



**CITY OF PORTLAND, MAINE
DEPARTMENT OF PUBLIC WORKS**

**CONTRACT REQUIREMENTS,
AND SPECIFICATIONS**

For

**Deering Avenue Sewer Extension (Pitt Street to Fessenden
Street)**

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SECTION 00520 – AGREEMENT

This Agreement is by and between **City of Portland, Maine** (“Owner”) and (“Contractor”).

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

Owner and Contractor hereby agree as follows:

ARTICLE 1 - WORK

1.01 Contractor shall complete all Work as specified or indicated in the Contract Documents. The Work is generally described as follows:

Deering Avenue Sewer Extension (Pitt St to Fessenden St):

The Install approx. 220 LF of new 8" diameter sewer and two manholes connecting to existing SSMH-0229. Remove/replace one fire hydrant and four water services. Remove/replace three trees and install structural soil per spec/detail. Reconstruct ADA compliant sidewalk with reinforced concrete from Pitt St to Fessenden St, install new survey monument, adjust survey monument to grade, and reconstruct ADA ramps with detectable warning pad. Manhole inverts and lateral inverts to be verified in field.

ARTICLE 2 - THE PROJECT

2.01 The Project, of which the Work under the Contract Documents is a part, is generally described as follows:

City of Portland, Maine

Deering Avenue Sewer Extension (Pitt St to Fessenden St).

ARTICLE 3 - ENGINEER

3.01 The Project has been designed by The City of Portland Public Works Department Portland, Maine “Engineer”.

3.02 On this Project, by agreement with the Owner, Engineer will not furnish a Resident Project Representative to represent the Engineer at the Site or assist the Engineer in observing the progress and quality of work. This duty will be assumed by the Owner.

3.03 Owner will furnish and “Owner’s Site Representative” to represent Owner at the Site and assist Owner in observing the progress and quality of the Work. The Owner’s Site Representative is not Engineer’s Consultant, agent, or employee. The authority and responsibilities of the Owner’s Site

Representative shall be those of the Resident Project Representative identified in the Supplemental Conditions.

ARTICLE 4 - CONTRACT TIMES

4.01 *Time is 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 *Contract Times: Dates*

A. Contract work must be completed and ready for City acceptance by July 1st, 2025.

4.03 *Milestones*

A. Milestones are as identified in the contract documents.

4.04 *Liquidated Damages*

A. Contractor and Owner recognize that time is of the essence as stated in Paragraph 4.01 above and that Owner will suffer financial and other losses if the Work is not completed and Milestones not achieved within the Contract Times, as duly modified. The parties also recognize the delays, expense, and difficulties involved in proving, in a legal or arbitration proceeding, the actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Contractor agree that as liquidated damages for delay (but not as a penalty):

1. *Substantial Completion*: Contractor shall pay Owner the value set forth below for each day that expires after the time (as duly adjusted pursuant to the Contract) specified above for Substantial Completion, until the Work is substantially complete.
2. *Completion of Remaining Work*: After Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Times (as duly adjusted pursuant to the Contract) for completion and readiness for final payment, Contractor shall pay Owner the value set forth below for each day that expires after such time until the Work is completed and ready for final payment.
3. *Milestones*: No Milestones other than Substantial Completion have been set for this contract.
4. Liquidated damages for failing to timely attain Milestones, Substantial Completion, and final completion are not additive, and will not be imposed concurrently.
5. The Contractor shall also be subject to liquidated damages based upon failure to follow the Supplemental Specifications or Special Provisions Section 656 and/or the Contractor's own soil and erosion and water pollution control plan (SEWPCP).
6. The per diem rates for Liquidated Damages shall be based on the contract value as set forth below:

Original Contract Amount		Per Diem Amount of
From More Than	To and Including	Liquidated Damages
		Calendar Day
\$0	\$100,000	\$100
\$100,000	\$300,000	\$175

\$300,000	\$500,000	\$250
\$500,000	\$1,000,000	\$325
\$1,000,000	\$2,000,000	\$500
\$2,000,000	\$4,000,000	\$750
\$4,000,000	and more	\$1,000

- B. If Owner recovers liquidated damages for a delay in completion by Contractor, then such liquidated damages are Owner's sole and exclusive remedy for such delay, and Owner is precluded from recovering any other damages, whether actual, direct, excess, or consequential, for such delay, except for special damages (if any) specified in this Agreement.

4.05 *Special Damages*

- A. Not Applicable.

ARTICLE 5 - CONTRACT PRICE

- 5.01 Owner shall pay Contractor for completion of the Work in accordance with the Contract Documents, the amounts that follow, subject to adjustment under the Contract:

- A. 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 15 of the General Conditions. Applications for Payment will be processed by Engineer as provided in the General Conditions.

6.02 *Progress Payments; Retainage*

- A. Owner shall make progress payments on the basis of Contractor's Applications for Payment on or about the **[ordinal number, such as 5th]** day of each month during performance of the Work as provided in Paragraph 6.02.A.1 below, provided that such Applications for Payment have been submitted in a timely manner and otherwise meet the requirements of the Contract. All such payments will be measured by the Schedule of Values established as provided in 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 elsewhere in the Contract.

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 Owner may withhold, including but not limited to liquidated damages, in accordance with General Conditions.
 - a. 95 percent of Work completed (with the balance being retainage).
 - b. 95 percent of cost of materials and equipment not incorporated in the Work (with the balance being retainage).

- B. Upon Substantial Completion, Owner shall pay an amount sufficient to increase total payments to Contractor to **98** percent of the Work completed, less such amounts set off by

Engineer or by Owner pursuant to Paragraph 15.01.E of the General Conditions. The final 2% of the value of the Work shall be retained for a period of one year from the date of Substantial Completion.

6.03 *Final Payment*

- A. Upon final completion and acceptance of the Work, Owner shall pay the remainder of the Contract Price in accordance with Paragraph 15.06 of the General Conditions.

6.04 *Consent of Surety*

- A. Owner will not make final payment, or return or release retainage at Substantial Completion or any other time, unless Contractor submits written consent of the surety to such payment, return, or release.

6.05 *Interest*

- A. Intentionally Left Blank.

ARTICLE 7 - CONTRACT DOCUMENTS

7.01 *Contents*

- A. The Contract Documents consist of all of the following:
 - 1. This Agreement.
 - 2. Bonds:
 - a. Performance bond (together with power of attorney).
 - b. Payment bond (together with power of attorney).
 - 3. General Conditions.
 - 4. Supplementary Conditions.
 - 5. Specifications as listed in the table of contents of the project manual (copy of list attached).
 - 6. Drawings (not attached but incorporated by reference) consisting of **9** sheets with each sheet bearing the following general title: **Deering Ave Sewer Extension (Pitt Street to Fessenden Street)**
 - 7. Addenda: No Addendums.
 - 8. Exhibits to this Agreement (enumerated as follows):
 - a. **None**
 - 9. The following which may be delivered or issued on or after the Effective Date of the Contract and are not attached hereto:
 - a. Notice to Proceed.
 - b. Work Change Directives.
 - c. Change Orders.
 - d. Field Orders.

- e. Warranty Bond, if any.
- B. The Contract Documents listed in Paragraph 7.01.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 7.
- D. The Contract Documents may only be amended, modified, or supplemented as provided in the Contract.

ARTICLE 8 - REPRESENTATIONS, CERTIFICATIONS, AND STIPULATIONS

8.01 Contractor's Representations

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

9. Contractor has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Contractor has discovered in the Contract Documents, and of discrepancies between Site conditions and the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.
10. The Contract Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.
11. Contractor's entry into this Contract constitutes an incontrovertible representation by Contractor that without exception all prices in the Agreement are premised upon performing and furnishing the Work required by the Contract Documents.

8.02 *Contractor's Certifications*

- A. Contractor certifies that it has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for or in executing the Contract. For the purposes of this Paragraph 8.02:
 1. "corrupt practice" means the offering, giving, receiving, or soliciting of anything of value likely to influence the action of a public official in the bidding process or in the Contract execution;
 2. "fraudulent practice" means an intentional misrepresentation of facts made (a) to influence the bidding process or the execution of the Contract to the detriment of Owner, (b) to establish Bid or Contract prices at artificial non-competitive levels, or (c) to deprive Owner 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 Owner, 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.

8.03 *Standard General Conditions*

- A. Owner stipulates that if the General Conditions that are made a part of this Contract are EJCDC® C-700, Standard General Conditions for the Construction Contract (2018), published by the Engineers Joint Contract Documents Committee, and if Owner is the party that has furnished said General Conditions, then Owner has plainly shown all modifications to the standard wording of such published document to the Contractor, through a process such as highlighting or "track changes" (redline/strikeout), or in the Supplementary Conditions.

IN WITNESS WHEREOF, Owner and Contractor have signed this Agreement.

This Agreement will be effective on **[indicate date on which Contract becomes effective]** (which is the Effective Date of the Contract).

Owner:

Contractor:

(typed or printed name of organization)

(typed or printed name of organization)

By: _____
(individual's signature)

By: _____
(individual's signature)

Date: _____
(date signed)

Date: _____
(date signed)

Name: _____
(typed or printed)

Name: _____
(typed or printed)

Title: _____
(typed or printed)

Title: _____
(typed or printed)

(If [Type of Entity] is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.)

Attest: _____
(individual's signature)

Attest: _____
(individual's signature)

Title: _____
(typed or printed)

Title: _____
(typed or printed)

Address for giving notices:

Address for giving notices:

Designated Representative:

Designated Representative:

Name: _____
(typed or printed)

Name: _____
(typed or printed)

Title: _____
(typed or printed)

Title: _____
(typed or printed)

Address:

Address:

Phone: _____

Phone: _____

Email: _____

Email: _____

(If [Type of Entity] is a corporation, attach evidence of authority to sign. If [Type of Entity] is a public body, attach evidence of authority to sign and resolution or other documents authorizing execution of this Agreement.)

License No.: _____
(where applicable)

State: _____

**SECTION 00700 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 Owner 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 document prepared by Contractor, in a form acceptable to Engineer, to request 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 Owner.
 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 Owner 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; 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 Owner directly to Contractor, duly submitted in compliance with the procedural requirements set forth herein, seeking an adjustment of Contract Price or Contract Times; 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.

- b. A demand or assertion by Contractor directly to Owner, duly 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.
 - c. A demand or assertion by Owner or Contractor, duly submitted in compliance with the procedural requirements set forth herein, made pursuant to Paragraph 12.01.A.4, concerning disputes arising after Engineer has issued a recommendation of final payment.
 - d. A demand for money or services by a third party is not a Claim.
11. *Constituent of Concern*—Asbestos, petroleum, radioactive materials, polychlorinated biphenyls (PCBs), lead-based paint (as defined by the HUD/EPA standard), hazardous waste, and any substance, product, waste, or other material of any nature whatsoever that is or becomes listed, regulated, or addressed pursuant to Laws and Regulations regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, or material.
 12. *Contract*—The entire and integrated written contract between Owner and Contractor concerning the Work.
 13. *Contract Documents*—Those items so designated in the Agreement, and which together comprise the Contract.
 14. *Contract Price*—The money that Owner has agreed to pay Contractor for completion of the Work in accordance with the Contract Documents.
 15. *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.
 16. *Contractor*—The individual or entity with which Owner has contracted for performance of the Work.
 17. *Cost of the Work*—See Paragraph 13.01 for definition.
 18. *Drawings*—The part of the Contract that graphically shows the scope, extent, and character of the Work to be performed by Contractor.
 19. *Effective Date of the Contract*—The date, indicated in the Agreement, on which the Contract becomes effective.
 20. *Electronic Document*—Any Project-related correspondence, attachments to correspondence, data, documents, drawings, information, or graphics, including but not limited to Shop Drawings and other Submittals, that are in an electronic or digital format.
 21. *Electronic Means*—Electronic mail (email), upload/download from a secure Project website, or other communications methods that allow: (a) the transmission or communication of Electronic Documents; (b) the documentation of transmissions, including sending and receipt; (c) printing of the transmitted Electronic Document by the recipient; (d) the storage and archiving of the Electronic Document by sender and recipient; and (e) the use by recipient of the Electronic Document for purposes permitted by this Contract. Electronic Means does not include the use of text messaging, or of Facebook, Twitter, Instagram, or similar social media services for transmission of Electronic Documents.

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.
24. *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.
 - a. The presence at the Site of materials that are necessary for the execution of the Work, or that are to be incorporated into the Work, and that are controlled and contained pursuant to industry practices, Laws and Regulations, and the requirements of the Contract, is not a Hazardous Environmental Condition.
 - b. The presence of Constituents of Concern that are to be removed or remediated as part of the Work is not a Hazardous Environmental Condition.
 - c. The presence of Constituents of Concern as part of the routine, anticipated, and obvious working conditions at the Site, is not a Hazardous Environmental Condition.
25. *Laws and Regulations; Laws or Regulations*—Any and all applicable laws, statutes, rules, regulations, ordinances, codes, and binding decrees, resolutions, and orders of any and all governmental bodies, agencies, authorities, and courts having jurisdiction.
26. *Liens*—Charges, security interests, or encumbrances upon Contract-related funds, real property, or personal property.
27. *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.
28. *Notice of Award*—The written notice by Owner to a Bidder of Owner's acceptance of the Bid.
29. *Notice to Proceed*—A written notice by Owner to Contractor fixing the date on which the Contract Times will commence to run and on which Contractor shall start to perform the Work.
30. *Owner*—The individual or entity with which Contractor has contracted regarding the Work, and which has agreed to pay Contractor for the performance of the Work, pursuant to the terms of the Contract.
31. *Progress Schedule*—A schedule, prepared and maintained by Contractor, describing the sequence and duration of the activities comprising Contractor's plan to accomplish the Work within the Contract Times.
32. *Project*—The total undertaking to be accomplished for Owner 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.
33. *Resident Project Representative*—The authorized representative of Engineer assigned to assist Engineer at the Site. As used herein, the term Resident Project Representative (RPR) includes any assistants or field staff of Resident Project Representative.

34. *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.
35. *Schedule of Submittals*—A schedule, prepared and maintained by Contractor, of required submittals and the time requirements for Engineer’s review of the submittals.
36. *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.
37. *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.
38. *Site*—Lands or areas indicated in the Contract Documents as being furnished by Owner upon which the Work is to be performed, including rights-of-way and easements, and such other lands or areas furnished by Owner which are designated for the use of Contractor.
39. *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.
40. *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.
41. *Submittal*—A written or graphic document, prepared by or for Contractor, which the Contract Documents require Contractor to submit to Engineer, or that is indicated as a Submittal in the Schedule of Submittals accepted by Engineer. Submittals may include Shop Drawings and Samples; schedules; product data; Owner-delegated designs; sustainable design information; information on special procedures; testing plans; results of tests and evaluations, source quality-control testing and inspections, and field or Site quality-control testing and inspections; warranties and certifications; Suppliers’ instructions and reports; records of delivery of spare parts and tools; operations and maintenance data; Project photographic documentation; record documents; and other such documents required by the Contract Documents. Submittals, whether or not approved or accepted by Engineer, are not Contract Documents. Change Proposals, Change Orders, Claims, notices, Applications for Payment, and requests for interpretation or clarification are not Submittals.
42. *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 of such Work.
43. *Successful Bidder*—The Bidder to which the Owner makes an award of contract.
44. *Supplementary Conditions*—The part of the Contract that amends or supplements these General Conditions.

45. *Supplier*—A manufacturer, fabricator, supplier, distributor, 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.
46. *Technical Data*
- a. Those items expressly identified as Technical Data in the Supplementary Conditions, with respect to either (1) existing subsurface conditions at or adjacent to the Site, or existing physical conditions at or adjacent to the Site including existing surface or subsurface structures (except Underground Facilities) or (2) Hazardous Environmental Conditions at the Site.
 - b. If no such express identifications of Technical Data have been made with respect to conditions at the Site, then Technical Data is defined, with respect to conditions at the Site under Paragraphs 5.03, 5.04, and 5.06, as the data contained in boring logs, recorded measurements of subsurface water levels, assessments of the condition of subsurface facilities, laboratory test results, and other factual, objective information regarding conditions at the Site that are set forth in any geotechnical, environmental, or other Site or facilities conditions report prepared for the Project and made available to Contractor.
 - c. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data, and instead Underground Facilities are shown or indicated on the Drawings.
47. *Underground Facilities*—All active or not-in-service underground lines, pipelines, conduits, ducts, encasements, cables, wires, manholes, vaults, tanks, tunnels, or other such facilities or systems at the Site, including but not limited to those facilities or systems that produce, transmit, distribute, or convey telephone or other communications, cable television, fiber optic transmissions, power, electricity, light, heat, gases, oil, crude oil products, liquid petroleum products, water, steam, waste, wastewater, storm water, other liquids or chemicals, or traffic or other control systems. An abandoned facility or system is not an Underground Facility.
48. *Unit Price Work*—Work to be paid for on the basis of unit prices.
49. *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.
50. *Work Change Directive*—A written directive to Contractor issued on or after the Effective Date of the Contract, signed by Owner and recommended by Engineer, ordering an addition, deletion, or revision in the Work.

