inspection, and testing, and of satisfactory replacement or reconstruction (including but not limited to all costs of repair or replacement of work of others); and pending Contractor's full discharge of this responsibility the City or District shall be entitled to impose a reasonable set-off against payments due under Article 15.

2. If the uncovered Work is not found to be defective, Contractor shall be allowed an increase in the Contract Price or an extension of the Contract Times, or both, directly attributable to such uncovering, exposure, observation, inspection, testing, replacement, and reconstruction. If the parties are unable to agree as to the amount or extent thereof, then Contractor may submit a Change Proposal within 30 days of the determination that the Work is not defective.

14.06 *City or District May Stop the Work*

A. If the Work is defective, or Contractor fails to supply sufficient skilled workers or suitable materials or equipment, or fails to perform the Work in such a way that the completed Work will conform to the Contract Documents, then City or District may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated;

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however, this right of City or District to stop the Work shall not give rise to any duty on the part of City or District to exercise this right for the benefit of Contractor, any Subcontractor, any Supplier, any other individual or entity, or any surety for, or employee or agent of any of them.

14.07 *City or District May Correct Defective Work*

A. If Contractor fails within a reasonable time after written notice from Engineer to correct defective Work, or to remove and replace rejected Work as required by Engineer, or if Contractor fails to perform the Work in accordance with the Contract Documents, or if Contractor fails to comply with any other provision of the Contract Documents, then City or District may, after seven days written notice to Contractor, correct or remedy any such deficiency.

B. In exercising the rights and remedies under this Paragraph 14.07, City or District shall proceed expeditiously. In connection with such corrective or remedial action, City or District may exclude Contractor from all or part of the Site, take possession of all or part of the Work and suspend Contractor's services related thereto, and incorporate in the Work all materials and equipment stored at the Site or for which City or District has paid Contractor but which are stored elsewhere. Contractor shall allow City or District, their representatives, agents and employees, their other contractors, and Engineer and Engineer's consultants access to the Site to enable City or District to exercise the rights and remedies under this paragraph.

C. All claims, costs, losses, and damages incurred or sustained by City or District in exercising the rights and remedies under this Paragraph 14.07 will be charged against Contractor as set-offs against payments due under Article 15. Such claims, costs, losses and damages will include but not be limited to all costs of repair, or replacement of work of others destroyed or damaged by correction, removal, or replacement of Contractor's defective Work.

D. Contractor shall not be allowed an extension of the Contract Times because of any delay in the performance of the Work attributable to the exercise by City or District of City or District's rights and remedies under this Paragraph 14.07.

## ARTICLE 15 – PAYMENTS TO CONTRACTOR; SET-OFFS; COMPLETION; CORRECTION PERIOD

15.01 *Progress Payments*

A. *Basis for Progress Payments*: The Schedule of Values established as provided in Article 2 will serve as the basis for progress payments and will be incorporated into a form of Application for Payment acceptable to Engineer. Progress payments on account of Unit Price Work will be based on the number of units completed during the pay period, as determined under the provisions of Paragraph 13.03. Progress payments for cost-based Work will be based on Cost of the Work completed by Contractor during the pay period.

B. *Applications for Payments*:

1. At least 20 days before the date established in the Agreement for each progress payment (but not more often than once a month), Contractor shall submit to Engineer for review an Application for Payment filled out and signed by Contractor covering the Work completed as of the date of the Application and accompanied by such supporting documentation as is required by the Contract Documents. If payment is requested on the basis of materials and equipment not incorporated in the Work but

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delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment shall also be accompanied by a bill of sale, invoice, or other documentation warranting that City or District has received the materials and equipment free and clear of all Liens, and evidence that the materials and equipment are covered by appropriate property insurance, a warehouse bond, or other arrangements to protect City or District's interest therein, all of which must be satisfactory to City and District.

2. Beginning with the second Application for Payment, each Application shall include an affidavit of Contractor stating that all previous progress payments received on account of the Work have been applied on account to discharge Contractor's legitimate obligations associated with prior Applications for Payment.

3. The amount of retainage with respect to progress payments will be as stipulated in the Agreement.

C. *Review of Applications*:

1. Engineer will, within 10 days after receipt of each Application for Payment, including each resubmittal, either indicate in writing a recommendation of payment and present the Application to City and District, or return the Application to Contractor indicating in writing Engineer's reasons for refusing to recommend payment. In the latter case, Contractor may make the necessary corrections and resubmit the Application.

2. Engineer's recommendation of any payment requested in an Application for Payment will constitute a representation by Engineer to City or District, based on Engineer's observations of the executed Work as an experienced and qualified design professional, and on Engineer's review of the Application for Payment and the accompanying data and schedules, that to the best of Engineer's knowledge, information and belief:

   a. the Work has progressed to the point indicated;

   b. the quality of the Work is generally in accordance with the Contract Documents (subject to an evaluation of the Work as a functioning whole prior to or upon Substantial Completion, the results of any subsequent tests called for in the Contract Documents, a final determination of quantities and classifications for Unit Price Work under Paragraph 13.03, and any other qualifications stated in the recommendation); and

   c. the conditions precedent to Contractor's being entitled to such payment appear to have been fulfilled in so far as it is Engineer's responsibility to observe the Work.

3. By recommending any such payment Engineer will not thereby be deemed to have represented that:

   a. inspections made to check the quality or the quantity of the Work as it has been performed have been exhaustive, extended to every aspect of the Work in progress, or involved detailed inspections of the Work beyond the responsibilities specifically assigned to Engineer in the Contract; or

   b. there may not be other matters or issues between the parties that might entitle Contractor to be paid additionally by City or District or entitle City or District to withhold payment to Contractor.

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4. Neither Engineer's review of Contractor's Work for the purposes of recommending payments nor Engineer's recommendation of any payment, including final payment, will impose responsibility on Engineer:

   a. to supervise, direct, or control the Work, or

   b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto, or

   c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work, or

   d. to make any examination to ascertain how or for what purposes Contractor has used the money paid on account of the Contract Price, or

   e. to determine that title to any of the Work, materials, or equipment has passed to City or District free and clear of any Liens.

5. Engineer may refuse to recommend the whole or any part of any payment if, in Engineer's opinion, it would be incorrect to make the representations to City or District stated in Paragraph 15.01.C.2.

6. Engineer will recommend reductions in payment (set-offs) necessary in Engineer's opinion to protect City or District from loss because:

   a. the Work is defective, requiring correction or replacement;

   b. the Contract Price has been reduced by Change Orders;

   c. City or District has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;

   d. City or District has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible; or

   e. Engineer has actual knowledge of the occurrence of any of the events that would constitute a default by Contractor and therefore justify termination for cause under the Contract Documents.

D. *Payment Becomes Due*:

1. Ten days after presentation of the Application for Payment to City or District with Engineer's recommendation, the amount recommended (subject to any City or District set-offs) will become due, and when due will be paid by City and District to Contractor.

E. *Reductions in Payment by City or District*:

1. In addition to any reductions in payment (set-offs) recommended by Engineer, City or District is entitled to impose a set-off against payment based on any of the following:

   a. claims have been made against City or District on account of Contractor's conduct in the performance or furnishing of the Work, or City or District has incurred costs, losses, or damages on account of Contractor's conduct in the performance or furnishing of the Work, including but not limited to claims, costs, losses, or damages from workplace injuries, adjacent property damage, non-compliance with Laws and Regulations, and patent infringement;

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b. Contractor has failed to take reasonable and customary measures to avoid damage, delay, disruption, and interference with other work at or adjacent to the Site;

c. Contractor has failed to provide and maintain required bonds or insurance;

d. City or District has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible;

e. City or District has incurred extra charges or engineering costs related to submittal reviews, evaluations of proposed substitutes, tests and inspections, or return visits to manufacturing or assembly facilities;

f. the Work is defective, requiring correction or replacement;

g. City or District has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;

h. the Contract Price has been reduced by Change Orders;

i. an event that would constitute a default by Contractor and therefore justify a termination for cause has occurred;

j. liquidated damages have accrued as a result of Contractor's failure to achieve Milestones, Substantial Completion, or final completion of the Work;

k. Liens have been filed in connection with the Work, except where Contractor has delivered a specific bond satisfactory to City and District to secure the satisfaction and discharge of such Liens;

l. there are other items entitling City or District to a set off against the amount recommended.

2. If City or District imposes any set-off against payment, whether based on its own knowledge or on the written recommendations of Engineer, City or District will give Contractor immediate written notice (with a copy to Engineer) stating the reasons for such action and the specific amount of the reduction, and promptly pay Contractor any amount remaining after deduction of the amount so withheld. City and District shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by City, District, and Contractor, if Contractor remedies the reasons for such action. The reduction imposed shall be binding on Contractor unless it duly submits a Change Proposal contesting the reduction.

3. Upon a subsequent determination that City or District's refusal of payment was not justified, the amount wrongfully withheld shall be treated as an amount due as determined by Paragraph 15.01.C.1 and subject to interest as provided in the Agreement.

15.02 *Contractor's Warranty of Title*

A. Contractor warrants and guarantees that title to all Work, materials, and equipment furnished under the Contract will pass to City and District free and clear of (1) all Liens and other title defects, and (2) all patent, licensing, copyright, or royalty obligations, no later than seven days after the time of payment by City or District.

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15.03 *Substantial Completion*

A. When Contractor considers the entire Work ready for its intended use Contractor shall notify City, District, and Engineer in writing that the entire Work is substantially complete and request that Engineer issue a certificate of Substantial Completion. Contractor shall at the same time submit to City, District, and Engineer an initial draft of punch list items to be completed or corrected before final payment.

B. Promptly after Contractor's notification, City, District, Contractor, and Engineer shall make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.

C. If Engineer considers the Work substantially complete, Engineer will deliver to City and District a preliminary certificate of Substantial Completion which shall fix the date of Substantial Completion. Engineer shall attach to the certificate a punch list of items to be completed or corrected before final payment. City and District shall have seven days after receipt of the preliminary certificate during which to make written objection to Engineer as to any provisions of the certificate or attached punch list. If, after considering the objections to the provisions of the preliminary certificate, Engineer concludes that the Work is not substantially complete, Engineer will, within 14 days after submission of the preliminary certificate to City and District, notify Contractor in writing that the Work is not substantially complete, stating the reasons therefor. If City or District does not object to the provisions of the certificate, or if despite consideration of City or District's objections Engineer concludes that the Work is substantially complete, then Engineer will, within said 14 days, execute and deliver to City, District, and Contractor a final certificate of Substantial Completion (with a revised punch list of items to be completed or corrected) reflecting such changes from the preliminary certificate as Engineer believes justified after consideration of any objections from City or District.

D. At the time of receipt of the preliminary certificate of Substantial Completion, City, District, and Contractor will confer regarding City or District's use or occupancy of the Work following Substantial Completion, review the builder's risk insurance policy with respect to the end of the builder's risk coverage, and confirm the transition to coverage of the Work under a permanent property insurance policy held by City or District. Unless City, District, and Contractor agree otherwise in writing, City or District shall bear responsibility for security, operation, protection of the Work, property insurance, maintenance, heat, and utilities upon City or District's use or occupancy of the Work.

E. After Substantial Completion the Contractor shall promptly begin work on the punch list of items to be completed or corrected prior to final payment. In appropriate cases Contractor may submit monthly Applications for Payment for completed punch list items, following the progress payment procedures set forth above.

F. City or District shall have the right to exclude Contractor from the Site after the date of Substantial Completion subject to allowing Contractor reasonable access to remove its property and complete or correct items on the punch list.

15.04 *Partial Use or Occupancy*

A. Prior to Substantial Completion of all the Work, City or District may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which City, District, , Engineer, and Contractor agree constitutes a

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separately functioning and usable part of the Work that can be used by City or District for its intended purpose without significant interference with Contractor's performance of the remainder of the Work, subject to the following conditions:

1. At any time City or District may request in writing that Contractor permit City or District to use or occupy any such part of the Work that City or District believes to be substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, City, District, and Engineer will follow the procedures of Paragraph 15.03.A through E for that part of the Work.

2. At any time Contractor may notify City, District, and Engineer in writing that Contractor considers any such part of the Work substantially complete and request Engineer to issue a certificate of Substantial Completion for that part of the Work.

3. Within a reasonable time after either such request, City, District,, Contractor, and Engineer shall make an inspection of that part of the Work to determine its status of completion. If Engineer does not consider that part of the Work to be substantially complete, Engineer will notify City, District, and Contractor in writing giving the reasons therefor. If Engineer considers that part of the Work to be substantially complete, the provisions of Paragraph 15.03 will apply with respect to certification of Substantial Completion of that part of the Work and the division of responsibility in respect thereof and access thereto.

4. No use or occupancy or separate operation of part of the Work may occur prior to compliance with the requirements of Paragraph 6.05 regarding builder's risk or other property insurance.

15.05 *Final Inspection*

A. Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Engineer will promptly make a final inspection with City, District, and Contractor and will notify Contractor in writing of all particulars in which this inspection reveals that the Work, or agreed portion thereof, is incomplete or defective. Contractor shall immediately take such measures as are necessary to complete such Work or remedy such deficiencies.

15.06 *Final Payment*

A. *Application for Payment*:

1. After Contractor has, in the opinion of Engineer, satisfactorily completed all corrections identified during the final inspection and has delivered, in accordance with the Contract Documents, all maintenance and operating instructions, schedules, guarantees, bonds, certificates or other evidence of insurance, certificates of inspection, annotated record documents (as provided in Paragraph 7.11), and other documents, Contractor may make application for final payment.

2. The final Application for Payment shall be accompanied (except as previously delivered) by:

   a. all documentation called for in the Contract Documents;

   b. consent of the surety, if any, to final payment;

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c. satisfactory evidence that all title issues have been resolved such that title to all Work, materials, and equipment has passed to City and District free and clear of any Liens or other title defects, or will so pass upon final payment.

d. a list of all disputes that Contractor believes are unsettled; and

e. complete and legally effective releases or waivers (satisfactory to City and District) of all Lien rights arising out of the Work, and of Liens filed in connection with the Work.

3. In lieu of the releases or waivers of Liens specified in Paragraph 15.06.A.2 and as approved by City and District, Contractor may furnish receipts or releases in full and an affidavit of Contractor that: (a) the releases and receipts include all labor, services, material, and equipment for which a Lien could be filed; and (b) all payrolls, material and equipment bills, and other indebtedness connected with the Work for which City or District might in any way be responsible, or which might in any way result in liens or other burdens on City or District's property, have been paid or otherwise satisfied. If any Subcontractor or Supplier fails to furnish such a release or receipt in full, Contractor may furnish a bond or other collateral satisfactory to City or District to indemnify City or District against any Lien, or City or District at their option may issue joint checks payable to Contractor and specified Subcontractors and Suppliers.

B. *Engineer's Review of Application and Acceptance*:

1. If, on the basis of Engineer's observation of the Work during construction and final inspection, and Engineer's review of the final Application for Payment and accompanying documentation as required by the Contract Documents, Engineer is satisfied that the Work has been completed and Contractor's other obligations under the Contract have been fulfilled, Engineer will, within ten days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of final payment and present the Application for Payment to City and District for payment. Such recommendation shall account for any set-offs against payment that are necessary in Engineer's opinion to protect City and District from loss for the reasons stated above with respect to progress payments. At the same time Engineer will also give written notice to City, District, and Contractor that the Work is acceptable, subject to the provisions of Paragraph 15.07. Otherwise, Engineer will return the Application for Payment to Contractor, indicating in writing the reasons for refusing to recommend final payment, in which case Contractor shall make the necessary corrections and resubmit the Application for Payment.

C. *Completion of Work*: The Work is complete (subject to surviving obligations) when it is ready for final payment as established by the Engineer's written recommendation of final payment.

D. *Payment Becomes Due*: Thirty days after the presentation to City and District of the final Application for Payment and accompanying documentation, the amount recommended by Engineer (less any further sum City or District is entitled to set off against Engineer's recommendation, including but not limited to set-offs for liquidated damages and set-offs allowed under the provisions above with respect to progress payments) will become due and shall be paid by City and District to Contractor.

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15.07 *Waiver of Claims*

A. The making of final payment will not constitute a waiver by City or District of claims or rights against Contractor. City and District expressly reserve claims and rights arising from unsettled Liens, from defective Work appearing after final inspection pursuant to Paragraph 15.05, from Contractor's failure to comply with the Contract Documents or the terms of any special guarantees specified therein, from outstanding Claims by City and District, or from Contractor's continuing obligations under the Contract Documents.

B. The acceptance of final payment by Contractor will constitute a waiver by Contractor of all claims and rights against City or District other than those pending matters that have been duly submitted or appealed under the provisions of Article 17.

15.08 *Correction Period*

A. If within one year after the date of Substantial Completion (or such longer period of time as may be prescribed by the terms of any applicable special guarantee required by the Contract Documents, or by any specific provision of the Contract Documents), any Work is found to be defective, or if the repair of any damages to the Site, adjacent areas that Contractor has arranged to use through construction easements or otherwise, and other adjacent areas used by Contractor as permitted by Laws and Regulations, is found to be defective, then Contractor shall promptly, without cost to City or Districtand in accordance with Owner's written instructions:

1. correct the defective repairs to the Site or such other adjacent areas;
2. correct such defective Work;
3. if the defective Work has been rejected by City or District, remove it from the Project and replace it with Work that is not defective, and
4. satisfactorily correct or repair or remove and replace any damage to other Work, to the work of others, or to other land or areas resulting therefrom.

B. If Contractor does not promptly comply with the terms of City or District's written instructions, or in an emergency where delay would cause serious risk of loss or damage, City or District may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. Contractor shall pay all claims, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals and all court or arbitration or other dispute resolution costs) arising out of or relating to such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others).