1.02 Terminology

- A. The words and terms discussed in Paragraphs 1.02.B, C, D, and E are not defined terms that require initial capital letters, but, when used in the Bidding Requirements or Contract Documents, have the indicated meaning.
- B. *Intent of Certain Terms or Adjectives*: 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 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*: The word “day” means a calendar day of 24 hours measured from midnight to the next midnight.
- D. *Defective*: The word “defective,” when modifying the word “Work,” refers to Work that is unsatisfactory, faulty, or deficient in that it:
 - 1. does not conform to the Contract Documents;
 - 2. does not meet the requirements of any applicable inspection, reference standard, test, or approval referred to in the Contract Documents; or
 - 3. has been damaged prior to Engineer’s recommendation of final payment (unless responsibility for the protection thereof has been assumed by Owner at Substantial Completion in accordance with Paragraph 15.03 or Paragraph 15.04).
- E. *Furnish, Install, Perform, Provide*
 - 1. The word “furnish,” when used in connection with services, materials, or equipment, means 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, means 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, means 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. *Contract Price or Contract Times*: References to a change in “Contract Price or Contract Times” or “Contract Times or Contract Price” or similar, indicate that such change applies to (1) Contract Price, (2) Contract Times, or (3) both Contract Price and Contract Times, as warranted, even if the term “or both” is not expressed.
- G. 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 Performance and Payment Bonds; Evidence of Insurance

- A. *Performance and Payment Bonds:* When Contractor delivers the signed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner the performance bond and payment bond (if the Contract requires Contractor to furnish such bonds).
- B. *Evidence of Contractor's Insurance:* When Contractor delivers the signed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner, with copies to each additional insured (as identified in the Contract), the certificates, endorsements, and other evidence of insurance required to be provided by Contractor in accordance with Article 6, except to the extent the Supplementary Conditions expressly establish other dates for delivery of specific insurance policies.
- C. *Evidence of Owner's Insurance:* After receipt of the signed counterparts of the Agreement and all required bonds and insurance documentation, Owner shall promptly deliver to Contractor, with copies to each additional insured (as identified in the Contract), the certificates and other evidence of insurance required to be provided by Owner under Article 6.

2.02 Copies of Documents

- A. Owner shall furnish to Contractor four printed copies of the Contract (including one fully signed 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. Owner 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. Owner shall make such original printed record version of the Contract available to Contractor for review. Owner 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 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 Owner, 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 Owner 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 and receive information, render decisions relative to the Contract, and otherwise act on behalf of each respective party.

2.05 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 the schedules submitted in accordance with Paragraph 2.03.A. No progress payment will 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.
 - 4. If a schedule is not acceptable, Contractor will have an additional 10 days to revise and resubmit the schedule.

2.06 Electronic Transmittals

- A. Except as otherwise stated elsewhere in the Contract, the Owner, Engineer, and Contractor may send, and shall accept, Electronic Documents transmitted by Electronic Means.
- B. If the Contract does not establish protocols for Electronic Means, then Owner, Engineer, and Contractor shall jointly develop such protocols.
- C. Subject to any governing protocols for Electronic Means, when transmitting Electronic Documents by Electronic Means, the transmitting party makes no representations as to long-term compatibility, usability, or readability of the Electronic Documents 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 Electronic Documents.

ARTICLE 3—CONTRACT DOCUMENTS: INTENT, REQUIREMENTS, REUSE

3.01 Intent

- A. The Contract Documents are complementary; what is required by one Contract Document 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 versions of the Contract Documents (including any printed copies derived from such electronic versions) and the printed record version, the printed record version will 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.
- F. Any provision or part of the Contract Documents held to be void or unenforceable under any Law or Regulation will be deemed stricken, and all remaining provisions will continue to be valid and binding upon Owner and Contractor, which agree that the Contract Documents will 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.
- G. Nothing in the Contract Documents creates:
 - 1. any contractual relationship between Owner or Engineer and any Subcontractor, Supplier, or other individual or entity performing or furnishing any of the Work, for the benefit of such Subcontractor, Supplier, or other individual or entity; or
 - 2. any obligation on the part of Owner 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.

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, means 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, and no instruction of a Supplier, will be effective to change the duties or responsibilities of Owner, Contractor, or Engineer 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 Owner or Engineer 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 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 interpretation by Engineer, or by an amendment or supplement to the Contract issued pursuant to Paragraph 11.01.
3. Contractor shall not be liable to Owner 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 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 Owner shall submit to the Engineer in writing 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.
- 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 Owner, 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 notify Owner and Contractor in writing that Engineer is unable to provide a decision or interpretation. If Owner

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 versions, or reuse any such Drawings, Specifications, other documents, or copies thereof on extensions of the Project or any other project without written consent of Owner 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 without Owner'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 precludes 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 30th 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 60th day after the day of Bid opening or the 30th 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 may be done at the Site prior to such date.

4.03 Reference Points

- A. Owner 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 Owner. 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 must 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 Owner. No Work will be delayed or postponed pending resolution of any disputes or disagreements, or during any appeal process, except as permitted by Paragraph 16.04, or as Owner and Contractor may otherwise agree in writing.
- 4.05 Delays in Contractor's Progress
- A. If Owner, Engineer, or anyone for whom Owner is responsible, delays, disrupts, or interferes with the performance or progress of the Work, then Contractor shall be entitled to an equitable adjustment in Contract Price or 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 Owner, Contractor, and those for which they are responsible, then Contractor shall be entitled to an equitable adjustment in Contract Times. Such an adjustment will 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 third-party utility owners or other third-party entities (other than those third-party utility owners or other third-party entities performing other work at or adjacent to the Site as arranged by or under contract with Owner, as contemplated in Article 8); and
 4. Acts of war or terrorism.
- D. Contractor's entitlement to an adjustment of Contract Times or Contract Price is limited as follows:
1. Contractor's entitlement to an adjustment of the Contract Times is conditioned on the delay, disruption, or interference adversely affecting an activity on the critical path to completion of the Work, as of the time of the delay, disruption, or interference.
 2. Contractor shall not be entitled to an adjustment in Contract Price 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. Such a concurrent delay by Contractor shall not preclude an adjustment of Contract Times to which Contractor is otherwise entitled.

3. Adjustments of Contract Times or Contract Price are subject to the provisions of Article 11.
- E. Each Contractor request or Change Proposal seeking an increase in Contract Times or Contract Price must be supplemented by supporting data that sets forth in detail the following:
1. The circumstances that form the basis for the requested adjustment;
 2. The date upon which each cause of delay, disruption, or interference began to affect the progress of the Work;
 3. The date upon which each cause of delay, disruption, or interference ceased to affect the progress of the Work;
 4. The number of days' increase in Contract Times claimed as a consequence of each such cause of delay, disruption, or interference; and
 5. The impact on Contract Price, in accordance with the provisions of Paragraph 11.07.

Contractor shall also furnish such additional supporting documentation as Owner or Engineer may require including, where appropriate, a revised progress schedule indicating all the activities affected by the delay, disruption, or interference, and an explanation of the effect of the delay, disruption, or interference on the critical path to completion of the Work.

- F. 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, together with the provisions of Paragraphs 4.05.D and 4.05.E.
- G. Paragraph 8.03 addresses 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.

ARTICLE 5—SITE; SUBSURFACE AND PHYSICAL CONDITIONS; HAZARDOUS ENVIRONMENTAL CONDITIONS

5.01 Availability of Lands

- A. Owner shall furnish the Site. Owner shall notify Contractor in writing 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, Owner 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 Owner'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, or to improvements, structures, utilities, or similar facilities located at such adjacent lands 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 7.13, 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 in a court of competent jurisdiction; and (c) to the fullest extent permitted by Laws and Regulations, indemnify and hold harmless Owner 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 Owner, 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.
- 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 will 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 Owner. 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. *Reports and Drawings*: The Supplementary Conditions identify:
1. Those reports of explorations and tests of subsurface conditions at or adjacent to the Site that contain Technical Data;
 2. Those drawings of existing physical conditions at or adjacent to the Site, including those drawings depicting existing surface or subsurface structures at or adjacent to the Site (except Underground Facilities), that contain Technical Data; and
 3. Technical Data contained in such reports and drawings.
- B. *Underground Facilities*: Underground Facilities are shown or indicated on the Drawings, pursuant to Paragraph 5.05, and not in the drawings referred to in Paragraph 5.03.A. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data.
- C. *Reliance by Contractor on Technical Data*: Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely upon the accuracy of the Technical Data as defined in Paragraph 1.01.A.46.b.
- D. *Limitations of Other Data and Documents*: Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:
1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences, and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto;
 2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings;
 3. the contents of other Site-related documents made available to Contractor, such as record drawings from other projects at or adjacent to the Site, or Owner's archival documents concerning the Site; or
 4. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions, or information.

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:
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;
 2. is of such a nature as to require a change in the Drawings or Specifications;
 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 Owner 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 whether it is necessary for Owner to obtain 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; obtain any pertinent cost or schedule information from Contractor; prepare recommendations to Owner 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 Owner in writing of Engineer's findings, conclusions, and recommendations.
- C. *Owner's Statement to Contractor Regarding Site Condition:* After receipt of Engineer's written findings, conclusions, and recommendations, Owner 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. *Early Resumption of Work:* If at any time Engineer determines that Work in connection with the subsurface or physical condition in question may resume prior to completion of Engineer's review or Owner's issuance of its statement to Contractor, because the condition in question has been adequately documented, and analyzed on a preliminary basis, then the Engineer may at its discretion instruct Contractor to resume such Work.
- E. *Possible Price and Times Adjustments*
 - 1. Contractor shall be entitled to an equitable adjustment in Contract Price or Contract Times, 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 subject to the provisions of Paragraphs 4.05.D and 4.05.E.
 - 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 Owner with respect to Contract Price and Contract Times by the submission of a Bid or becoming bound under a negotiated contract, or otherwise;

- 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 required by Paragraph 5.04.A.
 3. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, then any such adjustment will 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, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the subsurface or physical condition in question.
- F. *Underground Facilities; Hazardous Environmental Conditions:* Paragraph 5.05 governs rights and responsibilities regarding the presence or location of Underground Facilities. Paragraph 5.06 governs rights and responsibilities regarding Hazardous Environmental Conditions. The provisions of Paragraphs 5.03 and 5.04 are not applicable to the presence or location of Underground Facilities, or to Hazardous Environmental Conditions.

5.05 Underground Facilities

- A. *Contractor's Responsibilities:* Unless it is otherwise expressly provided in the Supplementary Conditions, the cost of all of the following are included in the Contract Price, and Contractor shall have full responsibility for:
 1. reviewing and checking all information and data regarding existing Underground Facilities at the Site;
 2. complying with applicable state and local utility damage prevention Laws and Regulations;
 3. verifying the actual location of those Underground Facilities shown or indicated in the Contract Documents as being within the area affected by the Work, by exposing such Underground Facilities during the course of construction;
 4. coordination of the Work with the owners (including Owner) of such Underground Facilities, during construction; and
 5. 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 on the Drawings, or was not shown or indicated on the Drawings 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), notify Owner and Engineer in writing regarding such Underground Facility.
- C. *Engineer's Review:* Engineer will:
 1. promptly review the Underground Facility and conclude whether such Underground Facility was not shown or indicated on the Drawings, or was not shown or indicated with reasonable accuracy;

2. identify and communicate with the owner of the Underground Facility; prepare recommendations to Owner (and if necessary issue any preliminary instructions to Contractor) regarding the Contractor's resumption of Work in connection with the Underground Facility in question;
3. obtain any pertinent cost or schedule information from Contractor; 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
4. advise Owner 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. *Owner's Statement to Contractor Regarding Underground Facility:* After receipt of Engineer's written findings, conclusions, and recommendations, Owner 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. *Early Resumption of Work:* If at any time Engineer determines that Work in connection with the Underground Facility may resume prior to completion of Engineer's review or Owner's issuance of its statement to Contractor, because the Underground Facility in question and conditions affected by its presence have been adequately documented, and analyzed on a preliminary basis, then the Engineer may at its discretion instruct Contractor to resume such Work.
- F. *Possible Price and Times Adjustments*
 1. Contractor shall be entitled to an equitable adjustment in the Contract Price or Contract Times, to the extent that any existing Underground Facility at the Site that was not shown or indicated on the Drawings, or was not shown or indicated with reasonable accuracy, 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. 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;
 - b. Contractor's entitlement to an adjustment of the Contract Times is subject to the provisions of Paragraphs 4.05.D and 4.05.E; and
 - c. Contractor gave the notice required in Paragraph 5.05.B.
 2. If Owner and Contractor agree regarding Contractor's entitlement to and the amount or extent of any adjustment in the Contract Price or Contract Times, then any such adjustment will 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, no later than 30 days after Owner's issuance of the Owner's written statement to Contractor regarding the Underground Facility in question.

4. The information and data shown or indicated on the Drawings with respect to existing Underground Facilities at the Site is based on information and data (a) furnished by the owners of such Underground Facilities, or by others, (b) obtained from available records, or (c) gathered in an investigation conducted in accordance with the current edition of ASCE 38, Standard Guideline for the Collection and Depiction of Existing Subsurface Utility Data, by the American Society of Civil Engineers. If such information or data is incorrect or incomplete, Contractor's remedies are limited to those set forth in this Paragraph 5.05.F.

5.06 Hazardous Environmental Conditions at Site

- A. *Reports and Drawings:* The Supplementary Conditions identify:
 1. those reports known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site;
 2. drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site; and
 3. Technical Data contained in such reports and drawings.
- B. *Reliance by Contractor on Technical Data Authorized:* Contractor may rely upon the accuracy of the Technical Data expressly identified in the Supplementary Conditions with respect to such reports and drawings, but such reports and drawings are not Contract Documents. If no such express identification has been made, then Contractor may rely on the accuracy of the Technical Data as defined in Paragraph 1.01.A.46.b. Except for such reliance on Technical Data, Contractor may not rely upon or make any claim against Owner or Engineer, or any of their officers, directors, members, partners, employees, agents, consultants, or subcontractors, with respect to:
 1. the completeness of such reports and drawings for Contractor's purposes, including, but not limited to, any aspects of the means, methods, techniques, sequences and procedures of construction to be employed by Contractor, and safety precautions and programs incident thereto;
 2. other data, interpretations, opinions, and information contained in such reports or shown or indicated in such drawings; or
 3. any Contractor interpretation of or conclusion drawn from any Technical Data or any such other data, interpretations, opinions or information.
- 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 Owner and Engineer (and promptly thereafter confirm such notice in writing). Owner shall promptly consult with Engineer concerning the necessity for Owner to retain a qualified expert to evaluate such condition or take corrective action, if any. Promptly after consulting with Engineer, Owner shall take such actions as are necessary to permit Owner to timely obtain required permits and provide Contractor the written notice required by Paragraph 5.06.F. If Contractor or anyone for whom Contractor is responsible created the Hazardous Environmental Condition in question, then Owner 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 Owner 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 Owner 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, as a result of such Work stoppage, such special conditions under which Work is agreed to be resumed by Contractor, or any costs or expenses incurred in response to the Hazardous Environmental Condition, then within 30 days of Owner's written notice regarding the resumption of Work, Contractor may submit a Change Proposal, or Owner may impose a set-off. Entitlement to any such adjustment is subject to the provisions of Paragraphs 4.05.D, 4.05.E, 11.07, and 11.08.
- 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 Owner 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. Owner may have such deleted portion of the Work performed by Owner's own forces or others in accordance with Article 8.
- I. To the fullest extent permitted by Laws and Regulations, Owner 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, 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.I obligates Owner 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 Owner 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 obligates Contractor to indemnify any individual or entity from and against the consequences of that individual's or entity's own negligence.

- 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 Contractor's obligations under the Contract. These bonds must 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 terms of a prescribed bond form, the Supplementary Conditions, or other provisions of the Contract.
- B. Contractor shall also furnish such other bonds (if any) as are required by the Supplementary Conditions or other provisions of the Contract.
- C. All bonds must be in the form included in the Bidding Documents or otherwise specified by Owner prior to execution of the Contract, except as provided otherwise by Laws or Regulations, and must be issued and signed by a surety named in "Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies" as published in Department Circular 570 (as amended and supplemented) by the Bureau of the Fiscal Service, 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 must show that it is effective on the date the agent or attorney-in-fact signed the accompanying bond.
- D. Contractor shall obtain the required bonds from surety companies that are duly licensed or authorized, in the state or jurisdiction in which the Project is located, to issue bonds in the required amounts.
- E. If the surety on a bond furnished by Contractor is declared bankrupt or becomes insolvent, or the surety ceases to meet the requirements above, then Contractor shall promptly notify Owner and Engineer in writing and shall, within 20 days after the event giving rise to such notification, provide another bond and surety, both of which must comply with the bond and surety requirements above.
- F. If Contractor has failed to obtain a required bond, Owner may exclude the Contractor from the Site and exercise Owner's termination rights under Article 16.
- G. Upon request to Owner from any Subcontractor, Supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of the Work, Owner shall provide a copy of the payment bond to such person or entity.

- H. Upon request to Contractor from any Subcontractor, Supplier, or other person or entity claiming to have furnished labor, services, materials, or equipment used in the performance of the Work, Contractor shall provide a copy of the payment bond to such person or entity.

6.02 Insurance—General Provisions

- A. Owner 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 Owner 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 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. Alternative forms of insurance coverage, including but not limited to self-insurance and “Occupational Accident and Excess Employer’s Indemnity Policies,” are not sufficient to meet the insurance requirements of this Contract, unless expressly allowed in the Supplementary Conditions.
- D. Contractor shall deliver to Owner, with copies to each additional insured identified in the Contract, certificates of insurance and endorsements establishing that Contractor has obtained and is maintaining the policies and coverages required by the Contract. Upon request by Owner or any other insured, Contractor shall also furnish other evidence of such required insurance, including but not limited to copies of policies, documentation of applicable self-insured retentions (if allowed) and deductibles, full disclosure of all relevant exclusions, and evidence of insurance required to be purchased and maintained by Subcontractors or Suppliers. In any documentation furnished under this provision, Contractor, Subcontractors, and Suppliers may block out (redact) (1) any confidential premium or pricing information and (2) any wording specific to a project or jurisdiction other than those applicable to this Contract.
- E. Owner shall deliver to Contractor, with copies to each additional insured identified in the Contract, certificates of insurance and endorsements establishing that Owner has obtained and is maintaining the policies and coverages required of Owner by the Contract (if any). Upon request by Contractor or any other insured, Owner shall also provide other evidence of such required insurance (if any), including but not limited to copies of policies, documentation of applicable self-insured retentions (if allowed) and deductibles, and full disclosure of all relevant exclusions. In any documentation furnished under this provision, Owner may block out (redact) (1) any confidential premium or pricing information and (2) any wording specific to a project or jurisdiction other than those relevant to this Contract.
- F. Failure of Owner or Contractor to demand such certificates or other evidence of the other party’s full compliance with these insurance requirements, or failure of Owner or Contractor to identify a deficiency in compliance from the evidence provided, will not be construed as a waiver of the other party’s obligation to obtain and maintain such insurance.
- G. In addition to the liability insurance required to be provided by Contractor, the Owner, at Owner’s option, may purchase and maintain Owner’s own liability insurance. Owner’s liability policies, if any, operate separately and independently from policies required to be provided by Contractor, and Contractor cannot rely upon Owner’s liability policies for any of Contractor’s obligations to the Owner, Engineer, or third parties.

- H. Contractor shall require:
 - 1. Subcontractors to purchase and maintain worker's compensation, commercial general liability, and other insurance that is appropriate for their participation in the Project, and to name as additional insureds Owner and Engineer (and any other individuals or entities identified in the Supplementary Conditions as additional insureds on Contractor's liability policies) on each Subcontractor's commercial general liability insurance policy; and
 - 2. Suppliers to purchase and maintain insurance that is appropriate for their participation in the Project.
- I. If either party does not purchase or maintain 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.
- J. If Contractor has failed to obtain and maintain required insurance, Contractor's entitlement to enter or remain at the Site will end immediately, and Owner may impose an appropriate set-off against payment for any associated costs (including but not limited to the cost of purchasing necessary insurance coverage), and exercise Owner's termination rights under Article 16.
- K. Without prejudice to any other right or remedy, if a party has failed to obtain required insurance, the other party may elect (but is in no way obligated) 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 will be adjusted accordingly.
- L. Owner does not represent that insurance coverage and limits established in this Contract necessarily will be adequate to protect Contractor or Contractor's interests. Contractor is responsible for determining whether such coverage and limits are adequate to protect its interests, and for obtaining and maintaining any additional insurance that Contractor deems necessary.
- M. The insurance and insurance limits required herein will not be deemed as a limitation on Contractor's liability, or that of its Subcontractors or Suppliers, under the indemnities granted to Owner and other individuals and entities in the Contract or otherwise.
- N. All the policies of insurance required to be purchased and maintained under this Contract will contain a provision or endorsement that the coverage afforded will not be canceled, 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 and Engineer.

6.03 Contractor's Insurance

- A. *Required Insurance:* Contractor shall purchase and maintain Worker's Compensation, Commercial General Liability, and other insurance pursuant to the specific requirements of the Supplementary Conditions.
- B. *General Provisions:* The policies of insurance required by this Paragraph 6.03 as supplemented must:
 - 1. include at least the specific coverages required;

2. be written for not less than the limits provided, or those required by Laws or Regulations, whichever is greater;
 3. remain in effect at least until the Work is complete (as set forth in Paragraph 15.06.D), and longer if expressly required elsewhere in this Contract, 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;
 4. apply with respect to the performance of the Work, whether such performance is 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; and
 5. include all necessary endorsements to support the stated requirements.
- C. *Additional Insureds*: The Contractor's commercial general liability, automobile liability, employer's liability, umbrella or excess, pollution liability, and unmanned aerial vehicle liability policies, if required by this Contract, must:
1. include and list as additional insureds Owner and Engineer, and any individuals or entities identified as additional insureds in the Supplementary Conditions;
 2. include coverage for the respective officers, directors, members, partners, employees, and consultants of all such additional insureds;
 3. afford primary coverage to these additional insureds for all claims covered thereby (including as applicable those arising from both ongoing and completed operations);
 4. not seek contribution from insurance maintained by the additional insured; and
 5. as to commercial general liability insurance, apply to additional insureds with respect to liability caused in whole or in part by Contractor's acts or omissions, or the acts and omissions of those working on Contractor's behalf, in the performance of Contractor's operations.

6.04 Builder's Risk and Other 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 Work's full insurable replacement cost (subject to such deductible amounts as may be provided in the Supplementary Conditions or required by Laws and Regulations). The specific requirements applicable to the builder's risk insurance are set forth in the Supplementary Conditions.
- B. *Property Insurance for Facilities of Owner Where Work Will Occur*: Owner is responsible for obtaining and maintaining property insurance covering each existing structure, building, or facility in which any part of the Work will occur, or to which any part of the Work will attach or be adjoined. Such property insurance will be written on a special perils (all-risk) form, on a replacement cost basis, providing coverage consistent with that required for the builder's risk insurance, and will be maintained until the Work is complete, as set forth in Paragraph 15.06.D.
- C. *Property Insurance for Substantially Complete Facilities*: Promptly after Substantial Completion, and before actual occupancy or use of the substantially completed Work, Owner will obtain property insurance for such substantially completed Work, and maintain such

property insurance at least until the Work is complete, as set forth in Paragraph 15.06.D. Such property insurance will be written on a special perils (all-risk) form, on a replacement cost basis, and provide coverage consistent with that required for the builder's risk insurance. The builder's risk insurance may terminate upon written confirmation of Owner's procurement of such property insurance.

- D. *Partial Occupancy or Use by Owner:* If Owner 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 Owner (directly, if it is the purchaser of the builder's risk policy, or through Contractor) will provide advance notice of such occupancy or use to the builder's risk insurer, and obtain an endorsement consenting to the continuation of coverage prior to commencing such partial occupancy or use.
- E. *Insurance of Other Property; Additional Insurance:* If the express insurance provisions of the Contract do not require or address the insurance of a property item or interest, then the entity or individual owning such property item will be responsible for insuring it. If Contractor elects to obtain other special insurance to be included in or supplement the property insurance policies provided under this Paragraph 6.04, it may do so at Contractor's expense.

6.05 Property Losses; Subrogation

- A. The builder's risk insurance policy purchased and maintained in accordance with Paragraph 6.04 (or an installation floater policy if authorized by the Supplementary Conditions), will contain provisions to the effect that in the event of payment of any loss or damage the insurer 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.
 - 1. Owner 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, risks, 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 individuals or entities identified in the Supplementary Conditions as builder's risk or installation floater 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.
 - 2. None of the above waivers extends to the rights that any party making such waiver may have to the proceeds of insurance held by Owner or Contractor as trustee or fiduciary, or otherwise payable under any policy so issued.
- B. Any property insurance policy maintained by Owner covering any loss, damage, or consequential loss to Owner's existing structures, buildings, or facilities in which any part of the Work will occur, or to which any part of the Work will attach or adjoin; to adjacent structures, buildings, or facilities of Owner; or to part or all of the completed or substantially completed Work, 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, will contain provisions to the effect that in the event of payment of any loss or damage the insurer will have no rights of recovery against any insureds thereunder, or against Contractor, Subcontractors, or Engineer, or the officers, directors, members, partners, employees, agents, consultants, or subcontractors of each and any of them, and

that the insured is allowed to waive the insurer's rights of subrogation in a written contract executed prior to the loss, damage, or consequential loss.

1. Owner waives 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 all losses and damages caused by, arising out of, or resulting from fire or any of the perils, risks, or causes of loss covered by such policies.
- C. The waivers in this Paragraph 6.05 include the waiver of rights due to business interruption, loss of use, or other consequential loss extending beyond direct physical loss or damage to Owner's property or the Work caused by, arising out of, or resulting from fire or other insured peril, risk, or cause of loss.
- D. Contractor shall be responsible for assuring that each Subcontract contains provisions whereby the Subcontractor waives all rights against Owner, 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 fire or other peril, risk, or cause of loss covered by builder's risk insurance, installation floater, and any other property insurance applicable to the Work.

6.06 Receipt and Application of Property Insurance Proceeds

- A. Any insured loss under the builder's risk and other policies of property insurance required by Paragraph 6.04 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 6.04 shall maintain such proceeds in a segregated account, and 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, Contractor shall repair or replace the damaged Work, using allocated insurance proceeds.

ARTICLE 7—CONTRACTOR'S RESPONSIBILITIES

7.01 Contractor's Means and Methods of Construction

- A. Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction.
- B. If the Contract Documents note, or Contractor determines, that professional engineering or other design services are needed to carry out Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures, or for Site safety, then Contractor

shall cause such services to be provided by a properly licensed design professional, at Contractor's expense. Such services are not Owner-delegated professional design services under this Contract, and neither Owner nor Engineer has any responsibility with respect to (1) Contractor's determination of the need for such services, (2) the qualifications or licensing of the design professionals retained or employed by Contractor, (3) the performance of such services, or (4) any errors, omissions, or defects in such services.

7.02 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.
- B. At all times during the progress of the Work, Contractor shall assign a competent resident superintendent who will not be replaced without written notice to Owner and Engineer except under extraordinary circumstances.

7.03 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 maintain good discipline and order at the Site.
- B. Contractor shall be fully responsible to Owner and Engineer for all acts and omissions of Contractor's employees; of Suppliers and Subcontractors, and their employees; and of any other individuals or entities performing or furnishing any of the Work, just as Contractor is responsible for Contractor's own acts and omissions.
- C. 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 will 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 Owner's written consent, which will not be unreasonably withheld.

7.04 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, 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 must be new and of good quality, except as otherwise provided in the Contract Documents. All special warranties and guarantees required by the Specifications will expressly run to the benefit of Owner. 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 must 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.

7.05 “Or Equals”

- A. *Contractor’s Request; Governing Criteria:* Whenever an item of equipment or material is specified or described in the Contract Documents by using the names of one or more proprietary items or specific Suppliers, 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 equipment or material, or items from other proposed Suppliers, under the circumstances described below.
1. If Engineer in its sole discretion determines that an item of equipment or material proposed by Contractor is functionally equal to that named and sufficiently similar so that no change in related Work will be required, Engineer will deem it an “or equal” item. For the purposes of this paragraph, a proposed item of equipment or material will be considered functionally equal to an item so named if:
 - a. in the exercise of reasonable judgment Engineer determines that the proposed item:
 - 1) is at least equal in materials of construction, quality, durability, appearance, strength, and design characteristics;
 - 2) 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) has a proven record of performance and availability of responsive service; and
 - 4) is not objectionable to Owner.
 - b. Contractor certifies that, if the proposed item is approved and incorporated into the Work:
 - 1) there will be no increase in cost to the Owner or increase in Contract Times; and
 - 2) the item will conform substantially to the detailed requirements of the item named in the Contract Documents.
- 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 will result in any change in Contract Price. The Engineer’s denial of an “or-equal” request will be final and binding, and may not be reversed through an appeal under any provision of the Contract.

- E. *Treatment as a Substitution Request*: If Engineer determines that an item of equipment or material proposed by Contractor does not qualify as an “or-equal” item, Contractor may request that Engineer consider the item a proposed substitute pursuant to Paragraph 7.06.

7.06 Substitutes

- A. *Contractor’s Request; Governing Criteria*: Unless the specification or description of an item of equipment or material 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 equipment or material under the circumstances described below. To the extent possible such requests must 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 equipment or material from anyone other than Contractor.
 2. The requirements for review by Engineer will be as set forth in Paragraph 7.06.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 equipment or material that Contractor seeks to furnish or use. The application:
 - a. will 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 the item specified; and
 - 3) be suited to the same use as the item specified.
 - 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 Owner 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 the item specified; and
 - 2) available engineering, sales, maintenance, repair, and replacement services.
 - d. will 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 Owner. 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*: Owner 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 Owner for the reasonable charges of Engineer for evaluating each such proposed substitute. Contractor shall also reimburse Owner for the reasonable charges of Engineer for making changes in the Contract Documents (or in the provisions of any other direct contract with Owner) 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 will be final and binding, and may not be reversed through an appeal under any provision of the Contract. Contractor may challenge the scope of reimbursement costs imposed under Paragraph 7.06.D, by timely submittal of a Change Proposal.

7.07 Concerning Subcontractors and Suppliers

- A. Contractor may retain Subcontractors and Suppliers for the performance of parts of the Work. Such Subcontractors and Suppliers must be acceptable to Owner. The Contractor's retention of a Subcontractor or Supplier for the performance of parts of the Work will not relieve Contractor's obligation to Owner to perform and complete the Work in accordance with the Contract Documents.
- B. Contractor shall retain specific Subcontractors and Suppliers 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, Owner may not require Contractor to retain any Subcontractor or Supplier 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 Owner the identity of the proposed Subcontractor or Supplier (unless Owner has already deemed such proposed Subcontractor or Supplier acceptable during the bidding process or otherwise). Such proposed Subcontractor or Supplier shall be deemed acceptable to Owner unless Owner raises a substantive, reasonable objection within 5 days.
- E. Owner may require the replacement of any Subcontractor or Supplier. Owner also may require Contractor to retain specific replacements; provided, however, that Owner may not require a replacement to which Contractor has a reasonable objection. If Contractor has

submitted the identity of certain Subcontractors or Suppliers for acceptance by Owner, and Owner has accepted it (either in writing or by failing to make written objection thereto), then Owner may subsequently revoke the acceptance of any such Subcontractor or Supplier so identified solely on the basis of substantive, reasonable objection after due investigation. Contractor shall submit an acceptable replacement for the rejected Subcontractor or Supplier.