C. In special circumstances where a particular item of equipment is placed in continuous service before Substantial Completion of all the Work, the correction period for that item may start to run from an earlier date if so provided in the Specifications.

D. Where defective Work (and damage to other Work resulting therefrom) has been corrected or removed and replaced under this paragraph, the correction period hereunder with respect to such Work will be extended for an additional period of one year after such correction or removal and replacement has been satisfactorily completed.

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E. Contractor's obligations under this paragraph are in addition to all other obligations and warranties. The provisions of this paragraph shall not be construed as a substitute for, or a waiver of, the provisions of any applicable statute of limitation or repose.

## ARTICLE 16 – SUSPENSION OF WORK AND TERMINATION

16.01 *City or District May Suspend Work*

A. At any time and without cause, City or District may suspend the Work or any portion thereof for a period of not more than 90 consecutive days by written notice to Contractor and Engineer. Such notice will fix the date on which Work will be resumed. Contractor shall resume the Work on the date so fixed. Contractor shall be entitled to an adjustment in the Contract Price or an extension of the Contract Times, or both, directly attributable to any such suspension. Any Change Proposal seeking such adjustments shall be submitted no later than 30 days after the date fixed for resumption of Work.

16.02 *City or District May Terminate for Cause*

A. The occurrence of any one or more of the following events will constitute a default by Contractor and justify termination for cause:

1. Contractor's persistent failure to perform the Work in accordance with the Contract Documents (including, but not limited to, failure to supply sufficient skilled workers or suitable materials or equipment or failure to adhere to the Progress Schedule);
2. Failure of Contractor to perform or otherwise to comply with a material term of the Contract Documents;
3. Contractor's disregard of Laws or Regulations of any public body having jurisdiction; or
4. Contractor's repeated disregard of the authority of City, District, or Engineer.

B. If one or more of the events identified in Paragraph 16.02.A occurs, then after giving Contractor (and any surety) ten days written notice that City or District is considering a declaration that Contractor is in default and termination of the contract, City or District may proceed to:

1. declare Contractor to be in default, and give Contractor (and any surety) notice that the Contract is terminated; and
2. enforce the rights available to City and District under any applicable performance bond.

C. Subject to the terms and operation of any applicable performance bond, if City or District has terminated the Contract for cause, City or District may exclude Contractor from the Site, take possession of the Work, incorporate in the Work all materials and equipment stored at the Site or for which City or District has paid Contractor but which are stored elsewhere, and complete the Work as City or District may deem expedient.

D. City or District may not proceed with termination of the Contract under Paragraph 16.02.B if Contractor within seven days of receipt of notice of intent to terminate begins to correct its failure to perform and proceeds diligently to cure such failure.

E. If City or District proceeds as provided in Paragraph 16.02.B, Contractor shall not be entitled to receive any further payment until the Work is completed. If the unpaid balance of the Contract Price exceeds the cost to complete the Work, including all related claims,

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costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals) sustained by City or District, such excess will be paid to Contractor. If the cost to complete the Work including such related claims, costs, losses, and damages exceeds such unpaid balance, Contractor shall pay the difference to City or District. Such claims, costs, losses, and damages incurred by City or District will be reviewed by Engineer as to their reasonableness and, when so approved by Engineer, incorporated in a Change Order. When exercising any rights or remedies under this paragraph, City or District shall not be required to obtain the lowest price for the Work performed.

F. Where Contractor's services have been so terminated by City or District, the termination will not affect any rights or remedies of City or District against Contractor then existing or which may thereafter accrue, or any rights or remedies of City or District against Contractor or any surety under any payment bond or performance bond. Any retention or payment of money due Contractor by City or District will not release Contractor from liability.

G. If and to the extent that Contractor has provided a performance bond under the provisions of Paragraph 6.01.A, the provisions of that bond shall govern over any inconsistent provisions of Paragraphs 16.02.B and 16.02.D.

16.03 *City and District May Terminate For Convenience*

A. Upon seven days written notice to Contractor and Engineer, City and District may, without cause and without prejudice to any other right or remedy of City and District, terminate the Contract. In such case, Contractor shall be paid for (without duplication of any items):

1. completed and acceptable Work executed in accordance with the Contract Documents prior to the effective date of termination, including fair and reasonable sums for overhead and profit on such Work;

2. expenses sustained prior to the effective date of termination in performing services and furnishing labor, materials, or equipment as required by the Contract Documents in connection with uncompleted Work, plus fair and reasonable sums for overhead and profit on such expenses; and

3. other reasonable expenses directly attributable to termination, including costs incurred to prepare a termination for convenience cost proposal.

B. Contractor shall not be paid on account of loss of anticipated overhead, profits, or revenue, or other economic loss arising out of or resulting from such termination.

16.04 *Contractor May Stop Work or Terminate*

A. If, through no act or fault of Contractor, (1) the Work is suspended for more than 90 consecutive days by City and District or under an order of court or other public authority, or (2) Engineer fails to act on any Application for Payment within 30 days after it is submitted, or (3) City and District fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon seven days written notice to City, District, and Engineer, and provided City, District, or Engineer do not remedy such suspension or failure within that time, terminate the contract and recover from City or District payment on the same terms as provided in Paragraph 16.03.

B. In lieu of terminating the Contract and without prejudice to any other right or remedy, if Engineer has failed to act on an Application for Payment within 30 days after it is submitted, or City or District has failed for 30 days to pay Contractor any sum finally

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determined to be due, Contractor may, seven days after written notice to City, District, and Engineer, stop the Work until payment is made of all such amounts due Contractor, including interest thereon. The provisions of this paragraph are not intended to preclude Contractor from submitting a Change Proposal for an adjustment in Contract Price or Contract Times or otherwise for expenses or damage directly attributable to Contractor's stopping the Work as permitted by this paragraph.

## ARTICLE 17 – FINAL RESOLUTION OF DISPUTES

17.01 *Methods and Procedures*

A. *Disputes Subject to Final Resolution*: The following disputed matters are subject to final resolution under the provisions of this Article:

1. A timely appeal of an approval in part and denial in part of a Claim, or of a denial in full; and

2. Disputes between City or District and Contractor concerning the Work or obligations under the Contract Documents, and arising after final payment has been made.

B. *Final Resolution of Disputes*: For any dispute subject to resolution under this Article, City, District, or Contractor may:

1. elect in writing to invoke the dispute resolution process provided for in the Supplementary Conditions; or

2. agree with the other party to submit the dispute to another dispute resolution process; or

3. if no dispute resolution process is provided for in the Supplementary Conditions or mutually agreed to, give written notice to the other party of the intent to submit the dispute to a court of competent jurisdiction.

## ARTICLE 18 – MISCELLANEOUS

18.01 *Giving Notice*

A. Whenever any provision of the Contract Documents requires the giving of written notice, it will be deemed to have been validly given if:

1. delivered in person, by a commercial courier service or otherwise, to the individual or to a member of the firm or to an officer of the corporation for which it is intended; or

2. delivered at or sent by registered or certified mail, postage prepaid, to the last business address known to the sender of the notice.

18.02 *Computation of Times*

A. When any period of time is referred to in the Contract by days, it will be computed to exclude the first and include the last day of such period. If the last day of any such period falls on a Saturday or Sunday or on a day made a legal holiday by the law of the applicable jurisdiction, such day will be omitted from the computation.

18.03 *Cumulative Remedies*

A. The duties and obligations imposed by these General Conditions and the rights and remedies available hereunder to the parties hereto are in addition to, and are not to be

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construed in any way as a limitation of, any rights and remedies available to any or all of them which are otherwise imposed or available by Laws or Regulations, by special warranty or guarantee, or by other provisions of the Contract. The provisions of this paragraph will be as effective as if repeated specifically in the Contract Documents in connection with each particular duty, obligation, right, and remedy to which they apply.

18.04 *Limitation of Damages*

A. With respect to any and all Change Proposals, Claims, disputes subject to final resolution, and other matters at issue, neither City, District, nor Engineer, nor any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, shall be liable to Contractor for any claims, costs, losses, or damages sustained by Contractor on or in connection with any other project or anticipated project.

18.05 *No Waiver*

A. A party's non-enforcement of any provision shall not constitute a waiver of that provision, nor shall it affect the enforceability of that provision or of the remainder of this Contract.

18.06 *Survival of Obligations*

A. All representations, indemnifications, warranties, and guarantees made in, required by, or given in accordance with the Contract, as well as all continuing obligations indicated in the Contract, will survive final payment, completion, and acceptance of the Work or termination or completion of the Contract or termination of the services of Contractor.

18.07 *Controlling Law*

A. This Contract is to be governed by the law of the state in which the Project is located.

18.08 *Headings*

A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

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# H. NOTICE OF AWARD

# Notice of Award

Date: _____, 2016

| | |
|---|---|
| Project: HAMMOND STREET UTILITY UPGRADES PHASE II | |
| Owner: City of Bangor | 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 Hammond Street Utility Upgrades Phase II.

The Contract Price of your Contract is _____ Dollars and _____Cents ($_____).

6 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 [6] 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

Bangor Water District
District

By:_____
Authorized Signature

_____
Title

# I. NOTICE TO PROCEED

# Notice to Proceed

Date: _____, 2016

| | |
|---|---|
| Project: HAMMOND STREET UTILITY UPGRADES PHASE II | |
| Owner: 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 Article 4 of the Agreement, the project must be completed on or before _____.

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<br>Given by: | Bangor Water District<br>Given by: |
| Authorized Signature | Authorized Signature |
| Title | Title |
| Date<br>Copy to Engineer | Date |

# J. 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**

_____ (Seal)
Contractor's Name and Corporate Seal

By: _____
Signature

_____
Print Name

_____
Title

Attest: _____
Signature

_____
Title

**SURETY**

_____ (Seal)
Surety's Name and Corporate Seal

By: _____
Signature (Attach Power of Attorney)

_____
Print Name

_____
Title

Attest: _____
Signature

_____
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 – (*Name, Address and Telephone*)<br>Surety Agency or Broker:<br>Owner's Representative (*Engineer or other party*): |

# K. 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**

_____ (Seal)
Contractor's Name and Corporate Seal

By: _____
Signature

_____
Print Name

_____
Title

Attest: _____
Signature

_____
Title

**SURETY**

_____ (Seal)
Surety's Name and Corporate Seal

By: _____
Signature (Attach Power of Attorney)

_____
Print Name

_____
Title

Attest: _____
Signature

_____
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*)<br>Surety Agency or Broker:<br>Owner's Representative (*Engineer or other*): |

# L. 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)

Endorsed by the Construction Specifications Institute.


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# Progress Estimate

# Contractor's Application

| For (contract): | Application Number: |
|---|---|
| Application Period: | Application Date: |

| A | | B | Work Completed | | E | F | | G |
|---|---|---|---|---|---|---|---|---|
| Item | | | C | D | | | | |
| Specification Section No. | Description | Scheduled Value | From Previous Application (C+D) | This Period | Materials Presently Stored (not in C or D) | Total Completed and Stored to Date (C + D + E) | % (F) B | Balance to Finish (B - F) |
| | | | | | | | | |
| | **Totals** | | | | | | | |


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# Progress Estimate

# Contractor's Application

| For (contract): | Application Number: |
|---|---|
| Application Period: | Application Date: |

| A | | | | B | C | D | E | F | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Item | | Bid Quantity | Unit Price | Bid Value | Estimated Quantity Installed | Value | Materials Presently Stored (not in C) | Total Completed and Stored to Date (D + E) | % (F) B | Balance to Finish (B - F) |
| Bid Item No. | Description | | | | | | | | | |
| | | | | | | | | | | |
| | **Totals** | | | | | | | | | |


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# 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** | | | | | | | |


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

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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.**

# M. CERTIFICATE OF SUBSTANTIAL COMPLETION

# Certificate of Substantial Completion

| | |
|---|---|
| Project: HAMMOND STREET UTILITY UPGRADES PHASE II | |
| Owner: City of Bangor | 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:

_____

_____

_____

_____

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

_____

_____

_____

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

| | |
|---|---|
| Executed by Engineer | Date |
| Accepted by Contractor | Date |
| Accepted by Owner | Date |
| Accepted by District | Date |

# 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 "Hammond Street Utility Upgrades Phase II", City of Bangor, Maine" dated July, 2016, prepared by The City of Bangor Engineering Department and the Bangor Water District.

### 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 were 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 to the Engineer a written plan of the intended procedure for handling flows within the existing sanitary 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 cleaning, CCTV inspection and construction, and moving the operation as necessary to facilitate construction.

Bid Item 73: Sedimentation and Erosion 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: The cost of installing, maintaining, and dismantling sedimentation and erosion control structures, including but not limited to, silt fence, hay bales, and silt sacks for protection of surrounding catch basins, as needed throughout the project.

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

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

# CONTRACT CLOSEOUT

## PART 1 - GENERAL

### 1.1 SECTION INCLUDES

A. Closeout Procedures.

B. Final Cleaning.

### 1.2 RELATED SECTIONS

A. None.

### 1.3 CLOSEOUT PROCEDURES

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

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

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

D. Submit record drawings including all ties and elevation information recorded for underground facilities.

### 1.4 FINAL CLEANING

A. Execute final cleaning prior to final inspection.

B. Clean interior and exterior surfaces exposed to view; remove temporary labels, stains and foreign substances.

C. Clean site; sweep paved areas, rake clean landscaped surfaces.

D. Remove waste and surplus materials, rubbish, and construction facilities from the site.

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.

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 or boulder, <u>two cubic yards</u> <u>or more</u> 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. Hot Mix Asphalt Paving
6. Sanitary Sewer Structures
7. Storm Drainage Structures
8. 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:

| Sieve Size | Weight Passing (%) |
|---|---|
| 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:

| Sieve Size | Weight Passing (%) |
|---|---|
| 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:

| Sieve Size | Weight Passing (%) |
|---|---|
| 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.

| Sieve Size | Weight Passing (%) | |
|---|---|---|
| | Screened | Crushed |
| 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.

| Sieve Size | Percent Finer by Weight |
|---|---|
| 4” | 100 |
| 3” | 90-100 |
| 1/4” | 25-90 |
| #40 | 0-30 |
| #200 | 0-5 |

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.

| Sieve Size | Weight Passing (%) |
|---|---|
| 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:

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

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

3.5 PROTECTION OF FINISHED WORK

A. Protect and maintain finished Work as necessary.

END OF SECTION

# 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
6. Hot Mix Asphalt Pavement
7. Landscape Grading

### 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.

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.

END OF SECTION

# HOT MIX ASPHALT PAVING

## PART 1 - GENERAL

### 1.1 SUMMARY

A. Section Includes:
   1. Hot Mix Asphalt Paving.

B. Related Sections:
   1. Grading
   2. Backfilling
   3. Landscape Grading

### 1.2 REFERENCES

A. Maine Department of Transportation Standard Specifications Highways and Bridges, latest edition and supplemental materials.

### 1.3 QUALITY ASSURANCE

A. Perform Work in accordance with Maine Department of Transportation Standard Specification - Highway and Bridges.

B. Mixing Plant: Conform to State of Maine Department of Transportation Standards.

C. Obtain materials from same source throughout.

### 1.4 ENVIRONMENTAL REQUIREMENTS.

A. Do not place asphalt when aggregate base surface temperature is less than 35 degrees F for Bituminous Concrete Binder and 50 degrees F for Bituminous Concrete Surface, or when surface is wet or frozen.

B. Apply bituminous prime and tack coats prior to placing all asphalt.

C. Do not place surface pavement when the binder surface is wet or contains an excess of moisture, which would prevent uniform distribution and the required penetration.

D. Conform to applicable standards for paving work.

## PART 2 - PRODUCTS

### 2.1 AGGREGATE SUBBASE

A. As specified in Backfilling.

2.2 AGGREGATE BASE

A. As specified in Backfilling.

2.3 BITUMINOUS CONCRETE BASE COURSE

A. MDOT Specification, Section 401.

B. As shown on plans.

2.4 BITUMINOUS TACK COAT

A. MDOT Specification, Section 409.

B. Type MS-2, Emulsified Asphalt, Mixing.

2.5 BITUMINOUS CONCRETE SURFACE COURSE

A. MDOT Specification, Section 401.

B. As shown on plans.

2.6 SIDEWALKS, DRIVES AND SHIM

A. MDOT Specification, Section 401.

B. As shown on plans.

2.7 TEMPORARY PATCHING

A. Hot or cold, as approved by Engineer.

2.8 ACCESSORIES

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

PART 3 - EXECUTION

3.1 AGGREGATE SUBBASE

A. As specified in Backfilling.

3.2 AGGREGATE BASE

A. As specified in Backfilling.

3.3 BITUMINOUS CONCRETE BASE COURSE

A. MDOT Specification, Section 401.

3.4 BITUMINOUS TACK COAT

A. Apply emulsified asphalt tack coat to gutters and pavement if required by Engineer to promote adequate bond.

B. Apply at a rate of 0.03 to 0.05 gallons/square yard; excess coating and/or fat spots will not be permitted.

3.5 BITUMINOUS CONCRETE SURFACE COURSE

A. MDOT Specification, Section 401.

3.6 SIDEWALKS, DRIVES AND SHIM

A. MDOT Specification, Section 401.

3.7 COMPACTION

A. Bituminous compaction shall take place at as high a temperature as possible without the mix bulging excessively in front of the rolls. For most dense graded mix this is between 260 degrees F and 285 degrees F. At no time shall the pavement be allowed to fall below 185 degrees F without compaction.

B. Pavement compacted at temperatures below 185 degrees may be removed if deemed unsatisfactory by the Engineer.

3.8 TOLERANCES

A. Flatness: Maximum variation of 1/4 inch measured with 10 foot straight edge.

B. Scheduled Compacted Thickness: Within 1/4 inch.

C. Variation from True Elevation: Within 1/2 inch.

3.9 FIELD QUALITY CONTROL

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

3.10 FIELD QUALITY ASSURANCE

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

3.10 PROTECTION

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

3.11 SCHEDULES

A. Roadways

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

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 68: H.M.A. 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 shown on the Drawings and as directed by the Engineer.
c. Includes: preparation and placement of specified thickness of binder and final surface course pavement in trench areas including shimming prior to pavement as necessary and saw cutting all edges before paving as noted on the Drawings and as directed by the Engineer, bituminous tack coat, and cutting in butt joints as required to match into existing pavement.

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.
3. Manholes – Bolt Down
a. Same as Manholes - Standard
b. Specify ordered to be bolt down and contain a gasket.

E. All iron and steel components, including reinforcing in precast structures must be in compliance with the American Iron and Steel Act of 2014.

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.

4. 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.

5. 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 28 -32: 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.

Bid Item 35: Abandon Existing PreCast Structure 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.

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. All iron and steel components, including reinforcing in precast structures must be in compliance with the American Iron and Steel Act of 2014.

F. Sump

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

G. Trap
   1. Provide a trap in all satellite catch basins as noted on plans or as directed by Engineer.

2. It is not necessary to install traps on large trunk drain lines if diameter of structure and pipe does not allow for installation provided traps are installed on all satellite structures.

3. Trap shall be "The Eliminator" as manufactured by Ground Water Rescue, 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.

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 26 - 27: Catch Basin (Various Sizes)

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 SUMMARY

A. Section Includes:
1. Sanitary Gravity Sewer Piping.
2. Service Laterals and connection to existing lateral piping.
3. Fittings
4. Cleanouts
5. Testing
6. Abandoning Existing Sewer Mains in Place

B. Related Sections:
1. Excavation
2. Sanitary Sewer and Storm Drain Systems

1.2 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.

1.3 SUBMITTALS

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

1.4 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.

1.5 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.

C. RCP – Old Castle Precast, or approved equal.

2.2 GRAVITY SEWER PIPE MATERIALS

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

B. Reinforced Concrete (RCP) Non-pressure Sewer Pipe, conforming to ASTM Specification C-76, ASTM C-443, AASHTO M170.
   1. Wall thickness: 5.5"
   2. Joints: seamless watertight construction, interconnecting.

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 tope 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 LATERIALS

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 l/2 psig in the time stated in the following table for the length of pipe being tested:

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

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 20-25: 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 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: cleaning, 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.

Bid Item 34: Abandon Existing Mains in Travel Way in Place 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.

END OF SECTION

TRENCHLESS SEWER REHAB SYSTEMS

This document specifies a Cured-In-Place-Pipe (CIPP) liner for the rehabilitation of sanitary sewer and storm water pipes. This specification includes quality control measures that mandate a CIPP liner of consistent and high quality. The specification is open to both fiberglass-based CIPP products that are cured with ultra-violet light and felt-based CIPP products that are cured with hot water. It does not include steam-cured CIPP products. This specification is organized as follows:

1.0 General Description
2.0 Resins
3.0 Tube
4.0 Design Parameters
5.0 Installation
6.0 Requirements & Testing
7.0 Measurement and Payment

PART 1 - GENERAL

The method of rehabilitation shall be Cured-In-Place-Pipe (CIPP) as described herein for the line (or lines) listed in this bid document. This method includes cleaning and video inspection of the designated line, identification of existing live taps, removing of protruding taps by remote methods, performing point repairs, installation of a resin-impregnated tube into the existing pipe, followed by ultra-violet light or hot water curing as specified by the resin manufacturer, reopening service taps into the line, sampling and testing, and clean-up. Before final acceptance of each line segment, a post-rehabilitation video inspection and sample testing must be conducted and approved. Rehabilitation must be completed for the full length from the manhole to manhole, resulting in a sound, tight-fitting water-tight liner with a smooth interior surface.

The Contractor, or the sub-contractor, shall not change any material, design values or procedural matters stated or approved herein, without informing the Owner and receiving written approval of the change.

1.1 SUMMARY

A. Section Includes:
1. Quality Controls
2. Fiberglass/UV Cure CIPP
3. Felt/Thermal Cure CIPP

B. Related Sections:
1. Excavation
2. Sanitary Sewer and Storm Drain Systems
3. Sanitary Sewer Structures

1.1 EXPERIENCE RECORD OF CONTRACTORS

The contractor shall have successfully managed and completed CIPP rehabilitation projects on lines ranging in size from the smallest line on the project to the largest line on the project within the last three years previous to bid date. In the absence of this experience, a Manufacturer's representative will be on-site until the Owner states in writing the Contractor has demonstrated sufficient capacity to continue on his own. Alternatively, the Owner may require that the Contractor install a Demonstration Project as defined by the Owner using the same system to be proposed/installed under this Specification prior to bidding on a particular project. Terms, conditions, and test results set forth in this Specification apply and shall be met by the Demonstration Project. Because of the uniqueness of individual systems, installers, and products, the Owner reserves the sole right to determine approval/disapproval of a system or product for any/all reasons based on a Demonstration Project. The testing shall be paid for by the Owner and conducted at a testing laboratory of the Owner's designation.

1.2 REFERENCE STANDARDS

ASTM C581- Standard Practice for Determining Chemical Resistance of thermosetting resins used in glass fiber reinforced structures, intended for liquid service.

ASTM D543- Test Method for resistance of plastics to chemical reagents.

ASTM D790- Test Method(s) for flexural properties of un-reinforced and reinforced plastics and electrical insulating materials.

STM F1216 (including Appendix Xl)- Standard practice for rehabilitation of existing pipelines and conduits by the inversion and curing of a resin-impregnated tube.

ASTM F1743-96- Rehabilitation of existing pipelines and conduits by pulled-in-place installation of cured-in-place thermos-setting resin pipe (CIPP).

APS Standard- Water tightness standard for cured-in-place thermos-setting resin pipe/Porosity Test protocol.

1.3 BID INFORMATION

This project is bid on a "price per lineal foot" basis, or as otherwise noted in the proposal. The distance stated on the bid is the Owner's best estimate and shall be checked by the Contractor. The Owner will verify Contractor's measurement and payment will be based on the Bid cost per lineal foot or other unit based on the owner verified distance.

1.4 SUBMITTALS

Contractor shall provide the following information:

a. Thickness of each segment of pipe lined. (Attach ASTM 1216 wall thickness formula calculations).
b. Cost per foot with extended total.
c. Cost of service tap re-openings with extended total.
d. Type of resin to be used.
   (Attach 3rd party test results for chemical corrosion resistance testing (Section 2.02).

(Attach statement that resin is approved to be used in the proposed CIPP system (Section 2.02).

e. Initial (laminate design) modulus of elasticity used on the project (250,000 psi minimum).
(Attach 3rd party test results conducted in the last three (3) years.

f. Initial (laminate design) flexural strength used on this project (4,500 psi minimum).
(Attach 3rd party test results conducted in the last three (3) years.

g. Long-term reduction factor.
(Attach 3rd party test results conducted in the last three (3) years.

h. Type of inner liner and outer liner to be used.
(Attach manufacturer's of 3rd party certification for both the inner and outer liners stating styrene gas barrier status.

i. DEQ certification/permitting status of the wet-out facility.
(Attach a copy of DEQ permit or other DEQ documentation if permit-exempt.

j. Certificate of "direct sizing"- for fiberglass products only.

k. 3rd party test results stating the strength of the seam- for felt products only.

l. Boiler Truck Operator Certification (OSHA)-for thermal cure products only.

m. Distance from wet-out facility to job-site (300 mile maximum distance)- for thermal cure products only.

PART 2 - RESINS

2.1 Acceptable Resin Types

a. Polyester npg.
b. Orthothalic
c. Vinylester

2.2 Resin Definitions and Physical Characteristics

The liquid thermosetting resin used in this rehabilitation project shall produce a properly cured tube which will be resistant to abrasion caused by solids, grit, and/or sand. The cured tube shall also be resistant to corrosion due to acids and gases such as sulfuric acid, carbonic acid, hydrogen sulfide, methane, and carbon monoxide. The Cure-In-Place-Pipe system shall utilize thermosetting resins which will withstand the corrosive effect of the existing residential commercial, and industrial effluents, liquids and/or gases.

The resin system to be used shall be manufactured by an approved company selected by the Cured-In-Place process manufacturer. Documentation of approved status is a pre-contract requirement. Only corrosion resistant polyester npg, orthothalic, and vinlyester resins complying with the following definitions shall be used.

The chemical corrosion resistance of the actual resin system used by the Contractor shall be tested by the resin manufacturer in accordance with ASTM F1216, D-543 or C-581 as applicable. Exposure to the chemical solutions listed below shall result in a loss of no more than twenty percent (20%) of the initial physical properties when tested in accordance with ASTM C-581-87.

| Chemical Solution | Concentration (%) |
|---|---|
| Tap Water (pH 6-9) | 100 |
| Nitric Acid | 5 |
| Phosphoric Acid | 10 |
| Sulfuric Acid | 10 |
| Gasoline | 100 |
| Vegetable Oil | 100 |
| Detergent | 0.1 |
| Soap | 0.1 |

PART 3 - TUBE

3.1 Acceptable Materials

a. Fiberglass (cured with ultra-violet light).
b. Felt (cured with hot water).

3.2 Tube Characteristics & Standards

At the time of manufacture, each lot of glass fiber or felt tube liner shall be inspected for defects and tested in accordance with applicable ASTM standards. At the time of delivery, the liner shall be homogeneous throughout, uniform in color, free of cracks, holes, foreign materials, blisters, and deleterious faults.

For testing purposes, a production lot shall consist of all liner having the same marking number. It shall include any and all items produced during any given work shift and must be so identified as opposed to previous or ensuing production.

The ENGINEER may at any time direct the manufacturer to obtain compound samples and prepare test specimens in accordance with applicable ASTM standards.

An “inner liner” and “outer liner” film must be used for resin control (to prevent resin migration and contamination). The “inner film” and “outer film” must both be certified styrene gas barriers. The

"inner liner" film must be removed during the installation process unless it is a permanent part of the system and is made an integral part of the carrier tube by bonding or fusing to the carrier tube.

The material shall be manufactured in such a manner as to result in a tight-fitting, continuous liner after installation. There shall be no measureable annular space. The liner shall have a snug fit at manhole terminations as shall be evidenced by flares.

All wet-out or impregnation of the Tube must be done in an EPA-regulated, quality-controlled facility. Documentation of EPA permitting must be submitted with all qualified bids. No "over the hole" or "on-site" wet-out is allowed. For products that are cured with hot water, the wet-out must be conducted within 300 miles of the job site considering the time-sensitive characteristics of thermal-cured products.

3.3 Fiberglass Tube (Ultraviolet Light Curing Application)

The glass fiber tubing shall be seamless and spirally wound, including an exterior and interior film that protects and contains the resin used in the liner. The exterior film will be provided with a UV light blocker foil.

3.4 Fiberglass Tube (Ultraviolet Light Curing Application) (Continued)

1. Tube

    a. The Tube shall consist of a seamless, spirally wound glass fiber that is flexible and has strain values (expandable) of equal to eight (8) percent. The tube will not have a longitudinal seam, including a stitched seam, stitch-free-weld or bond, or stitch-free overlap. The tube shall be constructed to withstand installation pressures and have sufficient strength to bridge missing pipe.

    b. The impregnated Tube shall have a uniform thickness, that when compressed at installation pressures, will meet or exceed the Design thickness. If voids are present in the pipe, the Design wall thickness must still be met or exceeded.

    c. The Tube shall be sized such that when installed, it will tightly fit the internal circumference and length of the original pipe.

    d. The glass fiber Tube shall be saturated with the appropriate resin using a resin bath to allow for the lowest possible amount of air entrapment. Vacuum-suction impregnation methods are not allowed due to the introduction of air using this method. The liner will then be formed into a spirally wound shape for the purpose of being seamless in its cured state. An inner and outer material will be added that are both impervious to airborne styrene, with the outer materials also having UV blocking characteristics. The inner membrane will be removed after the installation and curing processes are completed.

    e. The wall color of the interior pipe surface of CIPP after installation shall be a light reflective color so that a clear detailed examination with closed circuit television inspection equipment may made.

f. The liner should be seamless in its cured state to insure homogenous physical properties around the circumference of the cured liner.

g. The manufacturer will test the raw materials and liner materials at various stages of manufacturing on every liner, including taking samples of every finished liner and conducting test for e-modulus, tensile, wall thickness and porosity.

h. Fiberglass materials must be “direct sized” to enhance the fiberglass/resin bond. Certification of this coating and its compatibility with the resin system used is required.

i. The Tube shall be constructed to withstand installation pressures and have sufficient strength to bridge missing pipe while meeting or exceeding the Design wall thickness at all pipe locations during installation conditions and pressures.

3.5 Felt Tube (Hot Water Curing Application)

The Tube shall consist of one or more layers of absorbent felt fabric and meet the requirements of ASTM F1216 or ASTM F1743, Section 5.

1. Tube:

a. For work performed under this specification, the following felt-based carrier tube materials may be used: Non-woven polyester felt and Non-woven fiberglass filament reinforced polyester felt.
b. The Tube shall be constructed to withstand installation pressures and have sufficient strength to bridge missing pipe while meeting or exceeding the Design wall thickness at all pipe locations during installation conditions and pressures.
c. The Tube Shall be sizes such that when installed will tightly fit the internal circumference and length of the original pipe. Overlapped layers of felt in longitudinal seams that cause lumps in the final product shall not be utilized.
d. The Tube shall be homogeneous across the entire wall thickness containing no intermediate or encapsulated elastomeric layers. No materials shall be included in the Tube that may cause delamination in the cured liner (CIPP). No dry or unsaturated layers shall be evident.
e. The wall color of the interior pipe surface of CIPP after installation shall be a light reflective color so that a clear detailed examination with closed circuit television inspection equipment may be made.
f. Seams in the felt Tube shall be allowed, because non-seamed felt tubes are not currently available, but the seams must be stronger than the non-seamed felt. Third-party test data documenting the strength of the seam is required.
g. The manufacturer will test the raw materials and liner materials at various stages of manufacturing on every liner, including taking samples of every finished liner and conducting test for e-modulus, tensile, wall thickness and porosity.
h. The outside of the Tube shall be marked for distance at regular intervals along its entire length, not exceed 5 ft. Such markings shall include the Manufacturers name or identifying symbol.

PART 4 - DESIGN PARAMETERS

The newly installed liner shall be **designed for a minimum fifty-year service life** under continuous loading conditions. The design shall assume no bonding to the original pipe wall. The liner shall be designed to withstand all imposed loads. Utilize a thicker liner in high traffic areas or as directed by Engineer.

| | **Parameter** | **C.I.P.P. System** |
|---|---|---|
| 1. | Pipe Condition | Fully deteriorated |
| 2. | Soil Type | Saturated/unsaturated |
| 3. | Design Thickness | Fiberglass: ASTM 1216 Design Formula, rounded up to nearest .7mm manufacturing increment.<br>Felt: ASTM 1216 Design Formula plus 10% (in consideration of product stretch), rounded up to nearest 1.5mm manufacturing increment. |
| 4. | Ovality of Pipe | 2% of circumference, unless measured and Stated otherwise by Engineer in writing. |
| 5. | Soil Land | 120 lbs/ft.$^3$ |
| 6. | Traffic Loads | Per AASHTO-HS-20-44 Highway Loading |
| 7. | Modulus of Soil | 500 psi. |
| 8. | Maximum Deflection | 5% |
| 9. | Minimum Safety | 2.0 |
| 10. | Resin Migration | Not Allowed |
| 11. | Soil Cover | Maximum distance in feet measured between the crown of the pipe and the highest point of soil cover over the length of the pip. |
| 12. | Water Cover | Same as soil cover unless stated otherwise by the Engineer, in writing, for specific lines. |

Wall thickness design calculations for each pipe to be rehabilitated via the CIPP method must be submitted with all qualified bids, along with supporting formulas that document that version of formula used. Additionally, product-specific strength values, including the short term flexural modulus and the long term flexural modulus reduction factor, must be substantiated by third-party testing which will be submitted with all qualified bids. The materials utilized for the contracted project shall be of a quality equal to or better than the materials used in the long-term test with respect to the initial flexural modulus and long term reduction factor used in Design.

PHYSICAL PROPERTIES: The cured pipe shall conform to the minimum structural standards, as follows:

| | |
|---|---|
| Tensile Stress ASTM D-638 | 3,000psi |
| Flexural Stress ASTM D-790 | 4,500psi |
| Modulus of Elasticity ASTM D-790 | 250,000psi |
| Porosity/Water Tightness Test | Tight |

4.1 Liner Thickness

The minimum allowable thickness for Fiberglass CIPP products is 2.8mm and can be increased as necessary to meet ASTM 1216 Design Formula in 0.7mm increments. The minimum allowable wall thickness for Felt CIPP products is 6.0mm and can be increased as necessary to meet ASTM 1216 Design Formula in 1.5mm increments. Fiberglass or Felt products below the stated minimum wall thickness (above) will not be allowed under any circumstances.

## PART 5 - INSTALLATION

Installation of the impregnated liner may be by inversion, or pull in place insertion as specified by the manufacturer. All equipment, labor materials, and processes required to complete the work must be ready on-site before installation begins.