- F. If Owner requires the replacement of any Subcontractor or Supplier retained by Contractor to perform any part of the Work, then Contractor shall be entitled to an adjustment in Contract Price or Contract Times, with respect to the replacement; and Contractor shall initiate a Change Proposal for such adjustment within 30 days of Owner's requirement of replacement.
- G. No acceptance by Owner of any such Subcontractor or Supplier, whether initially or as a replacement, will constitute a waiver of the right of Owner 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 solely responsible for scheduling and coordinating the work of Subcontractors and Suppliers.
- J. The divisions and sections of the Specifications and the identifications of any Drawings do not control Contractor in dividing the Work among Subcontractors or Suppliers, or in delineating the Work to be performed by any specific trade.
- K. All Work performed for Contractor by a Subcontractor or Supplier must be pursuant to an appropriate contractual agreement that specifically binds the Subcontractor or Supplier to the applicable terms and conditions of the Contract for the benefit of Owner and Engineer.
- L. Owner may furnish to any Subcontractor or Supplier, to the extent practicable, information about amounts paid to Contractor for Work performed for Contractor by the Subcontractor or Supplier.
- M. Contractor shall restrict all Subcontractors and Suppliers from communicating with Engineer or Owner, except through Contractor or in case of an emergency, or as otherwise expressly allowed in this Contract.

7.08 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 an 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 Owner 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 will be disclosed in the Contract Documents.
- B. To the fullest extent permitted by Laws and Regulations, Owner 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 Owner 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 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.

7.09 Permits

- A. Unless otherwise provided in the Contract Documents, Contractor shall obtain and pay for all construction permits, licenses, and certificates of occupancy. Owner 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). Owner shall pay all charges of utility owners for connections for providing permanent service to the Work.

7.10 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.

7.11 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. Neither Owner 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 Owner 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 is not Contractor's responsibility to make certain that the Work described in the Contract Documents is in accordance with Laws and Regulations, but this does not relieve Contractor of its obligations under Paragraph 3.03.
- C. Owner or Contractor may give written 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 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 Owner 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 written notice Contractor may submit a Change Proposal, or Owner may initiate a Claim.

7.12 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.

7.13 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.
- B. Contractor shall designate a qualified and experienced safety representative whose duties and responsibilities are the prevention of Work-related accidents and the maintenance and supervision of safety precautions and programs.
- C. 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.
- D. All damage, injury, or loss to any property referred to in Paragraph 7.13.C.2 or 7.13.C.3 caused, directly or indirectly, in whole or in part, by Contractor, any Subcontractor, 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 Owner 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).
- E. 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.
- F. Contractor shall notify Owner; the owners of adjacent property; the owners of Underground Facilities and other utilities (if the identity of such owners is known to Contractor); and other

contractors and utility owners performing work at or adjacent to the Site, in writing, when Contractor knows that 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.

- G. Contractor shall comply with the applicable requirements of Owner's safety programs, if any. Any Owner's safety programs that are applicable to the Work are identified or included in the Supplementary Conditions or Specifications.
- H. Contractor shall inform Owner and Engineer of the specific requirements of Contractor's safety program with which Owner's and Engineer's employees and representatives must comply while at the Site.
- I. Contractor's duties and responsibilities for safety and protection will continue until all the Work is completed, Engineer has issued a written notice to Owner and Contractor in accordance with Paragraph 15.06.C that the Work is acceptable, and Contractor has left the Site (except as otherwise expressly provided in connection with Substantial Completion).
- J. Contractor's duties and responsibilities for safety and protection will 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.

7.14 Hazard Communication Programs

- A. Contractor shall be responsible for coordinating any exchange of safety data sheets (formerly known as 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 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 by an emergency, or are required as a result of Contractor's response to an emergency. If Engineer determines that a change in the Contract Documents is required because of an emergency or Contractor's response, a Work Change Directive or Change Order will be issued.

7.16 Submittals

A. *Shop Drawing and Sample Requirements*

1. Before submitting a Shop Drawing or Sample, Contractor shall:
 - a. review and coordinate the Shop Drawing or Sample with other Shop Drawings and Samples and with the requirements of the Work and the Contract Documents;
 - b. determine and verify:
 - 1) all field measurements, quantities, dimensions, specified performance and design criteria, installation requirements, materials, catalog numbers, and similar information with respect to the Submittal;

- 2) 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
 - 3) all information relative to Contractor's responsibilities for means, methods, techniques, sequences, and procedures of construction, and safety precautions and programs incident thereto;
 - c. confirm that the Submittal is complete with respect to all related data included in the Submittal.
 2. Each Shop Drawing or Sample must 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 Shop Drawing or Sample, Contractor shall give Engineer specific written notice of any variations that the Submittal may have from the requirements of the Contract Documents. This notice must be set forth in a written communication separate from the Submittal; and, in addition, in the case of a Shop Drawing by a specific notation made on the Shop Drawing itself.
- B. *Submittal Procedures for Shop Drawings and Samples:* Contractor shall label and submit Shop Drawings and Samples to Engineer for review and approval in accordance with the accepted Schedule of Submittals.
 1. *Shop Drawings*
 - a. Contractor shall submit the number of copies required in the Specifications.
 - b. Data shown on the Shop Drawings must 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.C.
 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.C.
 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. *Engineer's Review of Shop Drawings and Samples*
 1. Engineer will provide timely review of Shop Drawings and Samples in accordance with the accepted Schedule of Submittals. Engineer's review and approval will be only to determine if the items covered by the Submittals will, after installation or incorporation in the Work, comply with the requirements of 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 will 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 or other appropriate Contract modification.
5. Engineer's review and approval of a Shop Drawing or Sample will not relieve Contractor from responsibility for complying with the requirements of Paragraphs 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, will 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 or Sample will 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.C.4.

D. Resubmittal Procedures for Shop Drawings and Samples

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 Shop Drawing and Sample submittals with sufficient information and accuracy to obtain required approval of an item with no more than two resubmittals. Engineer will record Engineer's time for reviewing a third or subsequent resubmittal of a Shop Drawing or Sample, and Contractor shall be responsible for Engineer's charges to Owner for such time. Owner may impose a set-off against payments due Contractor to secure reimbursement for such charges.
3. If Contractor requests a change of a previously approved Shop Drawing or Sample, Contractor shall be responsible for Engineer's charges to Owner for its review time, and Owner may impose a set-off against payments due Contractor to secure reimbursement for such charges, unless the need for such change is beyond the control of Contractor.

- E. *Submittals Other than Shop Drawings, Samples, and Owner-Delegated Designs*
1. The following provisions apply to all Submittals other than Shop Drawings, Samples, and Owner-delegated designs:
 - a. Contractor shall submit all such Submittals to the Engineer in accordance with the Schedule of Submittals and pursuant to the applicable terms of the Contract Documents.
 - b. Engineer will provide timely review of all such Submittals in accordance with the Schedule of Submittals and return such Submittals with a notation of either Accepted or Not Accepted. Any such Submittal that is not returned within the time established in the Schedule of Submittals will be deemed accepted.
 - c. Engineer's review will be only to determine if the Submittal is acceptable under the requirements of the Contract Documents as to general form and content of the Submittal.
 - d. If any such Submittal is not accepted, Contractor shall confer with Engineer regarding the reason for the non-acceptance, and resubmit an acceptable document.
 2. Procedures for the submittal and acceptance of the Progress Schedule, the Schedule of Submittals, and the Schedule of Values are set forth in Paragraphs 2.03, 2.04, and 2.05.
- F. Owner-delegated Designs: Submittals pursuant to Owner-delegated designs are governed by the provisions of Paragraph 7.19.

7.17 Contractor's General Warranty and Guarantee

- A. Contractor warrants and guarantees to Owner that all Work will be in accordance with the Contract Documents and will not be defective. Engineer is entitled to rely on Contractor's warranty and guarantee.
- B. Owner's rights under this warranty and guarantee are in addition to, and are not limited by, Owner's rights under the correction period provisions of Paragraph 15.08. The time in which Owner may enforce its warranty and guarantee rights under this Paragraph 7.17 is limited only by applicable Laws and Regulations restricting actions to enforce such rights; provided, however, that after the end of the correction period under Paragraph 15.08:
 1. Owner shall give Contractor written notice of any defective Work within 60 days of the discovery that such Work is defective; and
 2. Such notice will be deemed the start of an event giving rise to a Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days of the notice.
- C. Contractor's warranty and guarantee hereunder excludes defects or damage caused by:
 1. abuse, or improper modification, 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.
- D. Contractor's obligation to perform and complete the Work in accordance with the Contract Documents is absolute. None of the following will constitute an acceptance of Work that is not in accordance with the Contract Documents, a release of Contractor's obligation to

perform the Work in accordance with the Contract Documents, or a release of Owner's warranty and guarantee rights under this Paragraph 7.17:

1. Observations by Engineer;
 2. Recommendation by Engineer or payment by Owner of any progress or final payment;
 3. The issuance of a certificate of Substantial Completion by Engineer or any payment related thereto by Owner;
 4. Use or occupancy of the Work or any part thereof by Owner;
 5. Any review and approval of a Shop Drawing or Sample submittal;
 6. The issuance of a notice of acceptability by Engineer;
 7. The end of the correction period established in Paragraph 15.08;
 8. Any inspection, test, or approval by others; or
 9. Any correction of defective Work by Owner.
- E. If the Contract requires the Contractor to accept the assignment of a contract entered into by Owner, then the specific warranties, guarantees, and correction obligations contained in the assigned contract will govern with respect to Contractor's performance obligations to Owner 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 Owner and Engineer, and the officers, directors, members, partners, employees, agents, consultants and subcontractors of each and any of them, from losses, damages, costs, and judgments (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 from third-party claims or actions relating to or resulting from the performance or furnishing of the Work, provided that any such claim, action, loss, cost, judgment or damage is attributable to bodily injury, sickness, disease, or death, or to damage 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 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 Owner 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 will 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.

7.19 Delegation of Professional Design Services

- A. Owner may require Contractor to provide professional design services for a portion of the Work by express delegation in the Contract Documents. Such delegation will specify the performance and design criteria that such services must satisfy, and the Submittals that Contractor must furnish to Engineer with respect to the Owner-delegated design.
- B. Contractor shall cause such Owner-delegated professional design services to be provided pursuant to the professional standard of care by a properly licensed design professional, whose signature and seal must appear on all drawings, calculations, specifications, certifications, and Submittals prepared by such design professional. Such design professional must issue all certifications of design required by Laws and Regulations.
- C. If a Shop Drawing or other Submittal related to the Owner-delegated design is prepared by Contractor, a Subcontractor, or others for submittal to Engineer, then such Shop Drawing or other Submittal must bear the written approval of Contractor's design professional when submitted by Contractor to Engineer.
- D. Owner and Engineer shall be entitled to rely upon the adequacy, accuracy, and completeness of the services, certifications, and approvals performed or provided by the design professionals retained or employed by Contractor under an Owner-delegated design, subject to the professional standard of care and the performance and design criteria stated in the Contract Documents.
- E. Pursuant to this Paragraph 7.19, Engineer's review, approval, and other determinations regarding design drawings, calculations, specifications, certifications, and other Submittals furnished by Contractor pursuant to an Owner-delegated design will be only for the following limited purposes:
 - 1. Checking for conformance with the requirements of this Paragraph 7.19;
 - 2. Confirming that Contractor (through its design professionals) has used the performance and design criteria specified in the Contract Documents; and
 - 3. Establishing that the design furnished by Contractor is consistent with the design concept expressed in the Contract Documents.
- F. Contractor shall not be responsible for the adequacy of performance or design criteria specified by Owner or Engineer.
- G. Contractor is not required to provide professional services in violation of applicable Laws and Regulations.

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 Owner may perform other work at or adjacent to the Site. Such other work may be performed by Owner's employees, or through contracts between the Owner and third parties. Owner may also arrange to have third-party utility owners perform work on their utilities and facilities at or adjacent to the Site.
- B. If Owner performs other work at or adjacent to the Site with Owner's employees, or through contracts for such other work, then Owner shall give Contractor written notice thereof prior to starting any such other work. If Owner has advance information regarding the start of any

third-party utility work that Owner has arranged to take place at or adjacent to the Site, Owner shall provide such information to Contractor.

- C. Contractor shall afford proper and safe access to the Site to each contractor that performs such other work, each utility owner performing other work, and Owner, if Owner is performing other work with Owner's employees, and provide a reasonable opportunity for the introduction and storage of materials and equipment and the execution of such other work.
- D. 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.
- E. If the proper execution or results of any part of Contractor's Work depends upon work performed by others, 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.
- F. The provisions of this article are not applicable to work that is performed by third-party utilities or other third-party entities without a contract with Owner, or that is performed without having been arranged by Owner. If such work occurs, then any related delay, disruption, or interference incurred by Contractor is governed by the provisions of Paragraph 4.05.C.3.

8.02 Coordination

- A. If Owner 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 Owner'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.
- B. Unless otherwise provided in the Supplementary Conditions, Owner shall have sole authority and responsibility for such coordination.

8.03 Legal Relationships

- A. If, in the course of performing other work for Owner at or adjacent to the Site, the Owner's employees, any other contractor working for Owner, or any utility owner that Owner has arranged to perform work, 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. 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 will 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, and any remedies available to Contractor under Laws or Regulations concerning utility action or inaction. When applicable, any such equitable adjustment in Contract Price will be conditioned on Contractor assigning to Owner 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 or Contract Price is subject to the provisions of Paragraphs 4.05.D and 4.05.E.

- B. Contractor shall take reasonable and customary measures to avoid damaging, delaying, disrupting, or interfering with the work of Owner, any other contractor, or any utility owner performing other work at or adjacent to the Site.
 - 1. 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 Owner may impose a set-off against payments due Contractor, and assign to such other contractor or utility owner the Owner's contractual rights against Contractor with respect to the breach of the obligations set forth in this Paragraph 8.03.B.
 - 2. When Owner is performing other work at or adjacent to the Site with Owner's employees, Contractor shall be liable to Owner for damage to such other work, and for the reasonable direct delay, disruption, and interference costs incurred by Owner as a result of Contractor's failure to take reasonable and customary measures with respect to Owner's other work. In response to such damage, delay, disruption, or interference, Owner may impose a set-off against payments due Contractor.
- C. 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, Owner, 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 Owner 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, 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—OWNER'S RESPONSIBILITIES

9.01 Communications to Contractor

- A. Except as otherwise provided in these General Conditions, Owner shall issue all communications to Contractor through Engineer.

- 9.02 Replacement of Engineer
- A. Owner 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 will be that of the former Engineer.
- 9.03 Furnish Data
- A. Owner shall promptly furnish the data required of Owner under the Contract Documents.
- 9.04 Pay When Due
- A. Owner shall make payments to Contractor when they are due as provided in the Agreement.
- 9.05 Lands and Easements; Reports, Tests, and Drawings
- A. Owner's duties with respect to providing lands and easements are set forth in Paragraph 5.01.
- B. Owner's duties with respect to providing engineering surveys to establish reference points are set forth in Paragraph 4.03.
- C. Article 5 refers to Owner'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. Owner'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. Owner's responsibilities with respect to Change Orders are set forth in Article 11.
- 9.08 Inspections, Tests, and Approvals
- A. Owner's responsibility with respect to certain inspections, tests, and approvals is set forth in Paragraph 14.02.B.
- 9.09 Limitations on Owner's Responsibilities
- A. The Owner 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 Work. Owner 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. Owner'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, Owner shall furnish Contractor reasonable evidence that financial arrangements have been made to satisfy Owner's obligations under the Contract (including obligations under proposed changes in the Work).

9.12 Safety Programs

- A. While at the Site, Owner's employees and representatives shall comply with the specific applicable requirements of Contractor's safety programs of which Owner has been informed.
- B. Owner shall furnish copies of any applicable Owner safety programs to Contractor.

ARTICLE 10—ENGINEER'S STATUS DURING CONSTRUCTION

10.01 Owner's Representative

- A. Engineer will be Owner's representative during the construction period. The duties and responsibilities and the limitations of authority of Engineer as Owner'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 Owner, 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 Owner 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 Owner informed of the progress of the Work and will endeavor to guard Owner 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 10.07. 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 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 Resident Project Representative

- A. If Owner 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 the Supplementary Conditions and in Paragraph 10.07.
- B. If Owner designates an individual or entity who is not Engineer's consultant, agent, or employee to represent Owner at the Site, then the responsibilities and authority of such individual or entity will be as provided in the Supplementary Conditions.

10.04 Engineer's Authority

- A. Engineer has the authority to reject Work in accordance with Article 14.
- B. Engineer's authority as to Submittals is set forth in Paragraph 7.16.