### 5.1 Pre-Installation

Prior to installation of the liner, the following activities are required:

a. Receipt and approval of pre-installation submittals.
b. Verification of line condition and any obstructions by video inspection.
c. Verification of existing taps in service by flowing water, dye test, or visually with a pan and tilt head camera or other means.
d. Cleaning of line (recorded on video tape).
e. Construct and complete any and all point repairs deemed necessary shall receive Owner approval before reworking the lines and the liner is installed.

Prior to installation, the diversion pumping system, including back-up pumps, shall be tested and running.

### 5.2 Set-up

The installation area/equipment shall be securely protected and all damaged yards, driveways, walks, etc., shall be repaired at no cost to the Owner. Plastic sheeting will be used to cover the work area around the manholes and/or access points to eliminate the opportunity of environmental contamination to the above-ground setting during the installation process.

### 5.3 Pre-liner/Outer Film/Outer Liner

At all locations where the CIPP liner is inverted or inserted into the host pipe, a pre-liner tube shall be used to control resin loss, liner thickness, a reduction in physical properties, contamination of the resin by water or other contaminants, and prevent blocked or plugged services or laterals. The pre-liner tube shall be reinforced plastic sheet formed into a tube sized to fit the host pipe being lined and shall be continuous from manhole to manhole. The pre-liner tube must be a rated gas barrier for styrene. Installation of the pre-liner tube shall be witnessed by the Owner or Engineer. Failure to install the required pre-liner tube or installation of pre-liner tube over only part of the segment shall result in the completed C.I.P.P. for that segment being rejected (regardless of physical tests and thickness test results). During thickness testing, the pre-liner tube shall be removed from the thickness test core sample along with the inner liner firm used. If there is any damage to the pre-liner tube, it should be repaired immediately with styrene-proof tape.

5.4 Tube Insertion (For Fiberglass/UV Cured Products)

1. An independent slip sheet, or integrated slip sheet shall be installed on the bottom half of the pipe prior to liner insertion, for the purpose of smoothing out the bottom of the liner to increase flow characteristics.
2. The pre-liner tube, or outer film, must be inserted into the pipe prior to inserting the liner, unless it is manufactured on the exterior of the liner, which is a normal characteristic of most fiberglass CIPP liners.
3. A constant tension winch should be used to pull the glass fiber liner into position in the pipe. Once inserted, end plugs shall be used to cap each end of the glass fiber liner to prepare for pressurizing the liner. The end plugs should be secured with straps to prevent them from being expelled due to pressure. Liner restraints should be used in manholes.
4. The glass fiber liner shall be cured with UV light sources at a constant inner pressure.

   a. The UV light sources should be assembled according to the manufacture's specifications for the liner diameter. For the liner to achieve the required water tightness and specified mechanical properties, the following parameters must be controlled during the entire curing process, giving the Engineer a record of the curing parameters over every segment of the entire length of the liner. This demonstrates that the entire liner is cured properly. The recording will include:
      - Curing Speed
      - Light source working & wattage
      - Inner air pressure
      - Exothermic (curing) temperatures
      - Date and time
      - Length of liner

5.5 Tube Insertion (For Fiberglass/UV Cured Products (continued)

5. This will be accomplished using a computer and data base that are tamper proof. During the curing process, infrared sensors will be used to record curing data that will be submitted to the Engineer with a post CCTV inspection on DVD.

   a. The parameters for curing speed, inner air pressure and wattage are defined in the Quality Tracker UV curing protocol issued by the manufacturer. The optimal curing speed, or travel speed of the energized UV light sources, is determined for each length of liner based or liner diameter, liner thickness, and exothermic reaction temperature.
6. Flushing of the cured fiberglass/UV cured CIPP liner (to reduce styrene residual) is not required for fiberglass/UV cured CIPP products that provide 3rd party test results that document styrene residual levels (without flushing) within acceptable defined levels.

5.6 Tube Insertion/Inversion (For Felt/Hot Water Cured Products)

1. The resin impregnated tube shall be transported and stored in a refrigerated truck until it is installed in an existing line by using an application of water, air, or cable and winch to properly place the tube between the upstream and downstream manholes.

2. A slip sheet shall be installed on the bottom half of the pipe prior to liner insertion, for the purpose of smoothing out the bottom of the liner to increase flow characteristic.
3. The pre-liner tube, or outer film must be inserted into the pipe prior to inserting the liner.
4. The wet out felt tube shall be inserted, or inverted, through an existing manhole or other approved access. Liner installation head pressures (minimum and maximum for hot and cold conditions) shall not be exceeded, regardless of which method of installation (stand pipe, pressure unit, etc.) is used.
5. Using the "Inversion Procedure", the tube end shall initially be turned inside out and attached to a platform ring, standpipe, or as approved. The addition of water will be adjusted to sufficient height/pressure to cause the impregnated tube to invert from manhole to manhole, and hold the tube tight against the existing pipe wall.
6. Using the "Insertion Procedure", the tube is winched into position according to manufacturer's recommendations. The addition of water will be adjusted to sufficient height/pressure to cause the calibration hose to invert from manhole to manhole and hold the tube tight against the existing pipe wall.
7. Liner restraints should be used in manholes.

5.7 Tube Insertion/Inversion (For Felt/Hot Water Cured Products (continued)

8. After the installation of the liner in completed, the Contractor shall use hot water system capable of providing the required amount of heat uniformly throughout the section for a complete cure of the resin. Boiler-truck operators must be fully certified by an approved certifying agency approved by the engineer. Certification documentation of at least two certified boiler-truck operators is a pre-contract requirement. Only fully-certified boiler-truck operators can operate boiler-trucks.
9. All water obtained from a City fire hydrant shall be metered and paid for by the Contractor. An <u>air gap</u> shall be provided between pipes/hoses connected to a fire hydrant and a storage tank/equipment used by the Contractor. The cost of said water shall be included in the cost of the project.
10. The curing temperature and schedule shall be as recommended by the resin/catalyst system manufacturer. The heat source shall be fitted with suitable monitors to gauge the temperature of the incoming and outgoing heat supply. Additionally, the Contractor is requited to utilize a remote temperature sensing method to ensure the adequate curing for every foot of liner in the pipe, considering the possibility of heat sinks. Temperatures monitored at the manholes do <u>not</u> guarantee an adequate representation of the temperatures for every foot of liner. Temperatures from each remote sensing device shall be recorded by a strip-chart recorder on a continuous tape. Graphs of the tape shall reflect readings from start of cure to completion of cure/draining of line. Tapes for each segment shall be submitted upon completion of each section. Initial cure may be considered completed when the remote sensing device(s) reflect that the cure temperatures, as recommended by the resin/catalyst system manufacturer, have been achieved. Curing temperatures and schedule shall comply with submitted data and shall include an adequate "cool down" as recommended by the resin manufacturer.
11. Cool-Down: The Contractor shall cool the hardened pipe to a temperature below 100 degrees Fahrenheit, in accordance with the resin manufacture's recommendation, before relieving the water column or pressure. Cool water may be added to the water column, while maintaining circulation as water is drained from a small hole at the opposite end of the cured-in-place-pipe, so that a constant water column height is maintained until cool-down is completed. Care shall be taken in the release of the water column so that a vacuum will not develop that could damage the newly installed pipe. Coupon samples shall be obtained for testing (Section 5.0/Testing).

12. Effluent from the curing process must be disposed of directly to a publicly owner treatment works (POTW) in full compliance with POTW's Industrial Pretreatment Program requirements. The POTW must provide written documentation that the effluent content complies with their Industrial Pretreatment Program requirements, a copy of which must be submitted to the Engineer for each rehabilitated pipe line, or each day of lining work.

5.8 Tube Insertion/Inversion (For Felt/Hot Water Cured Products (continued)

13. If EPA or waste water treatment levels are exceeded on the surface of the liner for storm water or sanitary sewer pipes (respectively), the Contractor must flush the line until styrene levels in flush-water are brought within the appropriate standard. The responsibility for disposal of contaminated water is the sole responsibility of the Contractor, and must be delivered to publicly owner treatment works (POTW) in full compliance with the POTW's Industrial Pretreatment Program requirements. The POTW must provide written documentation that the effluent content complies with their Industrial Pretreatment Program requirements. Proof of proper disposal, as specified above, must be presented to the engineer.

5.9 Post Installation

During the warranty period, which shall be defined as twelve (12) calendar months after acceptance by the Owner, any defects which will affect the integrity or strength of the liner pipe or hydraulic capacity shall be repaired at the Contractor's expense, in a manner mutually agreed to by the Owner and Contractor.

Service Reconnection: After the cured-in-place process is completed, the Contractor shall reconnect the existing line service connections. These services shall be reconnected by internal remote cutting method or external excavation.

Service taps or branches reconnected internally shall be fully reopened to 90% service line size (minimum) and trimmed to a neat, clean, circular opening concentric with the service line pipe, free of jagged edges, "sawteeth", resin plugs or resin shelves. This work may be performed by the Contractor.

Sealing at Manholes: The cured-in-place CIPP shall make a tight seal at the manhole opening with no annular gaps. Under all circumstances, the liner shall be sealed to the manhole and host pipe if no flair is present.

Finished Pipe: The finished ne cured-in-place liner shall be continuous over the entire length of each section lined, and be free from visual defects such as foreign inclusion, dry spots, pinholes, leaks and delamination.

PART 6 - REQUIREMENTS AND TESTING

The layers of the cured CIPP shall be uniformly bonded. It shall not be possible to separate any two layers with a probe or point of a knife blade so that the layers separate cleanly or the probe or knife blade moves freely between the layers. If separation of the layers occurs during testing of field samples, new samples will be cut from the work. Any reoccurrence may cause rejection of the work.

Testing of the completed, installed liner consists of:

a. Field testing
b. Laboratory testing
c. Long term testing

The Owner will pay for all initial testing described herein. Retests of failed samples shall be paid for by the Contractor via a deductive line item on the pay estimate.

Regardless of the resin/carrier tube system used, the completed liner shall meet or exceed:

(1) the initial modulus of elasticity )ASTM D-790) (as stated in design calculations)
(2) Initial flexural strength (ASTM D-790)
(3) APS Porosity Standard (tight or non-porous result), and
(4) Wall thickness values stated on each liner design sheet.

Values for the four parameters above which are under the minimum values stated on the bid form are not acceptable. An under thickness liner may be brought into compliance at no additional cost to the Owner by (1) removal and replacement of the undersized liner, or (2) addition of a second liner with the full wall thickness as stated on the liner design submittal (and after acceptable preparation of the undersized liner interior). Option (2) will be considered by the Owner on a case by case basis considering the resulting loss of flow capacity, and can be refused by the Owner for that reason. The addition of a thin liner that makes up the amount of undersizing is not an acceptable remedy because the structural properties of CIPP liners are not additive if they are not cured simultaneously and therefore are bonded together to act as a single liner.

In the event of a liner failure of either/both the flexural strength and the modulus tests, another flat plate sample shall be tested. Should the second sample fail, the liner shall be brought into satisfactory compliance by the above methods.

6.1 Field Test (Thickness)

Remove the CIPP liner material from the host pipe core samples. Remove any inner liner film, pre-liner and resin that is not contained within the felt tube. Measure the liner thickness at three spots on each sample. The resulting six measurements will be averaged. The average thickness shall be equal to or greater than the required thickness for the particular section stated on the bid form. No undersize allowance is permitted. In accordance with D 790-03, referenced in ASTM 1216, the calculated wall thickness refers only to the part of the liner that consists of a saturated felt tube. Elements that are not part of the saturated felt tube do not contribute to the structural integrity of the liner, thereby excluding felt tube that is not fully saturated or portions of resin without the felt tube carrier.

6.2 Laboratory Testing

Samples obtained for these test will be sent by the Owner to an approved laboratory for testing. The Owner will pay for testing.

PART 7 – MEASUREMENT AND PAYMENT

7.1 MEASUREMENT

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

7.2 SCHEDULE OF PAYMENT ITEMS

Bid Items 9 – 11: Clean and CCTV Sewer (Various Sizes and Cross Sections)

a. Payment: Unit price per each linear foot as stated in Proposal
b. Measurement: Linear feet as measured along the horizontal projection of 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: all equipment, labor, and materials required to clean and CCTV inspect existing sewer lines of various sizes, conditions, and cross sectional shapes present in existing sewer mains, including maintenance of flows, heavy cleaning, and unlimited passes of cleaning equipment through line segments as necessary to perform inspection or if extenuating circumstances arise, as practicable, and recommendation for trenchless repair method.
d. Explanation: Price per linear foot will not be multiplied if multiple passes by cleaning or CCTV equipment of the same lengths of pipe are necessary to perform complete inspection and collect all information necessary to determine if the pipe is suitable for trenchless rehabilitation. Assume multiple passes and heavy cleaning will be required to complete the work under this item. The City makes no guarantees as to the condition of the existing sewer mains.

Bid Item 12: Spot Repair Prior to Trenchless Rehab

a. Payment: Unit price per each unit as stated in the Proposal.
b. Measurement: Per unit completed.
c. Includes all equipment, labor, and materials necessary to repair small spot defects in an existing pipe as directed by Engineer that would prevent trenchless rehabilitation, in a manner that allows trenchless rehabilitation to proceed. The type of spot repair performed will vary greatly depending on the condition of the existing pipe but will span no longer than 5 feet for a single repair.

Bid Items 13-15: Trenchless Rehab of Sewer (Various Sizes & Cross Sections)

a. Payment: Unit price per each linear foot as stated in Proposal
b. Measurement: Linear feet as measured along the horizontal projection of 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: preparation of existing pipe and installation of new CIPP materials, excavation for sending and receiving pits, stone bedding, and all incidentals as required for complete installation.

Bid Items 16, 18: Reinstate Lateral (Various Sizes)

d. Payment: Unit price per each unit as stated in the Proposal.
e. Measurement: Per unit completed.

f. Includes all equipment, labor, and materials necessary to reinstate active laterals at connection to wall of relined pipe, and to coordinate with property owner on flow interruption or maintenance of flows.

Bid Items 17, 19: Trenchless Rehab of Lateral (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 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: preparation of existing pipe and installation of new CIPP materials, excavation for sending and receiving pits, stone bedding, and all incidentals as required for complete installation.

END OF SECTION

# LANDSCAPE GRADING

## PART 1 - GENERAL

### 1.1 SUMMARY

A. Section Includes:
   1. Final grade topsoil for finish landscaping.

B. Related Sections:
   1. Grading
   2. Backfilling
   3. Trenching
   4. Hot Mix Asphalt Paving

### 1.2 REFERENCES

A. ASTM C 602 - Specification for Agricultural Liming Materials.

B. FS O-F-241 - Fertilizers, Mixed Commercial.

## PART 2 - PRODUCTS

### 2.1 MATERIAL

A. Imported topsoil, friable loam; free of subsoil, roots, grass, excessive amount of weeds, stone, and foreign matter; acidity range (pH) of 5.5 of 7.5; containing a minimum of 4 percent and a maximum of 25 percent organic matter, maximum soluble salt content of 500 ppm, maximum of 5 percent by volume of extraneous material exceeding 2 inches in diameter.

## PART 2 - EXECUTION

### 2.2 EXAMINATION

A. Verify site and trench backfilling has been inspected.

B. Verify substrate base has been contoured and compacted.

### 2.3 SUBSTRATE PREPARATION

A. Eliminate uneven areas and low spots.

B. Remove debris, roots, branches, stones, in excess of 1/2 inch in size. Remove subsoil contaminated with petroleum products.

C. Scarify surface to depth of 3 inches where topsoil is scheduled. Scarify in areas where equipment used for hauling and spreading topsoil has compacted subsoil.

2.4 PLACING TOPSOIL

A. Place topsoil in areas where seeding, sodding, and/or planting, is scheduled. Place topsoil during dry weather.

B. Fine grade topsoil to eliminate rough or low areas. Maintain profiles and contour of subgrade.

C. Remove roots, weeds, rocks, and foreign material while spreading.

D. Manually spread topsoil close to trees, plants, building and structures to prevent damage.

E. Roll placed topsoil.

F. Remove surplus subsoil and topsoil from site.

G. Leave stockpile area and site clean and raked, ready to receive landscaping.

2.5 TOLERANCES

A. Top of Topsoil: Plus or minus 1/2 inch.

2.6 PROTECTION

A. Protect landscaping and other features remaining as final work.

B. Protect existing structures, fences, sidewalks, utilities, paving and curbs.

2.7 SCHEDULES

A. Topsoil placed compacted to thickness as shown on details.

END OF SECTION

# SEEDING

## PART 1 - GENERAL

### 1.1 SUMMARY

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

B. Related Sections:
1. Landscape Grading.

### 1.2 QUALITY ASSURANCE

A. Comply with all local, state and federal regulations concerning seeding.

### 1.3 REFERENCE STANDARDS

A. American Society OF state Highway and Transportation Officials (AASHTO):
1. M 145-74, Classification of Soils and Soil-Aggregate Mixtures for Highway Construction Purposes.

B. Maine Department of Transportation (MDOT):
1. Standard Specifications - Highways and Bridges.

### 1.4 SUBMITTALS

A. Test Reports:
1. Provide analysis of topsoil fill.
   a. Analyze to ascertain percentage of nitrogen, phosphorus, potash, soluble salt content, organic matter content, and Ph value.
   b. Results of seed purity and germination tests.
   c. Results of fertilizer analysis.
   d. Results of peat moss analysis.

B. Certificates:
1. Soil conditions and fertilizers.
2. Grass seed.
3. Quarantine restrictions.

### 1.5 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Tag seed, with botanical and common names.

B. Store and protect seed from excessive heat, cold, sun, rain, wind and other deleterious environmental conditions.

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

1.6 JOB CONDITIONS

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

1.7 DEFINITIONS

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

1.8 GUARANTEE

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

1.9 MAINTENANCE DATA

A. Submit maintenance data for continuing Owner maintenance under provisions of Section – Contract Closeout.

B. Include maintenance instructions, cutting method and maximum grass height; types, application frequency and recommended coverage of fertilizer.

PART 2 - PRODUCTS

2.1 SEED

A. Lawn Areas: Park Mixture:

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

B. Other Areas: Conservation Mixture:

| | |
|---|---|
| Creeping Red Fescue | 35.00% |
| Red Top | 6.00% |
| Kentucky Blue Grass | 24.00% |

| | |
|---|---|
| Perennial Rye | 10.00% |
| Annual Rye | 20.00% |
| White Clover | 5.00% |

2.2 MULCH

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

2.3 ACCESSORIES

A. Herbicide: Approved chemical registered in State of Maine for stump or basal bark treatment.

B. Stakes; Softwood lumber, chisel pointed.

C. String: Inorganic fiber.

PART 3 - EXECUTION

3.1 INSPECTION

A. Verify that prepared topsoil is ready to receive the Work of this Section.

B. Beginning of installation means acceptance of existing site conditions.

3.2 FERTILIZING

A. Apply fertilizer at a rate of 25 pounds per 1,000 square feet.

B. Apply after smooth raking of topsoil and prior to roller compaction.

C. Do not apply fertilizer at same time or with same machine as will be used to apply seed.

D. Mix thoroughly into upper 2 inches with an appropriate method.

E. Lightly water to aid the dissipation of fertilizer.

F. Water dry topsoil to a depth of 4 inches, 48 hours prior to seeding to obtain a loose, friable seed bed.

3.3 SEEDING

A. Apply seed at a rate of 3 pounds per 1,000 square foot evenly in two intersection directions. Rake in lightly to a depth of 3/8 inch. Do not seed area in excess of that which can be mulched on same day.

B. Planting Season: April 15 to June 15 or August 15 to October 1.

C. Do not sow immediately following rain, when ground is too dry, or during windy periods.

D. Roll seeded area with roller weighing a maximum of 150 lbs/foot of width.

E. Apply mulch immediately following seeding.

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

3.4 HYDROSEEDING

A. Apply seeded slurry at a rate of 3 pounds per 1,000 square feet evenly in two intersection directions, with a hydraulic seeder. Do not hydroseed area in excess of that which can be mulched on same day.

B. Immediately following seeding and rolling, apply mulch to a thickness of 1/8 inches. Maintain clear of shrubs and trees.

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

3.5 SEED PROTECTION

A. Cover seeded slopes where grade is 2:1 or greater with jute mat. Roll fabric onto slopes without stretching or pulling. Apply mulch in all other areas.

B. Lay fabric smoothly on surface, bury top end of each section in 6-inch deep excavated topsoil trench. Provide 12-inch overlay of adjacent rolls. Backfill trench and rake smooth, level with adjacent soil.

C. Secure outside edges and overlaps at 36-inch intervals with stakes.

D. Lightly dress slopes with topsoil to ensure close contact between fabric and soil.

E. At sides of ditches, lay fabric laps in direction of water flow. Lap ends and edges a minimum of 6 inches.

3.6 MAINTENANCE

A. Water to prevent grass and soil from drying out.

B. Roll surface to remove minor depressions or irregularities.

C. Control growth of weeds. Apply herbicides in accordance with manufacturer's instructions. Remedy damage resulting from improper use of herbicides.

D. Immediately reseed areas which show bare spots.

3.7 SPECIALIZED MAINTENANCE

A. Applies only to new utilities in park areas, cross-country residential areas, and other recreational spaces.

B. Fence off newly seeded areas until grass established.

C. Mow grass at regular intervals to maintain a maximum height of 2-1/2 inches. Do not cut more than 1/3 of grass blade at any one mowing.

D. Neatly trim edges and hand clip where necessary.

E. Immediately remove clippings after mowing and trimming.

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 72: Loam, Seed, and Mulch

a. Payment: Unit price per square yard as stated in the Proposal.
b. Measurement: As measured in place within the pay limits and to the thickness shown on the Drawings and as directed by the Engineer.
c. Includes: furnishing all materials, equipment, and labor necessary to place loam to full depth and final grades, seed, mulch, water, and fertilize as necessary to satisfactorily restore lawn areas.

END OF SECTION

FLANGED-END CHECK VALVES

PART 1 - GENERAL

1.01 DESCRIPTION:

A. Provide a tide flex valve as indicated and in compliance with Contract Documents.

1.02 REFERENCES:

A. American National Standards Institute (ANSI):

1. B16.1 Cast Iron Pipe Flanges and Flanged Fittings - Class 125 Flanges - outside and inside diameters, bolt circles, numbers and diameters of bolts

2. B16.5 - 1996 - Pipe Flanges and Flanged Fittings

1.03 SUBMITTALS:

A. Submit product literature that includes information on the performance and operation of the valve, materials of construction, dimensions and weights, elastomer characteristics, headloss and flow data, and pressure ratings.

B. Provide shop drawings that clearly identify the valve dimensions.

C. Upon request, manufacturer shall provide installation and reference lists for existing valves of similar size and type to the project scope.

1.04 QUALITY ASSURANCE

A. Supplier shall have at least fifteen (15) years experience in the manufacture of “duckbill” style elastomeric valves.

B. Manufacturer shall have conducted independent hydraulic testing to determine headloss and jet velocity characteristics on a minimum of eight sizes of duckbill valves ranging from 2” through 48”. The testing must include multiple constructions (stiffness) within each size and must have been conducted for free discharge (discharge to atmosphere) and submerged conditions.

C. Manufacturer to have conducted Finite Element Analysis (FEA) on various duckbill valves to determine deflection, stress and strain characteristics under various load conditions. Modeling must have been done for flowing conditions (positive differential pressure) and reverse differential pressure.

E. The bill slit of the duckbill valve must be at least 1.57 times the nominal pipe diameter.

PART 2 - PRODUCTS

2.01 "DUCKBILL" ELASTOMERIC CHECK VALVES

A. Check Valves are to be all rubber and of the flow operated check type with a flanged end connection which shall be manufactured to connect to the existing mechanical flange without modification. The port area shall contour down to a duckbill which shall allow passage of flow in one direction while preventing reverse flow. The flange and flexible duckbill sleeve shall be one piece rubber construction with nylon reinforcement. The bill portion shall be thinner and more flexible than the valve body, and formed into a curve of 180°.

B. The flange drilling shall conform to ANSI B16.1 Class 125/ANSI B16.5, Class 150 standards. The valve shall be furnished with stainless steel back-up rings for installation.

C. Manufacturer must have available flow test data from an accredited hydraulics laboratory to confirm pressure drop data. Company name, plant location, valve size and serial number shall be bonded to the check valve.

D. All iron and steel must be in compliance with the American Iron and Steel Act of 2014.

2.02 FUNCTION

A. When line pressure inside the valve exceeds the backpressure outside the valve, the line pressure forces the bill of the valve open, allowing flow to pass. When backpressure exceeds the line pressure, the bill of the valve is forced closed.

2.03 MANUFACTURER

A. All valves shall be of the Series 35 as manufactured by Tideflex Technologies or approved equal. All valves shall be manufactured in the U.S.A.

PART 3 - EXECUTION

3.01 INSTALLATION

A. Valve shall be installed in accordance with manufacturer's written Installation and Operation Manual and approved submittals.

3.02 MANUFACTURER'S CUSTOMER SERVICE

A. Manufacturer's authorized representative shall be available for customer service during installation and start-up, and to train personnel in the operation, maintenance and troubleshooting of the valve.

B. Manufacturer shall also make customer service available directly from the factory in addition to authorized representatives for assistance during installation and start-up, and to train personnel in the operation, maintenance and troubleshooting of the valve.

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: Remove and Install 16" Tide Valve

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 labor, materials, and equipment necessary to remove and dispose of existing tide valve and connect new one to existing flange, as shown on the drawings, as necessary to provide complete installation.

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 x $10^{-5}$ 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 33: 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.

B. Related Sections:
1. Hot Mix Asphalt Paving.

### 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 69: 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. Note that curb on the drawings shown as proposed to be completed by others and not required to be removed and reset and is not part of this pay item.

END OF SECTION

UNIT PAVERS

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. The General Documents, as listed on the Table of Contents, and applicable parts of GENERAL SPECIFICATIONS, shall be included in and made a part of this Section.

B. Examine all Contract Documents and all other Sections of the Specifications for requirements therein affecting the work of this trade.

1.02 SUMMARY

A. The work of this Section consists of providing all labor, equipment, materials, incidental work, and construction methods necessary to furnish and install the concrete unit pavers and metal edging, as indicated on the Contract Documents and as specified.

1.03 RELATED WORK UNDER OTHER SECTIONS

A. The following items of related work are specified and included in other Sections of the Specifications:

1. EARTHWORK

1.04 REFERENCES

A. The following standards shall apply to the work of this Section:

1. American Association of State Highway and Transportation Officials (AASHTO):

| | |
|---|---|
| M 43 | Standard Size of Coarse Aggregate for Highway Construction |
| M 140 | Emulsified Asphalt |
| M 208 | Cationic Emulsified Asphalt |

B. American Society for Testing and Materials (ASTM):

| | |
|---|---|
| C 33 | Specification for Concrete Aggregates |
| C 136 | Test Method for Sieve Analysis of Fine and Coarse Aggregates |
| C 936 | Specification for Solid Concrete Interlocking Paving Units |
| D 36 | Test Method for Softening Point of Bitumin (Ring-and-Ball Apparatus) |
| D 113 | Test Method for Ductility of Bituminous Materials |

D 1557 Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/$ft^3$)

D 3381 Specification for Viscosity-Graded Asphalt Cement for Use in Pavement Construction.

C. State of Maine Department of Transportation (MDOT)

Specifications Standard Specifications of Highways and Bridges

1.05 SUBMITTALS

A. Shop Drawings: Submit shop drawings for layout, illustrating paver layout at typical intersections, typical banding and running bond along sidewalk and in typical seating areas.

B. Design Mix Submittals: Submit design mix submittals including description of materials, proportions, and mechanical sieve sizes of aggregates for the following:

1. Certified sieve analysis for sand

2. Bituminous concrete setting bed mix.

3. Neoprene tack coat.

C. Samples: Samples shall be submitted for the following items:

1. Furnish not less than four individual concrete pavers of each type, size, and finish required to Engineer for approval. Samples shall exhibit the full color range of pavers to be provided.

2. Submit a sample of metal edging, 12 inches length, with one stake.

D. Manufacturer's Product Data: Manufacturer's Product Data shall be submitted for the following items:

1. Concrete Paver (each type and size and full color range)

2. Metal Edging

3. Neoprene-modified asphalt adhesive

E. Test Report:

1. Test report of prest concrete paver shall be submitted (each type).

2. Testing shall be done by an independent testing laboratory. Test procedures shall conform to ASTM C 396 methods, where applicable.

3. Test report shall indicate, as a minimum, the following:

a. Compressive strength, pounds per square inch.
b. Absorption, 5 hr submersion in cold water.
c. Absorption, 24 hr submersion in cold water.
d. Maximum saturation coefficient.
e. Initial rate of absorption (suction)
f. Abrasion index
g. Freeze-thaw

1.06 QUALITY ASSURANCE

A. Installer must review installation procedures of all prest concrete paving and sequence of work with General Contractor to ensure proper coordination with other subcontractors and suppliers whose work is affected by the delivery schedule and installation of paving work.

1.07 SAMPLE PANEL

A. Construct a sample panel of each type of concrete pavers on the specified base and setting bed before start of any prest concrete paving. Sample panel shall exhibit proposed color range, texture, bond, jointing, pattern, finish, paver size, and workmanship. Unless otherwise indicated, size of panel shall be 6 feet by 6 feet minimum.

1. Each sample panel representing “Concrete Unit Pavers” shall be constructed on a bituminous concrete base, with neoprene setting bed, pavers, jointing and suface sealants as required for the finish work.

2. The sample panels may not be part of the finished work, and must include all paver types.

3. The quality of workmanship, paver jointing, and cleanliness of pavers after installation must be approved by the Engineer before permanent paving is started.

4. If the original sample is not approved, the Contractor shall provide additional samples, as required, at no cost to the Owner until an approved sample is obtained.

5. The approved sample shall become the standard for unit paving for the entire job. Panel shall remain undisturbed until all paving is completed. Remove panel from the site upon completion of paving.

1.08 DELIVERY, STORAGE, AND HANDLING

A. Concrete paver units shall be packaged by strapping to manufacturer’s standard and delivered on pallets. Pavers damaged in any manner will be rejected and shall be replaced with new material at no additional cost to Owner.

B. Store all paving units on raised platforms. Storage piles or stacks shall be located to avoid or

be protected from heavy or unnecessary traffic. Store paving units on wood skids or pallets. Place and stack skids and units to distribute weight evenly and to prevent breakage or cracking of units. Materials shall be stored under an approved roof or covered with non-staining waterproof tarpaulins, at all times, except when materials are being installed. Protect paving units during storage and construction against moisture, soiling, staining, and physical damage.

C. Handle paving units to prevent chipping, breakage, soiling, or other damage. Do not use pinch or wrecking bars without protecting edges of units with wood or other rigid materials. Lift with wide-belt types, slings or vacuum lifts wherever possible; do not use wire cable or ropes containing tar or other substances which might cause staining. If required, use wood rollers and provide cushion at end of wood slides. Any paving unit chipped during delivery, storage, or handling will be rejected and replaced by the Contractor at no additional cost to the Owner.

D. Deliver cement in manufacturer's original water-resistant bags, labeled with manufacturer's name and product brand, with seals unbroken and full weight. Damaged and fractional packages will be rejected.

1.09 PROTECTION OF ADJACENT SURFACES

A. Finished surfaces adjacent to the concrete unit paving shall be adequately protected from soiling, staining, and other damage during construction.

PART 2 PRODUCTS

2.01 CONCRETE PAVERS

A. Red Charcoal Concrete pavers (4" x 8") shall be Hanover Traditional Prest Concrete Brick, Hydraulically prest concrete pavers, manufactured by Hanover Architectural Products, Inc., Hanover, PA, 17331, (717) 637-0500, or approved equal.

1. Paver size shall be 4" x 8", "Traditional" style.

2. Paver thickness shall be 2 3/8 inches.

3. Pavers shall have a minimum compressive strength of 9,000 psi.

4. Water absorption shall be 5 percent or less.

5. Finish of paver shall be "Natural".

6. Color shall be Red/Charcoal Blend as approved by the Engineer from the manufacturer's full range of standard and blended colors.

B. Gray Concrete pavers (8" x 8" "Charcoal Band") shall be Hanover Traditional Prest Concrete Brick, Hydraulically prest concrete pavers, manufactured by Hanover Architectural Products, Inc., Hanover, PA, 17331, (717) 637-0500, or approved equal.

1. Paver size shall be 8" x 8", "Traditional" style.

2. Paver thickness shall be 2 3/8 inches.

3. Pavers shall have a minimum compressive strength of 9,000 psi.

4. Water absorption shall be 5 percent or less.

5. Finish of paver shall be “Natural”.

6. Color shall be Charcoal as approved by the Engineer from the manufacturer’s full range of standard and blended colors.

C. Concrete pavers (8” x 8” “Custom Blue Band”) shall be Hanover Traditional Prest Concrete Brick, Hydraulically precast concrete pavers, manufactured by Hanover Architectural Products, Inc., Hanover, PA, 17331, (717) 637-0500, or approved equal.

1. Paver size shall be 8” x 8”, “Traditional” style.

2. Paver thickness shall be 2 3/8 inches.

3. Pavers shall have a minimum compressive strength of 9,000 psi.

4. Water absorption shall be 5 percent or less.

5. Finish of paver shall be “Natural”.

6. Color shall be Matrix # B92527, Custom Mix as approved by the Engineer from the manufacturer’s full range of standard and blended colors.

D. Detectable warning pavers shall be Vitrified Polymer Composite (VPC) Cast In Place Detectable/Tactile Warning Surface Tiles shall be an epoxy polymer composition with an ultra violet stabilized coating employing aluminum oxide particles in the truncated domes. The tile shall incorporate an in-line pattern of truncated domes measuring nominal 0.2” height, 0.9” base diameter, and 0.45” top diameter, spaced center-to-center 2.35” as measured on a diagonal and 1.67” as measured side by side. For wheelchair safety the field area shall consist of a non-slip surface with a minimum of 40 - 90° raised points 0.045” high, per square inch; ”Armor-Tile” as manufactured by Engineered Plastics Inc., Tel: 800-682-2525, or approved equal. Color shall be slate.

2.02 AGGREGATE BASE COURSE

A. Material for aggregate base course shall be as specified under the EARTHWORK and paid for under this UNIT PAVERS.

2.03 AGGREGATE SUBBASE COURSE

A. Material for aggregate subbase course shall be as specified under EARTHWORK and paid for under UNIT PAVERS.

2.04 BITUMINOUS BASE COURSE

A. Bituminous Concrete shall be as specified under H.M.A. PAVEMENT and paid for under UNIT PAVERS of this Specification.

2.05 ASHPALTIC PRIMER

A. Primer for base beneath bituminous setting bed and pavers shall be an emulsified asphalt rapid setting type conforming to AASHTO M 140, Grade RS-1, or AASHTO M 208, Grade CRS-1.

2.06 NEOPRENE-MODIFIED ASPHALT ADHESIVE

A. Neoprene modified asphalt adhesive shall meet the following requirements:

1. Mastic (asphalt adhesive):
    a. Solids (base) content by volume = 75 ± 1 percent.
    b. Weight = 8.0-8.5 lb/gal.
    c. Solvent vehicle = Varsol (over 100 degree F flash).