- C. Engineer's authority as to design drawings, calculations, specifications, certifications and other Submittals from Contractor in response to Owner's delegation (if any) to Contractor of professional design services, is set forth in Paragraph 7.19.
 - D. Engineer's authority as to changes in the Work is set forth in Article 11.
 - E. Engineer's authority as to Applications for Payment is set forth in Article 15.
- 10.05 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.
- 10.06 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 Owner or Contractor, and will not be liable to Owner, Contractor, or others in connection with any proceedings, interpretations, decisions, or judgments conducted or rendered in good faith.
- 10.07 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, will 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.
 - 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 Contractor under 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 10.07 also apply to the Resident Project Representative, if any.
- 10.08 Compliance with Safety Program
- A. While at the Site, Engineer's employees and representatives will comply with the specific applicable requirements of Owner's and Contractor's safety programs of which Engineer has been informed.

ARTICLE 11—CHANGES TO THE CONTRACT

11.01 Amending and Supplementing the Contract

- A. The Contract may be amended or supplemented by a Change Order, a Work Change Directive, or a Field Order.
- B. If an amendment or supplement to the Contract includes a change in the Contract Price or the Contract Times, such amendment or supplement must be set forth in a Change Order.
- C. All changes to the Contract that 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, must be supported by Engineer's recommendation. Owner and Contractor may amend other terms and conditions of the Contract without the recommendation of the Engineer.

11.02 Change Orders

- A. Owner and Contractor shall execute appropriate Change Orders covering:
 - 1. Changes in 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 an Owner set-off, unless Contractor has duly contested such set-off;
 - 3. Changes in the Work which are: (a) ordered by Owner pursuant to Paragraph 11.05, (b) required because of Owner's acceptance of defective Work under Paragraph 14.04 or Owner'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 that embody the substance of any final and binding results under: Paragraph 11.03.B, resolving the impact of a Work Change Directive; Paragraph 11.09, concerning Change Proposals; Article 12, Claims; Paragraph 13.02.D, final adjustments resulting from allowances; Paragraph 13.03.D, final adjustments relating to determination of quantities for Unit Price Work; and similar provisions.
- B. If Owner or Contractor refuses to execute a Change Order that is required to be executed under the terms of Paragraph 11.02.A, it will be deemed to be of full force and effect, as if fully executed.

11.03 Work Change Directives

- A. 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 negotiations are unsuccessful, by a determination under the terms of the Contract Documents governing adjustments, expressly including Paragraph 11.07 regarding change of Contract Price.

- B. If Owner has issued a Work Change Directive and:
 - 1. Contractor believes that an adjustment in Contract Times or Contract Price is necessary, then Contractor shall submit any Change Proposal seeking such an adjustment no later than 30 days after the completion of the Work set out in the Work Change Directive.
 - 2. Owner believes that an adjustment in Contract Times or Contract Price is necessary, then Owner shall submit any Claim seeking such an adjustment no later than 60 days after issuance of the Work Change Directive.

11.04 Field Orders

- A. 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 Owner and also on Contractor, which shall perform the Work involved promptly.
- B. If Contractor believes that a Field Order justifies an adjustment in the Contract Price or Contract Times, then before proceeding with the Work at issue, Contractor shall submit a Change Proposal as provided herein.

11.05 Owner-Authorized Changes in the Work

- A. Without invalidating the Contract and without notice to any surety, Owner may, at any time or from time to time, order additions, deletions, or revisions in the Work. Changes involving the design (as set forth in the Drawings, Specifications, or otherwise) or other engineering or technical matters will be supported by Engineer's recommendation.
- B. Such changes in the Work may be accomplished by a Change Order, if Owner 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 must be performed under the applicable conditions of the Contract Documents.
- C. Nothing in this Paragraph 11.05 obligates 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.

11.06 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.C.2.

11.07 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 must comply with the provisions of Paragraph 11.09. Any Claim for an adjustment of Contract Price must 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);
 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 11.07.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 11.07.C).
- C. *Contractor's Fee*: When applicable, the Contractor's fee for overhead and profit will 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 will be 15 percent;
 - b. For costs incurred under Paragraph 13.01.B.3, the Contractor's fee will be 5 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 11.07.C.2.a and 11.07.C.2.b is that the Contractor's fee will be based on: (1) a fee of 15 percent of the costs incurred under Paragraphs 13.01.B.1 and 13.01.B.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 5 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 Owner will be no greater than 27 percent of the costs incurred by the Subcontractor that actually performs the Work;
 - d. No fee will 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 Owner for any change which results in a net decrease in Cost of the Work will be the amount of the actual net decrease in Cost of the Work and a deduction of an additional amount equal to 5 percent of such actual net decrease in Cost of the Work; and
 - f. When both additions and credits are involved in any one change or Change Proposal, the adjustment in Contractor's fee will be computed by determining the sum of the costs in each of the cost categories in Paragraph 13.01.B (specifically, payroll costs, Paragraph 13.01.B.1; incorporated materials and equipment costs, Paragraph 13.01.B.2; Subcontract costs, Paragraph 13.01.B.3; special consultants costs, Paragraph 13.01.B.4; and other costs, Paragraph 13.01.B.5) and applying to each such cost category sum the appropriate fee from Paragraphs 11.07.C.2.a through 11.07.C.2.e, inclusive.

11.08 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 must comply with the provisions of Paragraph 11.09. Any Claim for an adjustment in the Contract Times must comply with the provisions of Article 12.
- B. Delay, disruption, and interference in the Work, and any related changes in Contract Times, are addressed in and governed by Paragraph 4.05.

11.09 Change Proposals

- A. *Purpose and Content:* Contractor shall submit a Change Proposal to Engineer to request an adjustment in the Contract Times or Contract Price; contest an initial decision by Engineer concerning the requirements of the Contract Documents or relating to the acceptability of the Work under the Contract Documents; challenge a set-off against payment due; or seek other relief under the Contract. The Change Proposal will specify any proposed change in Contract Times or Contract Price, or other proposed relief, and explain the reason for the proposed change, with citations to any governing or applicable provisions of the Contract Documents. Each Change Proposal will address only one issue, or a set of closely related issues.
- B. *Change Proposal Procedures*
 - 1. *Submittal:* Contractor shall submit each Change Proposal to Engineer within 30 days after the start of the event giving rise thereto, or after such initial decision.
 - 2. *Supporting Data:* The Contractor shall submit supporting data, including the proposed change in Contract Price or Contract Time (if any), to the Engineer and Owner within 15 days after the submittal of the Change Proposal.
 - a. Change Proposals based on or related to delay, interruption, or interference must comply with the provisions of Paragraphs 4.05.D and 4.05.E.
 - b. Change proposals related to a change of Contract Price must include full and detailed accounts of materials incorporated into the Work and labor and equipment used for the subject Work.

The supporting data must 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.

- 3. *Engineer's Initial Review:* Engineer will advise Owner regarding the Change Proposal, and consider any comments or response from Owner regarding the Change Proposal. If in its discretion Engineer concludes that additional supporting data is needed before conducting a full review and making a decision regarding the Change Proposal, then Engineer may request that Contractor submit such additional supporting data by a date specified by Engineer, prior to Engineer beginning its full review of the Change Proposal.
- 4. *Engineer's Full Review and Action on the Change Proposal:* Upon receipt of Contractor's supporting data (including any additional data requested by Engineer), Engineer will conduct a full review of each Change Proposal and, within 30 days after such receipt of the Contractor's supporting data, either approve the Change Proposal in whole, deny it in whole, or approve it in part and deny it in part. Such actions must be in writing, with a copy provided to Owner and Contractor. If Engineer does not take action on the Change Proposal within 30 days, then either Owner 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.

5. *Binding Decision*: Engineer's decision is final and binding upon Owner and Contractor, unless Owner or Contractor appeals the decision by filing a Claim under Article 12.
- C. *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 in writing that the Engineer is unable to resolve the Change Proposal. For purposes of further resolution of such a Change Proposal, such notice will be deemed a denial, and Contractor may choose to seek resolution under the terms of Article 12.
- D. *Post-Completion*: Contractor shall not submit any Change Proposals after Engineer issues a written recommendation of final payment pursuant to Paragraph 15.06.B.

11.10 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 Owner and Contractor are subject to the Claims process set forth in this article:
 1. Appeals by Owner or Contractor of Engineer's decisions regarding Change Proposals;
 2. Owner demands for adjustments in the Contract Price or Contract Times, or other relief under the Contract Documents;
 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; and
 4. Subject to the waiver provisions of Paragraph 15.07, any dispute arising after Engineer has issued a written recommendation of final payment pursuant to Paragraph 15.06.B.
- 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 rests with the party making the Claim. In the case of a Claim by Contractor seeking an increase in the Contract Times or Contract Price, 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 resolving the Claim by mutual agreement. All actions taken on a Claim will 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, Owner and Contractor may mutually agree to mediation of the underlying dispute. The agreement to mediate will stay the Claim submittal and response process.
2. If Owner and Contractor agree to mediation, then after 60 days from such agreement, either Owner or Contractor may unilaterally terminate the mediation process, and the Claim submittal and decision process will 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 will resume as of the date of the conclusion of the mediation, as determined by the mediator.
3. Owner 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 will 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 Owner 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 will 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 will be incorporated in a Change Order or other written document 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. When needed 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.

- B. *Costs Included*: Except as otherwise may be agreed to in writing by Owner, costs included in the Cost of the Work will be in amounts no higher than those commonly incurred in the locality of the Project, will not include any of the costs itemized in Paragraph 13.01.C, and will 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 Owner and Contractor in advance of the subject Work. Such employees include, without limitation, superintendents, foremen, safety managers, safety representatives, and other personnel employed full time on the Work. Payroll costs for employees not employed full time on the Work will be apportioned on the basis of their time spent on the Work. Payroll costs include, but are not limited to, salaries and wages plus the cost of fringe benefits, which include social security contributions, unemployment, excise, and payroll taxes, workers' compensation, health and retirement benefits, 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, will be included in the above to the extent authorized by Owner.
 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 accrue to Contractor unless Owner deposits funds with Contractor with which to make payments, in which case the cash discounts will accrue to Owner. All trade discounts, rebates, and refunds and returns from sale of surplus materials and equipment will accrue to Owner, 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 Owner, Contractor shall obtain competitive bids from subcontractors acceptable to Owner and Contractor and shall deliver such bids to Owner, which 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 will 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 or retained for services specifically related to the Work.
 5. Other costs consisting of 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, 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.
 - 1) In establishing included costs for materials such as scaffolding, plating, or sheeting, consideration will be given to the actual or the estimated life of the material for use on other projects; or rental rates may be established on the basis of purchase or salvage value of such items, whichever is less. Contractor will not

be eligible for compensation for such items in an amount that exceeds the purchase cost of such item.

c. *Construction Equipment Rental*

- 1) Rentals of all construction equipment and machinery, and the parts thereof, in accordance with rental agreements approved by Owner as to price (including any surcharge or special rates applicable to overtime use of the construction equipment or machinery), and the costs of transportation, loading, unloading, assembly, dismantling, and removal thereof. All such costs will be in accordance with the terms of said rental agreements. The rental of any such equipment, machinery, or parts must cease when the use thereof is no longer necessary for the Work.
 - 2) Costs for equipment and machinery owned by Contractor or a Contractor-related entity will be paid at a rate shown for such equipment in the equipment rental rate book specified in the Supplementary Conditions. An hourly rate will be computed by dividing the monthly rates by 176. These computed rates will include all operating costs.
 - 3) With respect to Work that is the result of a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price ("changed Work"), included costs will be based on the time the equipment or machinery is in use on the changed Work and the costs of transportation, loading, unloading, assembly, dismantling, and removal when directly attributable to the changed Work. The cost of any such equipment or machinery, or parts thereof, must cease to accrue when the use thereof is no longer necessary for the changed 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 6.04), 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 include settlements made with the written consent and approval of Owner. No such losses, damages, and expenses will 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 does not include any of the following items:
1. Payroll costs and other compensation of Contractor's officers, executives, principals, general managers, engineers, architects, estimators, attorneys, auditors, accountants, purchasing and contracting agents, expeditors, 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. The cost of purchasing, renting, or furnishing small tools and hand tools.
 3. Expenses of Contractor's principal and branch offices other than Contractor's office at the Site.
 4. Any part of Contractor's capital expenses, including interest on Contractor's capital employed for the Work and charges against Contractor for delinquent payments.
 5. 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.
 6. Expenses incurred in preparing and advancing Claims.
 7. 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*
1. When the Work as a whole is performed on the basis of cost-plus-a-fee, then:
 - a. Contractor's fee for the Work set forth in the Contract Documents as of the Effective Date of the Contract will be determined as set forth in the Agreement.
 - b. for any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price on the basis of Cost of the Work, Contractor's fee will be determined as follows:
 - 1) When the fee for the Work as a whole is a percentage of the Cost of the Work, the fee will automatically adjust as the Cost of the Work changes.
 - 2) When the fee for the Work as a whole is a fixed fee, the fee for any additions or deletions will be determined in accordance with Paragraph 11.07.C.2.
 2. When the Work as a whole is performed on the basis of a stipulated sum, or any other basis other than cost-plus-a-fee, then Contractor's fee for any Work covered by a Change Order, Change Proposal, Claim, set-off, or other adjustment in Contract Price on the basis of Cost of the Work will be determined in accordance with Paragraph 11.07.C.2.
- E. *Documentation and Audit*: Whenever the Cost of the Work for any purpose is to be determined pursuant to this Article 13, Contractor and pertinent Subcontractors will establish and maintain records of the costs in accordance with generally accepted accounting practices. Subject to prior written notice, Owner will be afforded reasonable access, during

normal business hours, to all Contractor's accounts, records, books, correspondence, instructions, drawings, receipts, vouchers, memoranda, and similar data relating to the Cost of the Work and Contractor's fee. Contractor shall preserve all such documents for a period of three years after the final payment by Owner. Pertinent Subcontractors will afford such access to Owner, and preserve such documents, to the same extent required of Contractor.

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 Owner 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 for any of the foregoing will be valid.
- C. *Owner's Contingency Allowance:* Contractor agrees that an Owner's contingency allowance, if any, is for the sole use of Owner 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 for Work covered by allowances, and the Contract Price will 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 thereon will be final and binding (except as modified by Engineer to reflect changed factual conditions or more accurate data) upon Owner and Contractor, and the final adjustment of Contract Price will be set forth in a Change Order, subject to the provisions of the following paragraph.

E. *Adjustments in Unit Price*

1. Contractor or Owner shall be entitled to an adjustment in the unit price with respect to an item of Unit Price Work if:
 - a. the quantity of the item of Unit Price Work performed by Contractor differs materially and significantly from the estimated quantity of such item indicated in the Agreement; and
 - b. Contractor's unit costs to perform the item of Unit Price Work have changed materially and significantly as a result of the quantity change.
2. The adjustment in unit price will account for and be coordinated with any related changes in quantities of other items of Work, and in Contractor's costs to perform such other Work, such that the resulting overall change in Contract Price is equitable to Owner and Contractor.
3. Adjusted unit prices will apply to all units of that item.

ARTICLE 14—TESTS AND INSPECTIONS; CORRECTION, REMOVAL, OR ACCEPTANCE OF DEFECTIVE WORK

14.01 Access to Work

- A. Owner, Engineer, their consultants and other representatives and personnel of Owner, independent testing laboratories, and authorities having jurisdiction 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 with such procedures and programs 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. Owner 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 Owner, except that costs incurred in connection with tests or inspections of covered Work will 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 Owner;
 2. to attain Owner'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 will be performed by independent inspectors, testing laboratories, or other qualified individuals or entities acceptable to Owner and Engineer.

- E. If the Contract Documents require the Work (or part thereof) to be approved by Owner, 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 will 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 written notice of all defective Work of which Owner 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 Owner'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 Owner 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 Owner and Contractor are unable to agree as to the measure of such claims, costs, losses, and damages resulting from defective Work, then Owner may impose a reasonable set-off against payments due under Article 15.

14.04 Acceptance of Defective Work

- A. If, instead of requiring correction or removal and replacement of defective Work, Owner prefers to accept it, Owner 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 Owner'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 will 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 Owner 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 Owner.