2. Base (2 percent neoprene, 10 percent fibers, 88 percent asphalt)
    a. Melting point (ASTM D 36) = 200 degree F minmum.
    b. Penetration at 77 degrees F 100 gram load 5 second (0.1 mm) = 23-27.
    c. Ductility (ASTM D 113 at 77 degrees F, 5 cm/minute = 125 cm, minimum.

2.07 SAND FOR JOINT FILLER

A. Material for sand joint filler shall be as specified under EARTHWORK, and paid for under this Section UNIT PAVERS of this Specification.

2.08 METAL EDGING

A. Metal Edging shall be PermaLoc AsphaltEdge aluminum edging, manufactured by PermaLoc, Holland, MI, 49424, or approved equal. Aluminum edging shall be shop fabricated from aluminum alloy 6063-T6, 3/16 inch thick x 2 ½ inch wall by 2 ¼ inch base, with standard black baked-on acrylic paint finish. Edging shall be furnished in 8-foot lengths.

1. Adjacent sections shall be adjoined using a 4” siding, locking connector of aluminum alloy 6063-T6, maintaining 3/8” expansion joint between sections.

2. Stakes shall be spiral steel spikes with insulating plastic washers 10” x 3/8”.

2.09 WATER

A. Water shall be potable and shall be free of injurious contaminants.

2.10 SURFACE SEALANT FOR PAVERS

A. Surface sealant for all concrete paver pavement shall be Sure Klean Weatherseal SLX 100 Water and Oil Repellent, manufactured by ProSoCo Company, Inc., or approved equal.

1. Provide five (5) year labor and materials warranty.

PART 3 EXECUTION

3.01 METAL EDGING

A. Metal edging shall be installed at locations indicated on the Contract Documents. Install aluminum edging with the base resting on the concrete or bituminous binder base and facing toward the brick surface. Bituminous setting bed and tack coat shall be applied on top of edging. Set edging to the required alignment, straight and true and to the required elevation to ensure full paver restraint. Core drill holes in concrete base as necessary. Thread spike through insulating washer. Drive spikes into base until spike head firmly wedges washer against flange of aluminum edging.

1. Aluminum edging shall be securely staked in required position. Stakes shall be driven every 12" in straight runs and into every support section in curved sections.

2. Adjacent lengths shall be attached using manufacturer's standard connections according to manufacturer's published instructions.

3. Edging shall be set plumb and vertical at required line and grade. Straight sections shall not be wavy; curved sections shall be smooth and shall have no kinks or sharp bends.

3.02 ACCEPTABILITY OF BITUMINOUS BASE

A. Contractor shall examine the bituminous concrete base as specified under HOT MIX ASPHALT PAVING and provided, installed, and paid for under this UNIT PAVERS Specification, to determine its adequacy to receive concrete pavers and setting bed. Bituminous concrete shall have fully set prior to the work of installing concrete pavers. Evidence of inadequate base shall be brought to the immediate attention of the Engineer and shall be corrected by the Contractor as directed by the Engineer at no additional cost to the Owner.

B. Start of work of this Division 2 CONCRETE PAVERS shall constitute acceptance of bituminous concrete base.

3.03 AGGREGATE BASE COURSE

A. Aggregate subbase and base materials shall be to the depth indicated on the Contract Documents. Bases shall be as specified under EARTHWORK and paid for under UNIT PAVERS of this Specification.

3.04 BITUMINOUS SETTING BED

A. The surface of the bituminous base shall receive an asphalt prime coat before laying bituminous setting bed. Prime coat shall be applied at rate that will leave bituminous residue of 5 to 7 gallons per 100 SY after evaporation of vehicle. Base surface shall be dry and clean when prime coat is applied. Bituminous setting bed shall not be placed until vehicle has completely evaporated from prime coat.

B. Bituminous setting bed shall be installed over the bituminous base. Control bars ¾" deep shall be placed directly over the base. If grades must be adjusted, wood chocks under depth control bars shall be set to proper grade. Set two bars parallel to each other to serve as guides for the striking board. The depth control bars must be set carefully to bring the pavers, when laid, to proper grade.

C. While still hot (not less than 250 degrees F) some of the bituminous bed material shall not be placed between the parallel depth control bars. This bed shall be pulled with the striking board over the control bars several times. After each passage, low porous spots shall be showered with fresh bituminous material to produce a smooth, firm, and even setting bed. As soon as this initial panel is completed, advance the first bar to the next position in readiness for striking the next panel. After the depth control bars and wood chocks have been removed, carefully fill any depressions that remain.

D. The setting bed shall be rolled with a power roller to a nominal depth of ¾" still hot. The setting bed thickness shall be adjusted so that when the concrete pavers are placed and rolled, the top surface of the pavers will be at the required finish grade.

E. A coating of neoprene-modified asphalt adhesive shall be applied by mopping or troweling over the top surface of the bituminous setting bed so as to provide continuous bond under the pavers.

1. If adhesive is trowel-applied trowel shall be serrated type with serrations not to exceed 1/16".

3.05 SETTING CONCRETE PAVERS

A. Concrete pavers shall be set on a bituminous setting bed over a prepared concrete or bituminous concrete base. Setting bed shall be protected from damage prior to setting pavers.

B. Concrete pavers with chips, cracks, stains, or other structural or aesthetic defects shall not be used.

C. Only competent workmen under adequate supervision shall perform the work of setting concrete pavers. Set pavers in accordance with manufacturer's recommendations. Concrete pavers shall be set true to the required lines and grades in the pattern detailed on the Contract Documents.

D. After the modified asphalt adhesive is applied, pavers shall be carefully placed by hand, set true to the required lines and grades, in the pattern shown on the Contract Documents. Accurate alignment shall be maintained. The Engineer will approve the start of paving layouts. Paving layouts shall always begin at building entries.

E. Pavers shall be neatly cut and fitted at all perimeters and closures to fit neatly and closely. Pavers shall be tightly butted. Joints between pavers shall be uniform and shall not exceed 1/8" in width. Joints greater than 1/8" in width will not be accepted. Surface edge of one paver shall be level with the next adjacent pavers so that no voids, rocking motions, or tripping hazards are encountered. There shall be no deviation from a true grade greater than ¼ inch in 10 feet. All finish paved areas shall slope to drain at a minimum of 1/8" in one foot.

F. All cutting and patching required to complete the work shall be done (including the filling and closing of all openings) with water-cooled radial cut-off type masonry saws with diamond-tipped blade for a

sharp, straight edge. Cut edges shall be plumb and straight. Scoring and breaking will not be acceptable.

1. After cutting of pavers, grind all cut edges of top surfaces of pavers to create a beveled, 45 degree angle equal to the manufacturers bevel. Ground bevels shall be straight and true and shall be accomplished using a sufficiently fine grinding wheel or blade to prevent apparent grind marks on the bevels.

G. After a sufficient area of pavers has been installed, joints of pavers shall be filled by sweeping sand into the joints, as specified, performed and paid for under UNIT PAVERS.

H. Completed surface shall be compacted by running a medium plate vibrator across the top of the pavers. Additional joint filler material shall be swept in the joints during vibration to completely fill joint space.

I. Newly laid pavers shall be protected at all times by panels of plywood. These panels may be advanced as work progresses; however, the plywood protection shall be kept in areas which will be subjected to continued movement of materials and equipment. All necessary precautions shall be taken in order to avoid depressions and protect paver alignment.

3.06 JOINT TREATMENT

A. Joint filler shall be swept dry into the joints between pavers until the joints are completely filled. Surface shall be swept clean. Swept surface shall then be thoroughly dampened with a low-volume fine spray of water.

1. Sweep sand into paver joints until joints are filled solid. Fog lightly with water and repeat a minimum of three times or until joints are compacted and full.

2. Prior to acceptance, the paved area shall be flooded with water to assure that there are no depressions. Pavers with top surfaces greater than 1/16” above or below adjacent pavers shall be removed and reset. Remove and reset pavers as required until surface is true to line and grade. Refill sand joints as necessary until all joints are filled to finish grade.

3.07 CLEANING OF UNIT PAVER SURFACES

A. After completion of concrete paving, surfaces shall be carefully cleaned, removing all dirt, excess filler, and stains.

B. Clean pavers using an approved masonry cleaner and soft bristle brush.

3.09 APPLICATION OF SURFACE SEALANT OF CONCRETE PAVER SURFACES

A. Seal pavement surface as follows:

1. Apply surface sealer to installed, thoroughly cleaned paved areas using a low pressure airless

sprayer, brush, or roller in compliance with manufacturer's recommendations. Apply material in quantities sufficient to saturate the surface pavement and not less than one gallon per 450 square feet.

2. Contractor shall take safety precautions in order to avoid all skin contact with the sealer, keep the sealer away from all heat sources or flame, and maintain adequate ventilation to avoid any concentration of sealer vapors in the work area. Vapors may ignite explosively and may travel along the ground by ventilation to ignition sources far from the product.

3. Sealed, paved, surfaces shall display no color difference from the unsealed surface and no surface sheen. Paved areas that do exhibit these qualities after sealant installation shall be removed and replaced at no additional cost to the Owner.

## 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 70: Remove/Reset Exist. Brick Unit Pavers

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

b. Measurement: Square feet as measured in place.

c. Includes: all supervision, labor, materials, and equipment necessary, including removal, stockpiling, excavation, grading, compaction, furnishing and installing the aggregate base and subbase materials, bituminous base, setting bed, pavers, sealant, metal edging, and other incidentals as shown on the Drawings or as required to provide complete installation. Note that pavers on the drawings shown as proposed to be completed by others and not required to be removed and reset and is not part of this pay item.

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.

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

# ELECTRICAL SITEWORK SPECIFICATIONS

ELECTRICAL - GENERAL

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Electrical General
B. Electrical Conduit

1.2 RELATED SECTIONS

A. Excavation

1.3 REFERENCE STANDARDS

A. National Electrical Code (N.F.P.A. No. 70 -most recent edition)
B. Life Safety Code (N.F.P.A. No. l0l -most recent edition)
C. Occupational Safety and Health Act (O.S.H.A.) -regarding construction practices.
D. Utility Company standards, specifications and requirements.
E. State and local electrical codes, building codes and fire codes for the locale where the work is to be performed.

1.4 SUBMITTALS

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

1. General

a. Provide all labor, materials, equipment, operations, methods and procedures as indicated in the Contract Documents, together with all items necessary for or incidental to the completion of the work.

b. All systems or additions to existing systems indicated in the Contract Documents shall mean all necessary supervision, labor, equipment and materials required.

c. Refer to Drawings to coordinate material and equipment locations.

d. Visit and examine the project site and become familiar with all existing conditions pertinent to the work to be performed thereon. No additional compensation will be allowed for failure to be so informed.

e. Detailed requirements are indicated on the Drawings and in related sections of the Specifications. The work specified includes, but is not necessarily limited to installation of electrical conduits, and electrical boxes as directed by the City Engineer or his/her designee.

f. Contractor shall restore areas from as noted on the Plans.

g. All iron and steel components must be in compliance with the American Iron and Steel Act of 2014.

1.5 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. Fittings and Accessories - Manufacturer's recommendation, or approved equal.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that trench cut is ready to receive work, and excavations, locations, dimensions and elevations are as indicated on Drawings.

B. Beginning of installation means acceptance of existing conditions.

3.2 PREPARATION

C. Hand trim excavations to required elevations. Correct over excavation with 3/4" crushed stone.

D. Remove large stones, debris, or other hard matter which could damage pipes or impede consistent bedding, backfilling or compaction.

3.3 CONDUIT INSTALLATION

a. Replace existing conduits with 2 inch schedule 40 or schedule 80 PVC electrical conduit as noted on the plans. Conduit and all fittings, primer and cement supplied by the contractor.

b. Location of the connection to the existing conduit shall be determined by the City Engineer or his/her designee. This typically may be approximately 12 inches from the light base.

c. The type of connection between new conduit and existing conduit would normally be a PVC coupling if the existing conduit is PVC or a rubber coupling if the existing conduit is steel. The City Engineer or his/her designee shall determine the type of connection used.

d. Conduit joints to be cleaned and primed with PVC primer and cemented with appropriate PVC cement.

e. Existing conduits shall contain no power and if possible the existing wires will be pulled out of the conduit by city electrical prior to conduit replacement.

f. Traffic signal conduit shall be 2 inch schedule 40 or schedule 80 PVC conduit as noted on the plans.

g. Conduit joints to be cleaned and primed with PVC primer and cemented with appropriate PVC cement.

h. Traffic signal conduits shall be run to electrical box locations determined by the City Engineer or his/her designee. Electrical boxes supplied by the city and installed by the contractor.

i. Electrical box locations shall be determined in the field by the City Engineer or his/her designee at locations as close to the mast poles as practical.

j. Conduits shall be run into the electrical boxes and the new control box location from below the box and pad using long sweep 90 degree elbows.

k. Traffic signals shall remain in service during conduit replacement. Care shall be exercised not to disturb existing traffic signal conduits.

## 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 36, 37: Electrical Conduit (Various schedules)

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 each conduit between each connection point.
c. Includes clearing, excavation, stone bedding, backfill, compaction,

roadway base and subbase, shoring and bracing, dewatering, conduit, fittings and incidentals, all wires, and flowable fill in case of shallow depth, as shown on the Drawings or as required to provide complete installation.

Bid Item 38: Installation of City Provided Handhole

a. Payment: Unit price per each unit as stated in the Proposal
b. Measurement: Per Unit Completed
c. Includes: Furnishing all materials, equipment and labor necessary to install the handhole, and all piping, and fittings within the manholes to form a complete unit, and cover.

Bid Item 39: Remove Abandoned Light Posts

a. Payment: Unit price per each unit as stated in Proposal.
b. Measurement: Per unit completed.
c. Includes: all supervision, labor, materials, and equipment necessary to discontinue, remove and dispose of post and lamp and/or other fixtures, and other incidentals.

Bid Item 40: Connect to Exist. Conduit at Exist. Electrical Cabinet

a. Payment: Lump sum price as stated in the Proposal.
b. Measurement: Paid in proportion to the percentage of work complete at time of requisition.
c. Includes: all supervision, labor, materials, and equipment necessary to complete connection, such as excavation, backfilling, fittings, wiring and incidentals, as shown on the Drawings or as required to provide complete installation.

Bid Item 71: Remove/Reset Tree Grate

a. Payment: Unit price per each unit as stated in Proposal.
b. Measurement: Per unit completed.
c. Includes: all supervision, labor, materials, and equipment necessary to remove and reset existing tree grate to accommodate electrical installation, and other incidentals.

# WATER SITEWORK SPECIFICATIONS

## SECTION 02202
## EXCAVATION AND BACKFILL

### PART 1 – GENERAL

Provide all labor, materials, equipment, operations, methods and procedures as specifically noted in these specifications and as indicated on the Drawings, together with all items necessary for or incidental to the completion of excavation and backfill for the Project. All work performed and materials used for excavation will be considered as incidental to other items of these specifications.

### PART 2 – MATERIALS

Suitable material from excavation shall be used to the maximum extent possible in grading over, and adjacent to the water main. Materials that cannot be so placed shall be removed as directed by the District.

Suitable material is defined as material that is free of rocks larger than 6-inches, and frozen earth and has moisture content suitable for proper compaction.

**Common Borrow** - Borrow material shall contain no rocks or fragments with dimensions greater than 6-inches and shall be free of frozen earth, ice, snow, rubbish, peat and other unsuitable material. Common borrow shall meet MDOT specification 703.18. Borrow shall not be used in the work when suitable materials from the excavation are available.

> **Roadway Gravel -** Furnish and place gravel to a depth equal to the depth of existing gravel base or twenty four 24-inches, whichever is greater in excavations made in existing roadways. Roadway gravel to be furnished under this item shall be composed of screened or crushed gravel of hard durable particles meeting MDOT Type C specification 703.06 free from vegetable matter, lumps or balls of clay and other deleterious substances.

### PART 3 - EXECUTION

All work performed and materials used for excavation will be considered as incidental to other items of these specifications.

Pavement in the project area consists of approximately 6 inches of asphalt. Pavement shall be saw cut to the full depth and carefully excavated to provide smooth, straight trench sidewalls. Pavement disturbed beyond a six foot trench width will be replaced at no additional expense to the Owner.

Excavation shall be kept free of water and special precautions shall be taken to prevent entry of water, mud, or other foreign substances into the line. Temporary water-tight caps or plugs shall be installed over all openings at the end of each day, when the work is suspended for periods of 30 minutes or more (including lunch hours), between each length of pipe that is being installed, or whenever necessary to protect the work in progress.

All damage resulting from inadequate bracing or shoring will be the responsibility of the Contractor. The Contractor shall make all necessary repairs and do reconstructions at his own expense. The Contractor will bear all other expenses resulting from any such damage due to lack of adequate shoring. All excavated areas shall be compliant with all OSHA standards and regulations.

The Contractor will take special precautions on projects that are near road curbs. Every effort shall be made to avoid disturbing any roadside curbing. Should it become necessary to disturb or remove curbing during water main installation, the Contractor shall, at own expense, replace such curbing in accordance with construction practices in the latest edition of the Maine Department of Transportation Highway Specifications or local town specifications.

The Contractor shall note that underground sewer mains and services, storm drains, telephone or communications cables, gas lines, and other below-ground utilities exist in close proximity to the work. Excavation around other utilities, pipes, culverts, and similar installations shall be done with extreme care. It shall be the Contractor's responsibility to contact each utility to be encountered and obtain information relative to location and depth before excavating in the area. It shall be the contractor's responsibility to comply with the State of Maine "Dig Safe" law. The Contractor shall promptly notify the Utility concerned in the event of damage occurring during construction, whether caused by his action or others.

In the event that underground utilities conflict with the location of the work, the Contractor shall promptly notify the Engineer and shall not disturb the conflicting utility until given specific instruction specifying the action to be taken.

Private utilities (building drains, etc.) encountered during the work shall be brought to the attention of the Engineer and be handled in such manner as directed by the Engineer. All damaged utilities, public or private, shall be immediately repaired at the Contractor's expense.

The Contractor shall use extra caution to avoid disturbing any water service connections along the proposed water main routes. Any disruption of water service or any damage to such service lines shall be immediately reported to the Engineer and the property owner. It shall be the Contractor's responsibility to immediately repair any damage done to water services during installation of new water mains. Any damage due to the crimping of water services will be repaired at the Contractor's expense. No water service shall be crimped without the advanced written approval of the Bangor Water District. Crimping shall only be used as a last resort.

In the event of damage to facilities, a representative from the Engineer will be on site while repairs are being made.

All excavated material shall be placed in a manner that will not endanger the work and will avoid obstructing sidewalks and driveways. Gutters and other means for providing surface drainage shall be kept clear where possible.

Suitable excavated material or borrow (i.e. free of stones larger than 6-inches and capable of being properly compacted) shall be placed and tamped under and around the pipe, taking care to maintain equal depth on both sides and to prevent movement of the pipe from its proper alignment. Unsuitable material including wet clay, frozen soil, boulders, rubble, wood, debris, etc. shall not be replaced in the trench. Where directed by the District, due to soft or otherwise unsuitable trench bottom conditions, crushed stone or 6-inch minus granular pipe bedding shall be placed in accordance with the requirements of BWD standard details.

Backfill shall be placed in maximum 12-inch layers and be thoroughly compacted to 95% of maximum dry density before the next layer is placed.

At such locations as may be determined by the District, the Contractor shall perform test pit excavation to locate various utilities. The limits and depth of such excavations shall be determined by the District. The contractor shall perform all work as directed by the District. In addition, the Contractor shall carefully backfill the test pit, using 12-inch compacted layers, and restore the surface to a condition equal to or better than it was before.

**END OF SECTION**

## SECTION 02675
## CLEANING, DISINFECTION AND TESTING WATER MAINS

### PART 1 – GENERAL

Provide all labor, materials, equipment, operations, methods and procedures as specifically noted in these specifications and as indicated on the Drawings, together with all items necessary for or incidental to the completion of cleaning, disinfection and testing of water mains including (but not limited to) temporary/permanent chlorine taps and blowoffs.

### PART 2 – EXECUTION

Prior to testing and disinfection the Owner will assist the Contractor in filling and flushing the water main.

All water line testing shall be done in accordance with AWWA specifications.

The Owner requires a representative on site to witness the test and to operate any valves connecting to the existing main. The line testing must conform to the procedure detailed in ANSI/AWWA C651-92 and ANSI/AWWA C600-93.

Chlorination shall be done in accordance with ANSI/AWWA C651-92, the AWWA standard for Disinfecting Water Mains Section 5.2, Continuous-Feed Method.

All water shall be de-chlorinated using approved chemical or biologic agents before disposal to the city catch basin system. If advance permission is obtained by the CONTRACTOR from the City of Bangor, chlorinated water may be discharged directly to a sanitary sewer.

Integrity of the installed pipeline shall be confirmed using ANSI/AWWA C600-93, the AWWA standard for Installation of Ductile-Iron Water Mains and Their Appurtenances.

**All bacteriological sampling will be tested by the Owner.**

When one and a half (1 ½) times the working pressure is less than 100 PSI. The main will be pressure tested to a minimum of 100 PSI.

Failure of pressure tests or bacteria tests will be the responsibility of the Contractor and must be corrected at no additional cost to the Owner

## SECTION 03302
## THRUST BLOCKS

### PART 1 – GENERAL

Provide all labor, materials, equipment, operations, methods and procedures as specifically noted in these specifications and as indicated on the Drawings, together with all items necessary for or incidental to the completion of the thrust blocks.

### PART 2 – MATERIALS

Thrust blocking and anchorage is required wherever the pipe:

a) changes direction as at tees, bends, crosses, and tapping sleeves;
b) changes sizes, as at reducers; or
c) stops, as at dead ends and hydrants.

Concrete shall be used for thrust blocks, and they shall be poured in place or pre-cast in accordance with BWD standard details. Poured-in-place concrete shall be supplied by an approved concrete "redi-mix" supplier.

The Contractor shall furnish and install all materials and equipment, and perform all labor for the manufacture, transporting, placing, curing, and testing concrete for thrust blocks. Concrete shall be composed of Portland cement, water, fine and coarse aggregate, and an air-entraining mixture. Cement shall be Type II confirming to ASTM C150 or ASTM C175.

Aggregates shall conform to ASTM C33. For thrust blocks, all aggregates shall be able to pass through a screen with 2-inch square openings.

Preferably, water used in mixing and curing concrete shall be potable. Non-potable water shall be fresh, clean and free from injurious amounts of sewage, oil, acid, alkali, salt, and organic matter.

Air entraining admixtures shall conform to the Specifications for Air Entraining Admixtures for Concrete (ASTM C260).

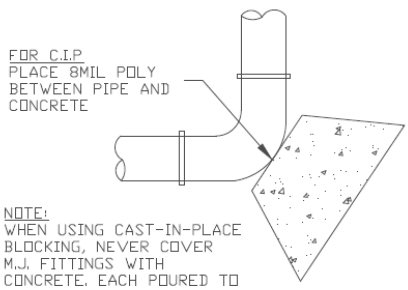
Unless otherwise shown on drawings, concrete used for thrust blocks shall have a 28-day compressive strength of 2,500 psi.

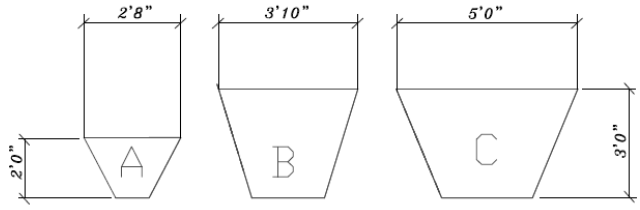
| Specified Compressive Strength at 28 days (psi) | Maximum permissible water-cement ratio, lb. of water per lb. of cement |
|---|---|
| 2,000 | 0.70 |
| 2,500 | 0.55 |
| 3,000 | 0.46 |
| 3,500 | 0.40 |
| 4,000 | 0.35 |

Water-to-cement ratios other than the above may be used when the strengths of the concrete are to be established by tests. The District shall determine if concrete testing is necessary and shall also determine the method of any concrete testing which is performed. The slump of concrete for thrust blocks shall be the minimum that is practicable such that the concrete may be easily shaped into the desired form, a wedge with the wide end against the solid undisturbed wall. Segregation of materials in the mixture shall not be permitted. Minimum thrust block area against the undisturbed trench wall shall be as follows:

TYPICAL USES

| PIPE SIZE (INCH) | 6 | 8 | 12 | 16 |
|---|---|---|---|---|
| 90 BEND | A | B | B | C |
| 45 BEND | A | A | A | B |
| 22.5 BEND | A | A | A | A |
| END | A | A | A | B |
| TEE | A | A | A | B |




THRUST BLOCK SPECIFICATIONS

A=SMALL PRECAST (.22 YDS.) HT.= 24"
B=LARGE PRECAST (.97 YDS.) HT.= 36"
C=CAST-IN-PLACE (1.74 YDS.) HT. = 50"

When a fitting is used to make a vertical bend, anchor the fitting to a thrust block braced against undisturbed soil. The thrust block should have enough resistance to withstand upward and outward thrusts at the fitting.

**PART 3 – INSTALLATION**

Poured-in-place thrust blocks shall be constructed by pouring concrete between the fitting and the undisturbed wall of the trench. A low slump mixture shall be used so that the concrete may be easily shaped into the desired form, a wedge with the wide end against the solid wall. Poured-in-place thrust blocks shall be poured using forms. Care shall be exercised to ensure that the concrete is clear of joint accessories, bolts, nuts, and flanges. A layer of 8-mil poly sheeting shall be placed between the main and the concrete thrust block.

Curing and form removal for concrete thrust blocks, and requirements due to air temperature and weather conditions shall follow proper construction practices and shall be subject to approval by the District.

Forming and placing of concrete for thrust blocks shall be done under the direction of the Owner.

**END OF SECTION**

## SECTION 15025
## WATER MAIN INSULATION

### PART 1 – GENERAL

Provide all labor, materials, equipment, operations, methods and procedures as specifically noted in these specifications and as indicated on the Drawings, together with all items necessary for or incidental to the completion insulation of water main where required and where shown on the plans.

### PART 2 – MATERIALS

Insulation for water mains shall be STYROFOAM™ HIGHLOAD 60, or approved equal meeting ASTM C578 – Standard Specification for Rigid Cellular Polystyrene Thermal Insulation. Insulation shall be 2” thick by 2’ wide.

### PART 3 – INSTALLATION

Insulation shall be installed above the water main wherever depth of burial is less than 5 feet and above or below the water main wherever the water main crosses a culvert, sewer or storm drain and 18” minimum separation cannot be maintained. Insulation shall be centered on the water main and shall be installed within 3 to 6 inches of the top or bottom of the water main.

## SECTION 15030
## VALVES

### PART 1 – GENERAL

Provide all labor, materials, equipment, operations, methods and procedures as specifically noted in these specifications and as indicated on the Drawings, together with all items necessary for or incidental to the completion of the water valve installations. **All valves shall be open left.**

### PART 2 – MATERIALS

All materials in contact with potable water shall be NSF/ANSI 61 approved. The Bangor Water District reserves the right to accept or reject materials when in the best interests of the District. Any reference to a particular standard shall mean the latest revision.

**Tapping valves** - shall be epoxy coated with 200 psi working pressure, non-rising stem, "O" ring, open left, flanged end conforming to AWWA C207, Class D, ANSI 150 lb. drilling, mechanical joint end conforming to AWWA C111, two-inch ductile iron operating nut with 304 stainless steel bolt, resilient seated gate valve conforming to ANSI/AWWA C509, manufactured by Waterous Series 500, American Darling CRS 80, Mueller A2360, AVK series 25, or approved equal.

Tapping valves shall be supplied with standard mechanical joint accessories, high strength low alloy steel bolts, and heavy hexagon nuts conforming to ANSI/AWWA C111/A21.11.

Tapping valve seal plates and bonnets shall have either all silicone bronze or 304 stainless steel bolts and nuts.

**Valves (General)** - shall be epoxy coated inside and out and supplied with standard mechanical joint accessories, high strength low alloy steel bolts and heavy hexagon nuts conforming to ANSI/AWWA C111.A21.11.

Valve seal plate and bonnet shall have either all-silicone bronze or 304 stainless steel bolts and nuts.

**Butterfly Valves** - Shall be a non-directional ductile iron valve with a steady state working pressure of 150 psig, and a maximum steady-state differential pressure of 150 psi, bubble-tight in both directions at rated psi, open left, mechanical joint ends, non-rising stem, two-inch ductile iron operating nut with stainless steel bolt, conforming to AWWA/ANSI C504. Manufactured by Clow, Dresser, Mueller, or Pratt.

**Gate Valves** - Shall be 200 psi working pressure, non-rising stem, "O" ring, stem seal, open left, mechanical joint, two-inch ductile iron operating nut with stainless steel bolt, resilient seated gate valve conforming to ANSI/AWWA C509, manufactured by Waterous Series 500, American-Darling CRS 80, Mueller A 2360, AVK series 25, or approved equal.

**Valve Boxes** - Shall be cast iron, or ductile iron free from defects, manufactured in the USA or Canada, two piece, sliding type with a non-flange top section, no inside stops, and an outside shaft diameter of six inches. Bottom section shall be belled base. Length of top section shall be a minimum of 24 inches.

Middle and bottom section length as needed. Boxes shall have the word “WATER” clearly cast into the cover.

**PART 3 – INSTALLATION**

Installation shall be made in accordance with the Contract Documents and manufacturers recommendations. All valves shall be installed plumb and true. All valve boxes shall be installed plumb and true and left 3” below finish grade when necessary to allow for surface grinding. Wrap valve boxes with polyethylene to allow for raising and lowering valve boxes. A valve box top shall be installed over every service box located within the travel way of vehicles. **All valves are required to be anchored to the tee or appropriate fitting. Foster adapters are allowed.**

**END OF SECTION**

## SECTION 15060
## DUCTILE IRON PIPE & FITTINGS

### PART 1 – GENERAL

Provide all labor, materials, equipment, operations, methods and procedures as specifically noted in these specifications and as indicated on the Drawings, together with all items necessary for or incidental to the completion of the water main installation.

### PART 2 – MATERIALS

#### 2.1 General

All materials in contact with potable water shall be NSF/ANSI 61 approved. The Bangor Water District reserves the right to accept or reject materials when in the best interests of the District. Any reference to a particular standard shall mean the latest revision.

> **Water main** - shall be ductile iron centrifugally cast with push-on joints conforming to AWWA/ANSI C151/A21.51. Pipe shall be Class 52, double cement lined and bituminous coated conforming to AWWA/ANSI C104/A21.4. Ten percent of the pipe shall be suitable for field cutting and marked as such.

**Gaskets –** Nitrile gaskets shall be used when petroleum contamination is found in the excavation.

**Duc-lug and tie bolts** - Duc- lug bolts shall be Star Supply Corp. "Starlug" or approved equal. Tie bolts with hexagonal nuts shall be Star Supply Corp. or approved equal.

**Flanged adapters** - couplings shall have either a ductile iron ASTM A536 or gray iron ASTM A126 body. Bolt circle, bolt size, and spacing shall conform to ANSI 150 lbs. flange drilling. Grade 30 gasket with either a malleable iron ASTM A47 or ductile iron ASTM A536 follower. Anchor studs shall be installed for a minimum working pressure of 125 psi. Bolts and nuts shall be ductile iron ASTM A536, Rockwell 912, or approved equal.

**Polyethylene encasement** – shall meet the requirements of AWWA C105/A21.5, shall be specifically designed for ductile iron pipe encasement and shall be utilized on all ductile iron pipe and fittings installed.

**Solid sleeves** - shall be mechanical joint solid sleeve ductile iron class 350 conforming to ANSI/AWWA C153/A21.53.

**Pipe fittings** –shall have mechanical joint ends conforming to ANSI/AWWA C1/A21.11, double cement lining and bituminous coating conforming to ANSI/AWWA C104.A21.4.

Fittings shall be supplied with mechanical joint accessories unless specified others, with high strength low alloy steel bolts and heavy hexagon nuts conforming to ANSI/AWWA C111.A21.11.

Long body fittings shall be Class 350 ductile iron conforming to ANSI/AWWA C110/A21.10.
Compact body fittings shall be Class 350 ductile iron conforming to ANSI/AWWA C153/A21.53.

**Mechanical joint retainer glands** – shall be heavy duty ductile iron body, UL or FM approved, and shall have a minimum working pressure rating as follows:

- 4-inch 350 psi
- 6-inch 350 psi
- 8-inch and larger 250 psi

Set screws shall be either "Cor-Ten" steel, ductile iron, or approved equal. The number of set screws shall be equal to or greater than the number of the nominal diameter of the gland (i.e. four-inch, four sets of screws; six-inch, six set of screws). Locking rings, MEGALUG and other restrained type glands are acceptable, but are not a replacement for thrust blocks.

**Mechanical joint tapping sleeve** - Shall be ductile iron and have ductile iron mechanical joint end seals conforming to AWWA C111, with outlet flange conforming to AWWA C207, class D with ANSI 150 lb. drilling recessed for tapping valve. Tapping sleeve shall fit AWWA standard of 1908, Class AB-CD cast iron pipe. Manufactured by Clow, Mueller, or approved equal. Acceptable for cast iron and ductile iron pipe. **All size on size taps require full body Ductile Iron MJ tapping sleeves.**

**Stainless steel tapping sleeve** - shall be entirely 304 stainless steel or 304 stainless steel body with ductile iron outlet flange conforming to AWWA C207 Class D, ANSI 150 lb. drilling recessed for tapping valve. Bolts shall be high strength 18-8 stainless steel with heavy hexagon nuts conforming to ANSI/AWWA C111 / A21.11.

Gasket material shall be acceptable for ductile iron pipe, grade 30 or approved equal, and shall have a smooth inside taper for uniform seating.

**PART 3 – INSTALLATION**

**Install polyethylene pipe wrap before installing water main in trench. Install wrap in accordance with AWWA, DIPRA and pipe manufacturers' recommendations.**

In addition to the requirements for thrust blocking, water mains shall be protected from movement by thrust forces in the following manner:

1. All fittings, valves, hydrants, and caps shall have ductile iron standard or wedge restraint glands, unless otherwise directed by the District.
2. All push-on joints in hydrant lateral shall be secured by rods as shown on the standard details or as directed by the District.

Bolts on all ductile standard glands shall be systematically tightened with a torque wrench according to the manufacturer's requirements. When all bolts have been tightened in this manner, each bolt shall be retightened according to manufacturer's requirements in the event that some may have loosened during the initial tightening process.

Pipe shall be laid directly on the undisturbed trench bottom. Where the water main extension crosses a sewer line or house lateral, the water main joints shall be spaced such that no water main joint is closer than 10 feet to the sewer centerline. The water line shall be installed such that it passes 18 inches over the sewer. Pipes shall be carefully lowered into the excavation, be guided into proper position, and joined to the preceding length or fitting. Pipes shall be installed using a temporary cap or plug to keep out water, animals, and debris.