14.05 Uncovering Work

- A. Engineer has the authority to require additional 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 Owner 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, 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 Owner 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 Owner may order Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, this right of Owner to stop the Work will not give rise to any duty on the part of Owner 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 Owner 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 defective Work as required by Engineer, then Owner may, after 7 days' written notice to Contractor, correct or remedy any such deficiency.

- B. In exercising the rights and remedies under this Paragraph 14.07, Owner shall proceed expeditiously. In connection with such corrective or remedial action, Owner 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 Owner has paid Contractor but which are stored elsewhere. Contractor shall allow Owner, Owner's representatives, agents and employees, Owner's other contractors, and Engineer and Engineer's consultants access to the Site to enable Owner to exercise the rights and remedies under this paragraph.
- C. All claims, costs, losses, and damages incurred or sustained by Owner 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 Owner of Owner'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 for 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.
 - 2. If payment is requested on the basis of materials and equipment not incorporated in the Work but delivered and suitably stored at the Site or at another location agreed to in writing, the Application for Payment must also be accompanied by: (a) a bill of sale, invoice, copies of subcontract or purchase order payments, or other documentation establishing full payment by Contractor for the materials and equipment; (b) at Owner's request, documentation warranting that Owner has received the materials and equipment free and clear of all Liens; and (c) evidence that the materials and equipment are covered by appropriate property insurance, a warehouse bond, or other arrangements to protect Owner's interest therein, all of which must be satisfactory to Owner.
 - 3. Beginning with the second Application for Payment, each Application must include an affidavit of Contractor stating that all previous progress payments received by Contractor have been applied to discharge Contractor's legitimate obligations associated with prior Applications for Payment.

4. 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 Owner, 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 Owner, 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 Owner or entitle Owner to withhold payment to Contractor.
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;
 - b. for the means, methods, techniques, sequences, or procedures of construction, or the safety precautions and programs incident thereto;
 - c. for Contractor's failure to comply with Laws and Regulations applicable to Contractor's performance of the Work;
 - d. to make any examination to ascertain how or for what purposes Contractor has used the money paid by Owner; or

- e. to determine that title to any of the Work, materials, or equipment has passed to Owner 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 Owner stated in Paragraph 15.01.C.2.
6. Engineer will recommend reductions in payment (set-offs) necessary in Engineer's opinion to protect Owner from loss because:
 - a. the Work is defective, requiring correction or replacement;
 - b. the Contract Price has been reduced by Change Orders;
 - c. Owner has been required to correct defective Work in accordance with Paragraph 14.07, or has accepted defective Work pursuant to Paragraph 14.04;
 - d. Owner 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 Owner with Engineer's recommendation, the amount recommended (subject to any Owner set-offs) will become due, and when due will be paid by Owner to Contractor.

E. *Reductions in Payment by Owner*

1. In addition to any reductions in payment (set-offs) recommended by Engineer, Owner is entitled to impose a set-off against payment based on any of the following:
 - a. Claims have been made against Owner based on Contractor's conduct in the performance or furnishing of the Work, or Owner has incurred costs, losses, or damages resulting from 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;
 - 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. Owner has been required to remove or remediate a Hazardous Environmental Condition for which Contractor is responsible;
 - e. Owner 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. Owner 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 has occurred that would constitute a default by Contractor and therefore justify a termination for cause;
 - j. Liquidated or other 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 Owner to secure the satisfaction and discharge of such Liens; or
 - l. Other items entitle Owner to a set-off against the amount recommended.
2. If Owner imposes any set-off against payment, whether based on its own knowledge or on the written recommendations of Engineer, Owner 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. Owner shall promptly pay Contractor the amount so withheld, or any adjustment thereto agreed to by Owner and Contractor, if Contractor remedies the reasons for such action. The reduction imposed will be binding on Contractor unless it duly submits a Change Proposal contesting the reduction.
 3. Upon a subsequent determination that Owner's refusal of payment was not justified, the amount wrongfully withheld will be treated as an amount due as determined by Paragraph 15.01.D.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 Owner free and clear of (1) all Liens and other title defects, and (2) all patent, licensing, copyright, or royalty obligations, no later than 7 days after the time of payment by Owner.

15.03 Substantial Completion

- A. When Contractor considers the entire Work ready for its intended use Contractor shall notify Owner 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 Owner and Engineer an initial draft of punch list items to be completed or corrected before final payment.
- B. Promptly after Contractor's notification, Owner, Contractor, and Engineer shall inspect 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 Owner a preliminary certificate of Substantial Completion which will 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. Owner shall have 7 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 Owner, notify Contractor in writing that the Work is not substantially complete, stating the reasons therefor. If Owner does not object to the provisions of the certificate, or if despite consideration of Owner's objections Engineer concludes that the Work is substantially

complete, then Engineer will, within said 14 days, execute and deliver to Owner 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 Owner.

- D. At the time of receipt of the preliminary certificate of Substantial Completion, Owner and Contractor will confer regarding Owner's use or occupancy of the Work following Substantial Completion, and confirm the transition to coverage of the Work under a permanent property insurance policy held by Owner. Unless Owner and Contractor agree otherwise in writing, Owner shall bear responsibility for security, operation, protection of the Work, property insurance, maintenance, heat, and utilities upon Owner'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. Owner 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, Owner may use or occupy any substantially completed part of the Work which has specifically been identified in the Contract Documents, or which Owner, Engineer, and Contractor agree constitutes a separately functioning and usable part of the Work that can be used by Owner 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, Owner may request in writing that Contractor permit Owner to use or occupy any such part of the Work that Owner believes to be substantially complete. If and when Contractor agrees that such part of the Work is substantially complete, Contractor, Owner, and Engineer will follow the procedures of Paragraph 15.03.A through 15.03.E for that part of the Work.
 - 2. At any time, Contractor may notify Owner 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, Owner, 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 Owner 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 6.04 regarding 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 Owner 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 7.12), and other documents, Contractor may make application for final payment.
2. The final Application for Payment must 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;
 - c. satisfactory evidence that all title issues have been resolved such that title to all Work, materials, and equipment has passed to Owner free and clear of any Liens or other title defects, or will so pass upon final payment.
 - d. a list of all duly pending Change Proposals and Claims; and
 - e. complete and legally effective releases or waivers (satisfactory to Owner) 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 Owner, 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 Owner might in any way be responsible, or which might in any way result in liens or other burdens on Owner'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 Owner to indemnify Owner against any Lien, or Owner at its option may issue joint checks payable to Contractor and specified Subcontractors and Suppliers.

- B. *Engineer's Review of Final Application and Recommendation of Payment:* 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 10 days after receipt of the final Application for Payment, indicate in writing Engineer's recommendation of final payment and present the final Application for Payment to Owner for payment. Such recommendation will account for any set-offs against payment that are necessary in Engineer's opinion to protect Owner from loss for the reasons stated above with respect to progress payments. 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. *Notice of Acceptability*: In support of its recommendation of payment of the final Application for Payment, Engineer will also give written notice to Owner and Contractor that the Work is acceptable, subject to stated limitations in the notice and to the provisions of Paragraph 15.07.
- D. *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 and issuance of notice of the acceptability of the Work.
- E. *Final Payment Becomes Due*: Upon receipt from Engineer of the final Application for Payment and accompanying documentation, Owner shall set off against the amount recommended by Engineer for final payment any further sum to which Owner is entitled, including but not limited to set-offs for liquidated damages and set-offs allowed under the provisions of this Contract with respect to progress payments. Owner shall pay the resulting balance due to Contractor within 30 days of Owner's receipt of the final Application for Payment from Engineer.

15.07 Waiver of Claims

- A. By making final payment, Owner waives its claim or right to liquidated damages or other damages for late completion by Contractor, except as set forth in an outstanding Claim, appeal under the provisions of Article 17, set-off, or express reservation of rights by Owner. Owner reserves all other claims or rights after final payment.
- B. The acceptance of final payment by Contractor will constitute a waiver by Contractor of all claims and rights against Owner other than those pending matters that have been duly submitted as a Claim, 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 Supplementary Conditions or the terms of any applicable special guarantee required by the Contract Documents), Owner gives Contractor written notice that any Work has been found to be defective, or that Contractor's repair of any damages to the Site or adjacent areas has been found to be defective, then after receipt of such notice of defect Contractor shall promptly, without cost to Owner and in accordance with Owner's written instructions:
 - 1. correct the defective repairs to the Site or such adjacent areas;
 - 2. correct such defective Work;
 - 3. remove the defective Work from the Project and replace it with Work that is not defective, if the defective Work has been rejected by Owner, 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 from the corrective measures.
- B. Owner shall give any such notice of defect within 60 days of the discovery that such Work or repairs is defective. If such notice is given within such 60 days but after the end of the correction period, the notice will be deemed a notice of defective Work under Paragraph 7.17.B.

- C. If, after receipt of a notice of defect within 60 days and within the correction period, Contractor does not promptly comply with the terms of Owner's written instructions, or in an emergency where delay would cause serious risk of loss or damage, Owner may have the defective Work corrected or repaired or may have the rejected Work removed and replaced. Contractor shall pay 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 such correction or repair or such removal and replacement (including but not limited to all costs of repair or replacement of work of others). Contractor's failure to pay such costs, losses, and damages within 10 days of invoice from Owner will be deemed the start of an event giving rise to a Claim under Paragraph 12.01.B, such that any related Claim must be brought within 30 days of the failure to pay.
- D. 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.
- E. 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.
- F. Contractor's obligations under this paragraph are in addition to all other obligations and warranties. The provisions of this paragraph are not to 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 Owner May Suspend Work

- A. At any time and without cause, Owner 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 directly attributable to any such suspension. Any Change Proposal seeking such adjustments must be submitted no later than 30 days after the date fixed for resumption of Work.

16.02 Owner 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 Owner or Engineer.

- B. If one or more of the events identified in Paragraph 16.02.A occurs, then after giving Contractor (and any surety) 10 days' written notice that Owner is considering a declaration that Contractor is in default and termination of the Contract, Owner may proceed to:
 - 1. declare Contractor to be in default, and give Contractor (and any surety) written notice that the Contract is terminated; and
 - 2. enforce the rights available to Owner under any applicable performance bond.
- C. Subject to the terms and operation of any applicable performance bond, if Owner has terminated the Contract for cause, Owner 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 Owner has paid Contractor but which are stored elsewhere, and complete the Work as Owner may deem expedient.
- D. Owner may not proceed with termination of the Contract under Paragraph 16.02.B if Contractor within 7 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 Owner 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, costs, losses, and damages (including but not limited to all fees and charges of engineers, architects, attorneys, and other professionals) sustained by Owner, 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 Owner. Such claims, costs, losses, and damages incurred by Owner 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, Owner shall not be required to obtain the lowest price for the Work performed.
- F. Where Contractor's services have been so terminated by Owner, the termination will not affect any rights or remedies of Owner against Contractor then existing or which may thereafter accrue, or any rights or remedies of Owner against Contractor or any surety under any payment bond or performance bond. Any retention or payment of money due Contractor by Owner 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 will govern over any inconsistent provisions of Paragraphs 16.02.B and 16.02.D.

16.03 Owner May Terminate for Convenience

- A. Upon 7 days' written notice to Contractor and Engineer, Owner may, without cause and without prejudice to any other right or remedy of Owner, 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 for any loss of anticipated profits or revenue, post-termination overhead costs, 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 Owner 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) Owner fails for 30 days to pay Contractor any sum finally determined to be due, then Contractor may, upon 7 days' written notice to Owner and Engineer, and provided Owner or Engineer do not remedy such suspension or failure within that time, terminate the contract and recover from Owner 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 Owner has failed for 30 days to pay Contractor any sum finally determined to be due, Contractor may, 7 days after written notice to Owner 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, pursuant to Article 12; and
 2. Disputes between Owner and Contractor concerning the Work, or obligations under the Contract Documents, that arise after final payment has been made.
- B. *Final Resolution of Disputes:* For any dispute subject to resolution under this article, Owner or Contractor may:
1. elect in writing to invoke the dispute resolution process provided for in the Supplementary Conditions;
 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 requires the giving of written notice to Owner, Engineer, or Contractor, it will be deemed to have been validly given only if delivered:
 - 1. in person, by a commercial courier service or otherwise, to the recipient's place of business;
 - 2. by registered or certified mail, postage prepaid, to the recipient's place of business; or
 - 3. by e-mail to the recipient, with the words "Formal Notice" or similar in the e-mail's subject line.

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 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 Owner 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 will not constitute a waiver of that provision, nor will 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 of the Contract or 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 Assignment of Contract

- A. Unless expressly agreed to elsewhere in the Contract, no assignment by a party to this Contract of any rights under or interests in the Contract will be binding on the other party without the written consent of the party sought to be bound; and, specifically but without limitation, money that may become due and money that is 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.

18.09 Successors and Assigns

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

18.10 Headings

- A. Article and paragraph headings are inserted for convenience only and do not constitute parts of these General Conditions.

SECTION 00800 – SUPPLEMENTARY CONDITIONS

These Supplementary Conditions amend or supplement EJCDC® C-700, Standard General Conditions of the Construction Contract (2018). The General Conditions remain in full force and effect except as amended.

The terms used in these Supplementary Conditions have the meanings stated in the General Conditions. Additional terms used in these Supplementary Conditions have the meanings stated below, which are applicable to both the singular and plural thereof.

The address system used in these Supplementary Conditions is the same as the address system used in the General Conditions, with the prefix "SC" added—for example, "Paragraph SC-4.05."

ARTICLE 1 - DEFINITIONS AND TERMINOLOGY

1.01 *Defined Terms*

SC-1.01.A.3 APPLICATION FOR PAYMENT

Add the following language to the end of Paragraph 1.01.A.3:

The Application for Payment form to be used on this Project is EJCDC No. C-620 or similar approved format. The Agency must approve all Applications for Payment before payment is made.

SC-1.01.A.8 CHANGE ORDER

Add the following language to the end of Paragraph 1.01.A.8:

The Change Order form to be used on this Project is EJCDC No. C-941. Agency approval is required before Change Orders are effective.

SC-1.01.A.25 LAWS AND REGULATIONS

Add the following language to the end of Paragraph 1.01.A.25:

“, including, without limitation, all applicable local, state, and federal orders related to the COVID-19 crisis.”

SC-1.01 A.30 OWNER

Add the following to the end of Paragraph 1.01.A.30 of the General Conditions:

Owner is referred to as Grantee in certain sections of these Contract Documents. Owner and Grantee are one and the same.

SC-1.01 A.52 NON-RESIDENT CONTRACTOR

Add the following paragraph immediately after Paragraph 1.01.A.51 of the General Conditions, which is to read as follows:

52. Non-Resident Contractor -

- a. A person who is not a resident in the State where the proposed construction is to be located, or

- b. Any partnership that has no member thereof resident in the State where the proposed construction is to be located.
- c. Any corporation established under laws other than those of the State in which the proposed construction is located.

ARTICLE 2 - PRELIMINARY MATTERS

SC-2.01 *Delivery of Bonds and Evidence of Insurance*

Add a new paragraph immediately after Paragraph 2.01.C of the General Conditions, which is to read as follows:

- D. *Non-Resident Contractor:* The Contractor, if a corporation established under laws other than the State in which the proposed construction is located, shall file with the Owner, notice of the name of its resident attorney, appointed as required by the laws of the State in which the proposed construction is located. The Contractor, if a resident of a State other than that in which the proposed construction is located and not a corporation, shall file, at the time of execution of the Agreement, with the Owner a written appointment of a resident of the State in which the construction is located, having an office or place of business therein, to be his true and lawful attorney upon whom all lawful processes in any actions or proceedings against him may be served; and in such writing, which shall set forth said attorney's place of residence, shall agree that any lawful process against him which is served on said attorney shall be of the same legal force and validity as if served on him and that the authority shall continue in force so long as any liability remains outstanding against him in said State. The power of attorney shall be filed in the office of the Secretary of State if required, and copies certified by the Secretary shall be sufficient evidence thereof. Such appointment shall continue in force until revoked by an instrument in writing, designating in a like manner some other person upon whom such processes may be served, which instrument shall be filed in the manner provided herein for the original appointment.