All pipes shall be installed with a minimum 5-foot 6-inch depth of cover over the top of the pipe not to exceed 7-feet without prior approval from the Bangor Water District. Where existing or proposed pipes, conduits, culverts, cables, wires, etc. interfere with laying at this depth, the water pipe shall be laid to provide a minimum vertical separation distance of 18-inches.

When a field cut end of a water main is to be used for insertion into a "Bell-Tite" or "Tyton" joint, it shall be beveled on the outside of the cut about 1/8-inch, at an angle of about 30 degrees with the pipe center. This shall be done with a portable grinder.

The Contractor shall locate and confirm sizes and materials of existing mains, excavate, furnish and install tapping sleeves and valves, and backfill the excavation. All materials, including mechanical joint accessories, valve boxes, and other items necessary to make all joints watertight and provide complete and effective connections to existing water mains shall be provided by the Contractor. All tapping sleeves shall be pressure tested prior to tapping the main. Tapping valves shall be installed plumb.

Contractors are not authorized to operate any valve connected to an existing water main including, but not limited to, all domestic and fire services.

All size-on- size taps shall be done with full body ductile iron MJ tapping sleeves meeting these specifications.

Special pipe bedding is normally not required for ductile iron pipe. Pipe bedding is required for excavations in ledge and may be required if unsuitable materials are encountered in the trench. If bedding is required, it shall be as per the Water Main Details. **No pipe shall be laid directly on ledge, under any circumstances.**

**END OF SECTION**

## SECTION 15070
## WATER SERVICES COPPER TUBING & ACCESSORIES

### PART 1 – GENERAL

Provide all labor, materials, equipment, operations, methods and procedures as specifically noted in these specifications and as indicated on the Drawings, together with all items necessary for or incidental to the completion of the water service installations.

### PART 2 – MATERIALS

All materials in contact with potable water shall be NSF/ANSI 61 approved. The Bangor Water District reserves the right to accept or reject materials when in the best interests of the District. Any reference to a particular standard shall mean the latest revision.

**Copper tubing** - shall be type "K" soft copper (ASTM B88).

**Service boxes** - shall be Erie style with arch pattern, one-inch in diameter, constructed from SC #40 Black Steel, adjustable in length from five feet to six feet, and have 1/2-inch diameter stainless steel rod 36-inches in length with brass cotter pins. One-inch caps shall be extra heavy with brass pentagon plug and coarse "rope" thread to fit a one-inch Erie style box. Two-inch caps shall be a #3 cover, cast iron with brass bushing and brass pentagon plug to fit a two-inch Erie style box. All caps shall have the word "WATER" clearly cast in top and be constructed of a magnetic material.

**Service box foot pieces** - shall be cast iron and fit all standard one-inch Erie style service boxes and fit over curb stops larger than one inch.

**Service saddles** - Shall be constructed of ductile iron with epoxy coating and with_two stainless steel bands, nuts, and washers. Body casting shall be wrap-around design of high tensile ductile iron conforming to ASTM A536. Gasket shall be of 3 1/2-inch diameter and constructed of Buna-N, and grooved to conform to the pipe surface, bonded in place for easy installation. Finish shall be epoxy coated. Ford FC202 or approved equal.

### PART 3 - INSTALLATION

Installation shall be made in accordance with the Contract Documents and manufacturers recommendations. A valve box top shall be installed over every service box located within the travel way of vehicles. All service installations shall be done after the main is chlorinated and pressure tested. Services shall be turned on before backfilling and observed by the resident inspector for leaks.

**END OF SECTION**

## SECTION 15071
## SERVICE BRASS

### PART 1 – GENERAL

Provide all labor, materials, equipment, operations, methods and procedures as specifically noted in these specifications and as indicated on the Drawings, together with all items necessary for or incidental to the completion of the service brass installations.

### PART 2 – MATERIALS

All materials in contact with potable water shall be NSF/ANSI 61 approved. The Bangor Water District reserves the right to accept or reject materials when in the best interests of the District. Any reference to a particular standard shall mean the latest revision.

**All brass fittings will be made of <u>No Lead</u> Brass**. (.25% lead or less brass), such as Enviro Brass or approved equal.

Brass fittings shall have a lead content meeting standards noted above for the fitting in question. The vendor shall supply the District with the lead content of the fittings. Fittings shall conform to ANSI/AWWA C800 standards and shall be compression type on the copper end. CTS (Copper Tubing Size) HDPE shall have stainless steel insert stiffeners. Provide necessary adapters to connect to existing services.

**Miscellaneous Brass** - Shall be 125 lbs., brass shall have a lead content meeting standards noted above for the fitting in question. The vendor shall supply the District with the lead content of the fittings, with iron pipe size (IPS) threads shall be used for connecting water services. Items included are bushings, couplings, elbows, nipples, plugs, and tees. Manufactured by Lee, Wheeler, Nibco, Hayes, Ford, McDonald EB2, Mueller, Cambridge Brass, or approved equal.

**Corporations** - shall have a lead content meeting standards noted above. The vendor shall supply the District with the lead content of the fittings Corporations shall have a ball valve type construction with inlet CC thread and compression pack joint on the outlet, heavy patterns, and shall conform to AWWA/ANSI C800. Manufactured by Ford, Hayes, McDonald EB2, Mueller, Cambridge Brass, or approved equal.

**Curb stops** - shall have a lead content meeting standards noted above. The vendor shall supply the District with the lead content of the fittings. Curb stops shall have a ball valve type construction or approved equal with compression pack joints on each end. Curb stops shall open left with no drain, have heavy patterns, and shall conform to AWWA/ANSI C800. Curb stops shall be manufactured by Ford, Hayes, McDonald EB2, Mueller, Cambridge Brass, or approved equal.

### PART 3 - INSTALLATION

Installation shall be made in accordance with the Contract Documents and manufacturers recommendations. All service installations shall be done after the main is chlorinated and pressure tested. Services shall be turned on before backfilling and observed by the resident inspector for leaks.

**END OF SECTION**

## SECTION 15080
## FIRE HYDRANTS

### PART 1 – GENERAL

Provide all labor, materials, equipment, operations, methods and procedures as specifically noted in these specifications and as indicated on the Drawings, together with all items necessary for or incidental to the completion of the fire hydrant installations.

### PART 2 – MATERIALS

All materials in contact with potable water shall be NSF/ANSI 61 approved. The Bangor Water District reserves the right to accept or reject materials when in the best interests of the District. Any reference to a particular standard shall mean the latest revision.

Hydrants shall be compression type conforming to AWWA/ANSI C502. Hydrants shall be Eddy F2640, Mueller Super Centurion 200, or US Pipe Metropolitan 250, US model 250, AVK Series 2780 meeting the following requirements:

1. Break flange construction
2. 5 1/4-inch main valve
3. Non self-draining - drain hole plugged
4. Two 2 1/2 inch hose nozzles (National Standard Thread)
5. One 4 1/2 inch pumper nozzle (National Standard Thread)
6. Inlet connection - mechanical joint
7. Inlet connection size - six inch
8. Direction of opening - right
9. Operating nut - 1 1/2 inch pentagon pattern (National Standard)
10. Trench depth - as specified in BWD's Construction Specifications
11. Hydrant color – yellow with silver bonnet and nozzles
12. Packing - "O" ring
13. Nozzle cap chains
14. Stainless steel nuts and bolts
15. Supplied with mechanical joint accessories, high strength low alloy steel bolts and heavy hexagon nuts conforming to ANSI/AWWA C111/A 21.11.

### PART 3 – INSTALLATION

Hydrants shall be installed plumb and true at the locations shown on the plan. Thrust blocks, rodding and duc-lugs shall be used.

Hydrants shall be given a primer coat of paint and an enamel finish coat, both of a type specified for metal finishes. Hydrants shall be yellow with silver nozzle caps and cover:

- Silver Paint: California oil based paint, number 211-10 or approved equal.
- Yellow Paint: California oil based paint, number 211-63 or approved equal.

**END OF SECTION**

## MEASUREMENT & PAYMENT

### PART 1 – GENERAL

**Item 41. 16-inch Dia. Class 52 CLDI Water Main**

Payment for this item shall include but not necessarily be limited to Class 52 cement-lined ductile iron water main, polyethylene pipe wrap, fittings (couplings, tees, bends, offsets, etc.), gaskets, rodding, thrust blocks, retaining glands, excavation and backfill, pressure test, chlorination, dechlorination, chlorination taps and blowoffs, connection to existing mains or hydrants, plugging abandoned mains, and any other items necessary to complete the installation. Pipe shall be measured continuously through all fittings. Payment will be made as follows:

75% upon installation

100% (less retainage) upon completion of pressure test and chlorination.

Payment of the unit price for this work shall be full compensation for all 16-inch diameter water main satisfactorily installed.

**Item 42. 12-inch Dia. Class 52 CLDI Water Main**

Same as Item 41, except main size is 12-inch diameter.

**Item 43. 8-inch Dia. Class 52 CLDI Water Main**

Same as Item 41, except main size is 8-inch diameter.

**Item 44. 6-inch Dia. Class 52 CLDI Water Main**

Same as Item 41, except main size is 6-inch diameter.

**Item 45. 4-inch Dia. Class 52 CLDI Water Main**

Same as Item 41, except main size is 6-inch diameter.

**Item 46. 16-inch Dia. Butterfly Valve w/Box**

Payment for this item shall include but not necessarily be limited to furnishing and installing butterfly valves, fittings, gaskets, valve box, retaining glands, rod restraints, raising and lowering valve box to accommodate paving, excavation and backfill and any other items necessary to complete the installation. Owner shall provide 16-inch butterfly valves only.

Payment of the unit price for this work shall be full compensation for all 16-inch diameter butterfly valves satisfactorily installed.

**Item 47. 12-inch Dia. Gate Valve w/Box**

Payment for this item shall include but not necessarily be limited to furnishing and installing gate valve (MJ x MJ or Tapping Valve), fittings, gaskets, valve box, retaining glands, rod restraints, raising and lowering valve box to accommodate paving, excavation and backfill and any other items necessary to complete the installation.

Payment of the unit price for this work shall be full compensation for all 12-inch diameter gate valves satisfactorily installed.

**Item 48. 8-inch Dia. Gate Valve w/Box**

Same as Item 47, except valve size is 8-inch.

**Item 49. 6-inch Dia. Gate Valve w/Box**

Same as Item 47, except valve size is 6-inch.

**Item 50. 4-inch Dia. Gate Valve w/Box**

Same as Item 47, except valve size is 4-inch.

**Item 51. Hydrant Assembly New**

Payment for this item shall include but not necessarily be limited to furnishing and installing hydrant, fittings, gaskets, retaining glands, rod restraints, thrust blocks, excavation and backfill, painting, removing existing hydrant and any other items necessary to complete the installation.

Payment of the unit price for this work shall be full compensation for all Hydrant Assemblies satisfactorily installed. Valves and main are paid for under separate items.

**Item 52. 16-inch Cut & Plug**

Payment for this item shall include but not necessarily be limited to furnishing and installing MJ plugs, fittings, gaskets, retaining glands, rod restraints, thrust blocks, excavation and backfill, temporary blow off assembly, and any other items necessary to complete the installation of plugs on live mains.

Payment of the lump sum price for this work shall be full compensation for all cut and plugs on live mains satisfactorily installed. Plugs on abandoned mains are incidental to water main.

**Item 53. 12-inch Cut & Plug**

Same as Item 52, except cut and plug size is 12-inch.

**Item 54. Temporary 4-inch Cut & Plug**

Same as Item 52, except cut and plug size is 4-inch.

**Item 55. 1-inch Dia. Type K Copper**

Payment for this item shall include but not necessarily be limited to furnishing and installing Type K copper tubing, fittings, connection to existing services, excavation and backfill and any other items necessary to complete the installation. All existing ¾" diameter services shall be renewed to the curbstop with 1-inch diameter copper.

Payment of the unit price for this work shall be full compensation for all 1-inch Dia. Type K copper pipe satisfactorily installed.

**Item 56. 1 1/4-inch Dia. Type K Copper**

Same as Item 55, except the pipe size is 1 1/4-inch.

**Item 57. 1 1/2-inch Dia. Type K Copper**

Same as Item 55, except the pipe size is 1 1/2-inch.

**Item 58. 2-inch Dia. Type K Copper**

Same as Item 55, except the pipe size is 2-inch.

**Item 59. 1-inch Dia. Corporation**

Payment for this item shall include but not necessarily be limited to furnishing and installing corporation, tapping, connections to new and existing service pipe, excavation and backfill and any other items necessary to complete the installation.

Payment of the unit price for this work shall be full compensation for all 1-inch diameter corporations satisfactorily installed.

**Item 60. 1 1/4-inch Dia. Corporation**

Same as Item 59, except the corporation size is 1 1/4-inch.

**Item 61. 1 1/2-inch Dia. Corporation**

Same as Item 59, except the corporation size is 1 1/2-inch.

**Item 62. 2-inch Dia. Corporation**

Same as Item 59, except the corporation size is 2-inch.

**Item 63. 1-inch Curb Stop & Box**

Payment for this item shall include but not necessarily be limited to furnishing and installing curb stop, fittings, gaskets, service box & rod, foot piece, raising and lowering service box to accommodate paving, connection to existing service, excavation and backfill and any other items necessary to complete the installation.

Payment of the unit price for this work shall be full compensation for all 1-inch diameter curb stops and boxes satisfactorily installed.

**Item 64. 1 1/4-inch Dia. Curb Stop & Box**

Same as Item 63, except the curb stop size is 1 1/4-inch.

**Item 65. 1 1/2-inch Dia. Curb Stop & Box**

Same as Item 63, except the curb stop size is 1 1/2-inch.

**Item 66. 2-inch Dia. Curb Stop & Box**

Same as Item 63, except the curb stop size is 2-inch.

**Item 67. Temporary Water**

Payment for this item shall include but not necessarily be limited to distribution of service interruption notices, pavement saw cutting, furnishing, installing and removing temporary bypass pipe, valves and appurtenances, covering and burying temporary bypass pipe, connections to water sources, temporary surface restoration, furnishing, installing, and removing pipe, disinfection, dechlorination, flushing, bacteriological sampling (by BWD), furnishing, installing and removing water service hose and appurtenances, connections, making, securing, sealing and permanent closure of temporary openings into buildings, 24 hour maintenance, excavation, backfill, surface restoration, and furnishing all labor, material and equipment necessary to complete the work.

Payment of the lump sum price for this work shall be full compensation for all temporary water service required to complete the Contract.

**END OF SECTION**

# ALTERNATE BID ITEM SPECIFICATIONS

ALTERNATE BID ITEMS

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. The General Documents, as listed on the Table of Contents, and applicable parts of general specifications, shall be included in and made a part of this Section.

B. Examine all Contract Documents, and all other Sections of the Specifications for requirements therein affecting the work of this trade.

1.02 SUMMARY

A. The work of this Section consists of providing all labor, equipment, materials, incidental work, and construction methods necessary to furnish and install designated Alternate Bid items as directed by Owner, and related items as indicated on the Contract Documents, as specified in this Section, and includes, but is not limited to, the following:

1. Modify installed Doghouse Structure to accept new pipe
2. Open Cut 15” PVC Sewer in Proposed Trenchless Rehab Area Sta. 2+58 to 2+76 LT.
3. Open Cut 27" PVC Sewer in Proposed Trenchless Rehab Area Sta. 0+59 to Sta. 3+63
4. Open Cut 49 x 32 Elliptical RCP Sewer in Proposed Trenchless Rehab Area Sta. 0+00 to Sta. 0+59
5. H.M.A. Pavement
6. Communication Conduit
7. Handholes for Communication Conduit not provided by City

1.03 RELATED WORK UNDER OTHER SECTIONS

A. The following items of related work are specified and included in other Sections of the Specifications:

1. Hot Mix Asphalt Pavement
2. Sanitary Sewer and Storm Drain Systems
3. Electrical - General

Refer to these sections of the specifications for details related to sewer and paving work as applicable.

PART 2 PRODUCTS

As specified in other sections of the specifications.

PART 3 EXECUTION

As specified in other sections of the specifications.

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 A1: Modify installed Doghouse Structure to Accept new Pipe

a. Payment: Unit price for each unit as stated in the Proposal
b. Measurement: Per completion of work.
c. Includes: Precast structure modification to accept new work including coring, patching, boots, invert channel modification, and incidentals.
d. Explanation: The intent of the contract is to install doghouse manholes to facilitate CCTV inspection and trenchless rehab of certain sewers as noted on the contract documents. If it is determined as a result of the CCTV inspection that the sewer is not able to be rehabilitated using trenchless methods, it may be necessary to modify the manhole to allow for main line connections from side streets or other areas to be connected to the manhole.

Bid Items A2 – A4: Open Cut Sewer in Proposed Trenchless Rehab Areas, various sizes and cross sections

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

Bid Item A5: H.M.A. 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 show on the Drawings and as directed by the Engineer.
c. Includes: preparation and placement of specified thickness of binder and final surface course pavement in trench areas including shimming prior to pavement as necessary and saw cutting all edges before paving as noted on the Drawings and as directed by the

Engineer, bituminous tack coat, and cutting in butt joints as required to match into existing pavement.

Bid Item A6: Communication Conduit

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 each conduit between each connection point.
c. Includes clearing, excavation, stone bedding, backfill, compaction, roadway base and subbase, shoring and bracing, dewatering, conduit, fittings and incidentals, all wires, and flowable fill in case of shallow depth, as shown on the Drawings or as required to provide complete installation.

Bid Item A7: Handhole (materials not provided by City under Alternate Bid)

a. Payment: Unit price per each unit as stated in the Proposal
b. Measurement: Per Unit Completed
c. Includes: Furnishing all materials, equipment and labor necessary to install the handhole, and all piping, and fittings within the manholes to form a complete unit, and cover.

END OF SECTION