2.06 *Electronic Transmittals*

SC-2.06 Delete Paragraphs 2.06.B and 2.06.C in their entirety and insert the following in their place:

- B. *Electronic Documents Protocol:* The parties shall conform to the following provisions in Paragraphs 2.06.B and 2.06.C, together referred to as the Electronic Documents Protocol ("EDP" or "Protocol") for exchange of electronic transmittals.
 - 1. *Basic Requirements*
 - a. To the fullest extent practical, the parties agree to and will transmit and accept Electronic Documents in an electronic or digital format using the procedures described in this Protocol. Use of the Electronic Documents and any information contained therein is subject to the requirements of this Protocol and other provisions of the Contract.
 - b. The contents of the information in any Electronic Document will be the responsibility of the transmitting party.
 - c. Electronic Documents as exchanged by this Protocol may be used in the same manner as the printed versions of the same documents that are exchanged using

non-electronic format and methods, subject to the same governing requirements, limitations, and restrictions, set forth in the Contract Documents.

- d. Except as otherwise explicitly stated herein, the terms of this Protocol will be incorporated into any other agreement or subcontract between a party and any third party for any portion of the Work on the Project, or any Project-related services, where that third party is, either directly or indirectly, required to exchange Electronic Documents with a party or with Engineer. Nothing herein will modify the requirements of the Contract regarding communications between and among the parties and their subcontractors and consultants.
- e. When transmitting Electronic Documents, the transmitting party makes no representations as to long term compatibility, usability, or readability of the items resulting from the receiving party's use of software application packages, operating systems, or computer hardware differing from those established in this Protocol.
- f. Nothing herein negates any obligation 1) in the Contract to create, provide, or maintain an original printed record version of Drawings and Specifications, signed and sealed according to applicable Laws and Regulations; 2) to comply with any applicable Law or Regulation governing the signing and sealing of design documents or the signing and electronic transmission of any other documents; or 3) to comply with the notice requirements of Paragraph 18.01 of the General Conditions.

2. *System Infrastructure for Electronic Document Exchange*

- a. Each party will provide hardware, operating system(s) software, internet, e-mail, and large file transfer functions ("System Infrastructure") at its own cost and sufficient for complying with the EDP requirements. With the exception of minimum standards set forth in this EDP, and any explicit system requirements specified by attachment to this EDP, it is the obligation of each party to determine, for itself, its own System Infrastructure.
 - 1) The maximum size of an email attachment for exchange of Electronic Documents under this EDP is 10 MB. Attachments larger than that may be exchanged using large file transfer functions or physical media.
 - 2) Each Party assumes full and complete responsibility for any and all of its own costs, delays, deficiencies, and errors associated with converting, translating, updating, verifying, licensing, or otherwise enabling its System Infrastructure, including operating systems and software, for use with respect to this EDP.
- b. Each party is responsible for its own system operations, security, back-up, archiving, audits, printing resources, and other Information Technology ("IT") for maintaining operations of its System Infrastructure during the Project, including coordination with the party's individual(s) or entity responsible for managing its System Infrastructure and capable of addressing routine communications and other IT issues affecting the exchange of Electronic Documents.
- c. Each party will operate and maintain industry-standard, industry-accepted, ISO-standard, commercial-grade security software and systems that are intended to protect the other party from: software viruses and other malicious software like worms, trojans, adware; data breaches; loss of confidentiality; and other threats in the transmission to or storage of information from the other parties, including

transmission of Electronic Documents by physical media such as CD/DVD/flash drive/hard drive. To the extent that a party maintains and operates such security software and systems, it shall not be liable to the other party for any breach of system security.

- d. In the case of disputes, conflicts, or modifications to the EDP required to address issues affecting System Infrastructure, the parties shall cooperatively resolve the issues; but, failing resolution, the Owner is authorized to make and require reasonable and necessary changes to the EDP to effectuate its original intent. If the changes cause additional cost or time to Contractor, not reasonably anticipated under the original EDP, Contractor may seek an adjustment in price or time under the appropriate process in the Contract.
- e. Each party is responsible for its own back-up and archive of documents sent and received during the term of the contract under this EDP, unless this EDP establishes a Project document archive, either as part of a mandatory Project website or other communications protocol, upon which the parties may rely for document archiving during the specified term of operation of such Project document archive. Further, each party remains solely responsible for its own post-Project back-up and archive of Project documents after the term of the Contract, or after termination of the Project document archive, if one is established, for as long as required by the Contract and as each party deems necessary for its own purposes.
- f. If a receiving party receives an obviously corrupted, damaged, or unreadable Electronic Document, the receiving party will advise the sending party of the incomplete transmission.
- g. The parties will bring any non-conforming Electronic Documents into compliance with the EDP. The parties will attempt to complete a successful transmission of the Electronic Document or use an alternative delivery method to complete the communication.
- h. The Owner will operate a Project information management system (also referred to in this EDP as "Project Website") for use of Owner, Engineer and Contractor during the Project for exchange and storage of Project-related communications and information. Except as otherwise provided in this EDP or the General Conditions, use of the Project Website by the parties as described in this Paragraph will be mandatory for exchange of Project documents, communications, submittals, and other Project-related information. The following conditions and standards will govern use of the Project Website:
 - 1) Describe the period of time during which the Project Website will be operated and be available for reliance by the parties;
 - 2) Provide any minimum system infrastructure, software licensing and security standards for access to and use of the Project Website;
 - 3) Describe the types and extent of services to be provided at the Project Website (such as large file transfer, email, communication and document archives, etc.); and
 - 4) Include any other Project Website attributes that may be pertinent to Contractor's use of the facility and pricing of such use.

C. *Software Requirements for Electronic Document Exchange; Limitations*

1. Each party will acquire the software and software licenses necessary to create and transmit Electronic Documents and to read and to use any Electronic Documents received from the other party (and if relevant from third parties), using the software formats required in this section of the EDP.
 - a. Prior to using any updated version of the software required in this section for sending Electronic Documents to the other party, the originating party will first notify and receive concurrence from the other party for use of the updated version or adjust its transmission to comply with this EDP.
2. The parties agree not to intentionally edit, reverse engineer, decrypt, remove security or encryption features, or convert to another format for modification purposes any Electronic Document or information contained therein that was transmitted in a software data format, including Portable Document Format (PDF), intended by sender not to be modified, unless the receiving party obtains the permission of the sending party or is citing or quoting excerpts of the Electronic Document for Project purposes.

ARTICLE 3 - CONTRACT DOCUMENTS: INTENT, REQUIREMENTS, REUSE

No changes in this Article.

ARTICLE 4 - COMMENCEMENT AND PROGRESS OF THE WORK

4.05 Delays in Contractor's Progress

SC-4.05 Amend Paragraph 4.05.C by adding the following subparagraphs:

5. *Weather-Related Delays*
 - a. If "abnormal weather conditions" as set forth in Paragraph 4.05.C.2 of the General Conditions are the basis for a request for an equitable adjustment in the Contract Times, such request must be documented by data substantiating each of the following: 1) that weather conditions were abnormal for the period of time in which the delay occurred, 2) that such weather conditions could not have been reasonably anticipated, and 3) that such weather conditions had an adverse effect on the Work as scheduled.
 - 1) Extreme or unusual weather which is typical for a given region, elevation or season shall be considered "abnormal weather conditions".

ARTICLE 5 - SITE, SUBSURFACE AND PHYSICAL CONDITIONS, HAZARDOUS ENVIRONMENTAL CONDITIONS

5.01 Availability of Lands

SC-5.01 Paragraph 5.01.B is deleted in its entirety and replaced with the following:

- A. Upon reasonable written request, Owner shall furnish Contractor with reasonable evidence of record legal title and legal description of the lands upon which the Construction is to be performed and Owner's interest therein.

5.03 Subsurface and Physical Conditions

SC-5.03 Add the following new paragraphs immediately after Paragraph 5.03.D:

- E. The following table lists the reports of explorations and tests of subsurface conditions at or adjacent to the Site that contain Technical Data, and specifically identifies the Technical Data in the report upon which Contractor may rely:

Report Title	Date of Report	Technical Data
N/A	N/A	N/A

- F. The following table lists the drawings of existing physical conditions at or adjacent to the Site, including those drawings depicting existing surface or subsurface structures at or adjacent to the Site (except Underground Facilities), that contain Technical Data, and specifically identifies the Technical Data upon which Contractor may rely:

Drawings Title	Date of Drawings	Technical Data
N/A	N/A	N/A

- G. Contractor may examine copies of reports and drawings identified in SC-5.03.E and SC-5.03.F that were not included with the Bidding Documents at **the City of Portland Engineering Office, Department of Public Works, 212 Canco Road, Portland, Maine** during regular business hours, or may request copies from Engineer.

5.06 *Hazardous Environmental Conditions*

SC-5.06 Add the following new paragraphs immediately after Paragraph 5.06.A.3:

4. The following table lists the reports known to Owner relating to Hazardous Environmental Conditions at or adjacent to the Site, and the Technical Data (if any) upon which Contractor may rely:

Report Title	Date of Report	Technical Data
N/A	N/A	N/A

5. The following table lists the drawings known to Owner relating to Hazardous Environmental Conditions at or adjacent to the Site, and Technical Data (if any) contained in such Drawings upon which Contractor may rely:

Drawings Title	Date of Drawings	Technical Data
N/A	N/A	N/A

SC-5.06 Delete paragraph 5.06.I in its entirety

ARTICLE 6—BONDS AND INSURANCE

6.01 Performance, Payment, and Other Bonds

SC-6.01 Add the following paragraphs immediately after Paragraph 6.01.A:

1. *Required Performance Bond Form:* The performance bond that Contractor furnishes will be in the form of EJCDC® C-610, Performance Bond (2010, 2013, or 2018 edition).
2. *Required Payment Bond Form:* The payment bond that Contractor furnishes will be in the form of EJCDC® C-615, Payment Bond (2010, 2013, or 2018 edition).

SC-6.01 Add the following language at the end of Paragraph 6.01.H:

“A qualifying bonding company is an insurance, bonding, and/or surety company that is (a) licensed or approved by the State of Maine Department of Business Regulation, Bureau of Insurance, to do business in the State of Maine AND (b) listed on the most recent Federal Department of the Treasury listing of “Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies”. The Bonds shall remain in effect for one year after final acceptance of the Work, and protect the Owner for at least one year of warranty of the Work hereunder, and also shall insure settlement of claims for the payment of all bills for labor, materials and equipment.

6.02 Insurance—General Provisions

SC-6.02 Add the following paragraph immediately after Paragraph 6.02.H.2 of the General Conditions:

3. Contractor shall cause its Subcontractors to list Owner as an additional insured on the Subcontractors’ insurance policies for coverage only in those areas where government immunity has been expressly waived by 14 M.R.S. A. § 8104-A, as limited by § 8104-B, and § 8111. Nothing in this Contract shall be deemed a waiver of any defenses, immunities or limitations of liability or damages available to the Owner under the Maine Tort Claims Act, other Maine statutory law, judicial precedent, common law, or any other defenses, immunities or limitations of liability available to the Owner. All Subcontractors’ workers compensation insurance policies shall include an endorsement waiving all rights of subrogation against the Owner and Engineer, its officers, agents or employees.

6.03 Contractor’s Insurance

SC-6.03 Supplement Paragraph 6.03 C with the following provisions:

6. Contractor shall name the Owner as an additional insured for coverage only in those areas where government immunity has been expressly waived by 14 M.R.S. A. § 8104-A, as limited by § 8104-B, and § 8111. Nothing in this Contract shall be deemed a waiver of any defenses, immunities or limitations of liability or damages available to the Owner under the Maine Tort Claims Act, other Maine statutory law,

judicial precedent, common law, or any other defenses, immunities or limitations of liability available to the Owner.

7. Contractor shall be responsible for any and all deductibles and/or self-insured retentions, which shall not exceed \$10,000 without prior written approval of the Owner's Corporation Counsel, which shall not be unreasonably withheld.

SC-6.03 Supplement Paragraph 6.03 with the following provisions after Paragraph 6.03.C:

- E. *Workers' Compensation and Employer's Liability*: Where required by law, Contractor shall purchase and maintain workers' compensation and employer's liability insurance, including, as applicable, United States Longshoreman and Harbor Workers' Compensation Act, Jones Act, and foreign voluntary workers' compensation (from available sources, notwithstanding the jurisdictional requirement of Paragraph 6.02.B of the General Conditions). All such insurance shall include an endorsement waiving all rights of subrogation against the Owner and Engineer, its officers, agents or employees.

Workers' Compensation and Related Policies	Policy limits of not less than:
Workers' Compensation	
State	Statutory
Applicable Federal (e.g., Longshoreman's)	Statutory
Foreign voluntary workers' compensation (employer's responsibility coverage), if applicable	Statutory
Jones Act (if applicable)	
Bodily injury by accident—each accident	\$1,000,000 or Statutory if higher
Bodily injury by disease—aggregate	\$1,000,000 or Statutory if higher
Employer's Liability	
Each accident	\$1,000,000 or Statutory if higher
Each employee	\$1,000,000 or Statutory if higher
Policy limit	\$1,000,000 or Statutory if higher

- F. *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 claims for the following types of damages arising out of or resulting from operations performed by or on behalf of the Contractor:
1. damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees,
 2. damages insured by reasonably available personal injury liability coverage, and
 3. damages because of injury to or destruction of tangible property wherever located, including loss of use resulting therefrom.
- G. *Commercial General Liability—Form and Content*: Contractor's commercial liability policy must be written on a 1996 (or later) Insurance Services Organization, Inc. (ISO) commercial

general liability form (occurrence form) and include the following coverages and endorsements:

1. Products and completed operations coverage.
 - a. Such insurance must be maintained for three years after final payment or work is completed, whichever is later.
 - b. Contractor shall furnish Owner 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 or when work is completed, whichever is later, and three years thereafter.
 2. Blanket contractual liability coverage, including but not limited to coverage of Contractor's contractual indemnity obligations in Paragraph 7.18.
 3. Severability of interests and no insured-versus-insured or cross-liability exclusions.
 4. Underground, explosion, and collapse coverage.
 5. Personal injury coverage.
 6. 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). If Contractor demonstrates to Owner that the specified ISO endorsements are not commercially available, then Contractor may satisfy this requirement by providing equivalent endorsements.
 7. 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.
- H. *Commercial General Liability—Excluded Content:* The commercial general liability insurance policy, including its coverages, endorsements, and incorporated provisions, must not include any of the following:
1. Any modification of the standard definition of "insured contract" (except to delete the railroad protective liability exclusion if Contractor is required to indemnify a railroad or others with respect to Work within 50 feet of railroad property).
 2. Any exclusion for water intrusion or water damage.
 3. Any provisions resulting in the erosion of insurance limits by defense costs other than those already incorporated in ISO form CG 00 01.
 4. Any exclusion of coverage relating to earth subsidence or movement.
 5. Any exclusion for the insured's vicarious liability, strict liability, or statutory liability (other than worker's compensation).
 6. Any limitation or exclusion based on the nature of Contractor's work.
 7. Any professional liability exclusion broader in effect than the most recent edition of ISO form CG 22 79.

I. *Commercial General Liability—Minimum Policy Limits*

Commercial General Liability	Policy limits of not less than:
General Aggregate	\$1,000,000.00
Products—Completed Operations Aggregate	\$1,000,000.00
Personal and Advertising Injury	\$1,000,000.00
Bodily Injury and Property Damage—Each Occurrence	\$1,000,000.00

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

Automobile Liability	Policy limits of not less than:
Bodily Injury	
Each Person	\$1,000,000
Each Accident	\$1,000,000
Property Damage	
Each Accident	\$1,000,000

- K. *Using Umbrella or Excess Liability Insurance to Meet CGL and Other Policy Limit Requirements*: Contractor may meet the policy limits specified for employer’s liability, commercial general liability, and automobile liability through the primary policies alone, or through combinations of the primary insurance policies and partial attribution of the policy limits of an umbrella or excess liability policy that is at least as broad in coverage as that of the underlying policy, as specified herein.

- L. *Contractor’s Pollution Liability Insurance*: Contractor shall purchase and maintain a policy covering third-party injury and property damage, including cleanup costs, as a result of pollution conditions arising from Contractor’s obligations, operations performed by or on behalf of Contractor, and completed operations. This insurance must be maintained for no less than three years after final completion.

Contractor’s Pollution Liability	Policy limits of not less than:
Each Occurrence/Claim	\$1,000,000.00
General Aggregate	\$1,000,000.00

- M. *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 in amount, form, and substance reasonably satisfactory to the Owner. This insurance must cover negligent acts, errors, or omissions in the performance of professional design or related services by the insured or others for whom the insured is legally liable. The insurance must be maintained throughout the duration of the Contract and for a minimum of three years after Substantial Completion. The retroactive date on the policy must pre-date the commencement of furnishing services on the Project.

- N. *Unmanned Aerial Vehicle Liability Insurance:* If Contractor or anyone acting on behalf of Contractor uses unmanned aerial vehicles (UAV—commonly *referred* to as drones) at the Site or in support of any aspect of the Work, Contractor or those acting on behalf of Contractor shall obtain UAV liability insurance in the amounts stated; name Owner, Engineer, and all individuals and entities identified in the Supplementary Conditions as additional insureds; and provide a certificate to Owner confirming Contractor’s compliance with this requirement. Such insurance will provide coverage for property damage, bodily injury or death, and invasion of privacy.

Unmanned Aerial Vehicle Liability Insurance	Policy limits of not less than:
Each Claim	\$1,000,000.00
General Aggregate	\$1,000,000.00

O. *Other Required Insurance:*

1. When explosives are to be used in the prosecution of the work, insurance provided by the Contractor shall also contain provisions for protection against damage claims due to such use of explosives.”

6.04 *Builder’s Risk and Other Property Insurance*

SC-6.04 Supplement Paragraph 6.04 of the General Conditions with the following provisions:

F. *Builder’s Risk Requirements:* The builder’s risk insurance must:

1. be written on a builder’s risk “all risk” policy form that at a minimum includes insurance for physical loss or damage to the Work, temporary buildings, falsework, and materials and equipment stored and in transit, and must not exclude the coverage of the following risks: fire; windstorm; hail; flood; earthquake, volcanic activity, and other earth movement; lightning; riot; civil commotion; terrorism; vehicle impact; aircraft; smoke; theft; vandalism and malicious mischief; mechanical breakdown, boiler explosion, and artificially generated electric current; collapse; explosion; debris removal; demolition occasioned by enforcement of Laws and Regulations; and water damage (other than that caused by flood).
 - a. Such policy will include an exception that results in coverage for ensuing losses from physical damage or loss with respect to any defective workmanship, methods, design, or materials exclusions.
 - b. 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 will be provided through other insurance policies acceptable to Owner and Contractor.
2. 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 Owner-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.

3. cover expenses incurred in the repair or replacement of any insured property (including but not limited to fees and charges of contractors, engineers, and architects).
4. 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).
5. extend to cover damage or loss to insured property while in transit.
6. allow for the waiver of the insurer's subrogation rights, as set forth in this Contract.
7. allow for partial occupancy or use by Owner by endorsement, and without cancellation or lapse of coverage.
8. include performance/hot testing and start-up, if applicable.
9. be maintained in effect until the Work is complete, as set forth in Paragraph 15.06.D of the General Conditions, or until written confirmation of Owner's procurement of property insurance following Substantial Completion, whichever occurs first.
10. include as named insureds the Owner, Contractor, Subcontractors (of every tier), and any other individuals or entities required by this Contract to be insured under such builder's risk policy. For purposes of Paragraphs 6.04, 6.05, and 6.06 of the General Conditions, and this and all other corresponding Supplementary Conditions, the parties required to be insured will be referred to collectively as "insureds." In addition to Owner, Contractor, and Subcontractors of every tier, include as insureds the following:

Engineer and Engineer's consultants as listed in SC-1.01.
11. include, in addition to the Contract Price amount, the value of the following equipment and materials to be installed by the Contractor but furnished by the Owner or third parties:

ARTICLE 7 - CONTRACTOR'S RESPONSIBILITIES

7.03 *Labor; Working Hours*

SC-7.03 Add the following new subparagraphs immediately after Paragraph 7.03.C:

1. Regular working hours are defined in the Special Provisions, Section 01000, of the Contract.
2. The Contractor shall not work during legal holidays or on weekends without written authorization obtained in advance from the City Portland. The Contractor shall not occupy public right of way, other than in designated staging areas, with equipment or materials during legal holidays.

SC-7.03 Add the following new paragraph immediately after Paragraph 7.03.C:

- D. **Contractor** shall be responsible for the cost of any overtime pay or other expense incurred by the Owner for Engineer's services (including those of the Resident Project Representative, if any), Owner's representative, and construction observation services, occasioned by the performance of Work on Saturday, Sunday, any legal holiday, or as overtime on any regular work day. If Contractor is responsible but does not pay, or if the parties are unable to agree

as to the amount owed, then Owner may impose a reasonable set-off against payments due under Article 15.

1. For purposes of administering the foregoing requirement, additional overtime costs are defined as **One Hundred (\$100.00) dollars per hour**.

SC-7.05 "Or Equals"

Add a new subparagraph SC-7.05.B.1 immediately after subparagraph 7.05.B:

1. It shall be Contractor's responsibility to coordinate all submittals to Engineer for approval to eliminate any conflicts which might arise due to the use of "or equal" items. Any additional costs incidental to the use of "or equal" items shall be paid by Contractor.

SC-7.06 Substitutes

Add a new subparagraph SC-7.06.E.1 immediately after subparagraph 7.06.E:

1. It shall be Contractor's responsibility to coordinate all submittals to Engineer for approval to eliminate any conflicts which might arise due to the use of substitutes. Any additional costs incidental to the use of substitutes shall be paid by Contractor.

7.08 Patent Fees and Royalties

SC-7.08 Delete Paragraph 7.08.B in its entirety.

SC-7.09 Permits

Add the following subparagraph immediately after Paragraph 7.09.A:

1. Local permit fees for permits required from the **City of Portland** will be waived.

Add the following paragraph immediately after Paragraph 7.09.A:

- B. The following permits/approvals have been or will be obtained by the Owner. Copies of the permit approvals are in the Appendices of the Bidding Documents. Full copies of the permit applications and approvals will be on file at the Owner's Offices. It is the responsibility of the Contractor to be familiar with and comply with the applicable provisions of each permit as they apply to the work:
 1. N/A

7.10 Taxes

SC-7.10 Add a new paragraph immediately after Paragraph 7.10.A:

- B. Owner is 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. Owner will furnish the required certificates of tax exemption to Contractor for use in the purchase of supplies and materials to be incorporated into the Work.
 2. Owner'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.

7.18 Indemnification

SC-7.18 Delete Paragraph 7.17.A in its entirety and replace with the following:

- A. To the fullest extent permitted by Laws or Regulations, Contractor shall defend, indemnify and hold harmless Owner, Owner's Consultants, and the officers, members, directors,

partners, employees, agents, other consultants and subcontractors of each 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 resulting from 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) and provided that such claim, cost, loss, or damage is caused in whole or in part by any negligent act or omission of Contractor, any Subcontractor, any Supplier, or any individual or entity directly or indirectly employed by any of them to perform or furnish any of the Work.

Any mechanic's lien or any other lien which may be filed against the premises which are the subject of the Contract by reason of the Work described herein shall be defended (by counsel reasonably acceptable to the Owner) and promptly discharged by Contractor at its own expense. Owner may require Contractor to provide a bond satisfactory to Owner to indemnify it against any lien and as a substitution in place of a lien. If Contractor should fail either to defend Owner against the lien or to discharge it, then Owner may do so at the Contractor's expense. In the event of such an undertaking by Owner, the Contractor will promptly reimburse Owner for all its costs and expenses in so doing, including, but not limited to, reimbursement of the Owner's reasonable counsel fees, as well as costs which may be incurred by it in substituting a bond in place of a lien.

ARTICLE 9—OWNER'S RESPONSIBILITIES

SC-9.04 Delete paragraphs 9.04, 9.05, 9.06, 9.07, 9.08, 9.10 and 9.11 in their entirety and insert the following in their place:

9.04. Several of the Owner's responsibilities described in various Articles of the General Conditions have been modified by various Supplementary Conditions that will not be specifically enumerated here. Full review of the Supplementary Conditions is necessary to a full understanding of the Owner's Responsibilities under this contract.

ARTICLE 10 - ENGINEER'S STATUS DURING CONSTRUCTION

10.03 *Resident Project Representative*

SC-10.03 Add the following new paragraph immediately after Paragraph 10.03.B:

- C. The Resident Project Representative (RPR) will be Engineer's representative at the Site. RPR's dealings in matters pertaining to the Work in general will be with Engineer and Contractor. RPR's dealings with Subcontractors will only be through or with the full knowledge or approval of Contractor. The RPR will:
1. *Conferences and Meetings:* Attend meetings with Contractor, such as preconstruction conferences, progress meetings, job conferences, and other Project-related meetings (but not including Contractor's safety meetings), and as appropriate prepare and circulate copies of minutes thereof.
 2. *Safety Compliance:* Comply with Site safety programs, as they apply to RPR, and if required to do so by such safety programs, receive safety training specifically related to RPR's own personal safety while at the Site.
 3. *Liaison*

- a. Serve as Engineer's liaison with Contractor. Working principally through Contractor's authorized representative or designee, assist in providing information regarding the provisions and intent of the Contract Documents.
 - b. Assist Engineer in serving as Owner's liaison with Contractor when Contractor's operations affect Owner's on-Site operations.
 - c. Assist in obtaining from Owner additional details or information, when required for Contractor's proper execution of the Work.
4. *Review of Work; Defective Work*
- a. Conduct on-Site observations of the Work to assist Engineer in determining, to the extent set forth in Paragraph 10.02, if the Work is in general proceeding in accordance with the Contract Documents.
 - b. Observe whether any Work in place appears to be defective.
 - c. Observe whether any Work in place should be uncovered for observation, or requires special testing, inspection or approval.
5. *Inspections and Tests*
- a. Observe Contractor-arranged inspections required by Laws and Regulations, including but not limited to those performed by public or other agencies having jurisdiction over the Work.
 - b. Accompany visiting inspectors representing public or other agencies having jurisdiction over the Work.
6. *Payment Requests: Review Applications for Payment with Contractor.*
7. *Completion*
- a. Participate in Engineer's visits regarding Substantial Completion.
 - b. Assist in the preparation of a punch list of items to be completed or corrected.
 - c. Participate in Engineer's visit to the Site in the company of Owner and Contractor regarding completion of the Work, and prepare a final punch list of items to be completed or corrected by Contractor.
 - d. Observe whether items on the final punch list have been completed or corrected.
- D. The RPR will not:
- 1. Authorize any deviation from the Contract Documents or substitution of materials or equipment (including "or-equal" items).
 - 2. Exceed limitations of Engineer's authority as set forth in the Contract Documents.
 - 3. Undertake any of the responsibilities of Contractor, Subcontractors, or Suppliers.
 - 4. Advise on, issue directions relative to, or assume control over any aspect of the means, methods, techniques, sequences or procedures of construction.
 - 5. Advise on, issue directions regarding, or assume control over security or safety practices, precautions, and programs in connection with the activities or operations of Owner or Contractor.

6. Participate in specialized field or laboratory tests or inspections conducted off-site by others except as specifically authorized by Engineer.
7. Authorize Owner to occupy the Project in whole or in part.

ARTICLE 11 - CHANGES TO THE CONTRACT

No changes to this Article.

ARTICLE 12 - CLAIMS

No changes to this Article.

ARTICLE 13 - COST OF WORK; ALLOWANCES, UNIT PRICE WORK

SC-13.03 UNIT PRICE WORK

SC-13.03 Delete Paragraph 13.03.E in its entirety and insert the following in its place:

E. *Adjustments in Unit Price*

1. Contractor or Owner shall be entitled to an adjustment in the unit price with respect to an item of Unit Price Work if:
 - a. the extended price of a particular item of Unit Price Work amounts to 5 percent or more of the Contract Price (based on estimated quantities at the time of Contract formation) and the variation in the quantity of that particular item of Unit Price Work actually furnished or performed by Contractor differs by more than **25** percent from the estimated quantity of such item indicated in the Agreement.
2. The adjustment in unit price will account for and be coordinated with any related changes in quantities of other items of Work, and in Contractor's costs to perform such other Work, such that the resulting overall change in Contract Price is equitable to Owner and Contractor.
3. Adjusted unit prices will apply to all units of that item.

ARTICLE 14 - TESTS AND INSPECTIONS; CORRECTION, REMOVAL, OR ACCEPTANCE OF DEFECTIVE WORK

SC-14.01.A Add the following at the end of paragraph 14.01.A.:

Contractor acknowledges and agrees that such inspection and testing conducted by Owner shall not be deemed to impose any duty or liability upon the City to supervise any aspect of or approve the quality of the Work.

ARTICLE 15 - PAYMENTS TO CONTRACTOR, SET OFFS; COMPLETIONS; CORRECTION PERIOD

SC-15.01 PROGRESS PAYMENTS

Delete Paragraph 15.01.D.1 in its entirety and insert the following in its place:

1. **35** days after presentation of the Application for Payment to Owner with Engineer's recommendation, the amount recommended (subject to any Owner set-offs) will become due, and when due will be paid by Owner to Contractor.

15.07 Waiver of Claims

SC-15.07 Delete Paragraph 15.07.A in its entirety and replace with the following:

- A. The making of final payment will not constitute a waiver by Owner of claims or rights against Contractor. Owner expressly reserves claims and rights arising from unsettled Liens, from defective Work appearing after final inspection, from Contractor's failure to comply with the Contract Documents or the terms of any special guarantees specified therein, from outstanding Claims by Owner, or from Contractor's continuing obligations under the Contract Documents.

ARTICLE 16 - SUSPENSION OF WORK AND TERMINATION

16.03 Owner May Terminate for Convenience

SC-16.03 Delete paragraph 16.03.A, including sub paragraphs 16.03.A.1 through 16.03.A.3, in their entirety and replace with the following:

- A. Owner shall have the right to terminate the Contract at any time for its convenience upon seven days' prior written notice to the Contractor. If the Contract is terminated by the Owner for convenience, Owner shall pay Contractor for all Work performed and all materials purchased pursuant to the Contract prior to receipt of such notice.

ARTICLE 17 - FINAL RESOLUTIONS OF DISPUTES

17.01 Methods and Procedures

SC-17.01.A Delete paragraph 17.01.A, including subsections 17.01.A.1 and 17.01.A.2, in their entirety, and replace with the following:

- A. Dispute resolution methods and procedures, if any, shall be as set forth in the Supplementary Conditions. If no such method and procedure has been set forth, Owner and Contractor may exercise such rights or remedies as either may otherwise have under the Contract Documents or by Laws or Regulations in respect of any dispute.

SC-17.01.B Delete paragraph 17.01.B, including subsections 17.01.B.1 through 17.01.B.3, in their entirety, and replace with the following:

- B. The Contract shall be construed in all respects in accordance with, and governed by, the laws of the State of Maine. The parties hereby consent to the exclusive jurisdiction of the Superior Court for the County of Cumberland in the State of Maine, for all actions, proceedings and litigation arising from or relating directly or indirectly to this Agreement or any of the obligations hereunder, and any dispute not otherwise resolved as provided in the Contract shall be litigated solely in said Court.

ARTICLE 18 - MISCELLANEOUS

SC-18.11 Add the following paragraph immediately after paragraph 18.10

18.11 Non-Discrimination

- A. Contractor agrees to adhere to a policy of non-discrimination in all employment actions, practices, policies, procedures, phases, and conditions of employment. This shall include compliance with the Workforce Innovation and Opportunity Act (29 USC chapter 32); the Nontraditional Employment for Women Act of 1991; title VI of the Civil Rights Act of 1964, as amended; section 504 of the Rehabilitation Act of 1973, as amended; the Age Discrimination Act of 1975, as amended; title IX of the Education Amendments of 1972, as amended; and with all applicable requirements imposed by or pursuant to regulations implementing those laws, including but not limited to 29 CFR part 37 and all other applicable laws, including the Maine Human Rights Act, ordinances and regulations regarding equal opportunity and equal treatment. Contractor specifically agrees that all employment-related decisions (including but not limited to hiring, discharge, transfers, promotions, discipline, training, job opportunities, and wage and salary levels) will be made without discrimination based on an individual's race or color, religion, age, sex (including pregnancy), sexual orientation, gender identity or expression, ancestry or national origin, physical or mental disability, veteran status, genetic information, previous assertion of a claim or right under Maine's Workers' Compensation Act, previous actions taken protected under Maine's Whistleblowers' Protection Act, or any other protected group status as defined by applicable law. Provisions in applicable laws providing for bona fide occupational qualifications, business necessity, or age limitations will be adhered to by Contractor where appropriate.

SECTION 01000 – CITY OF PORTLAND SPECIAL PROVISIONS

PART 1 - GENERAL

1.1 EJCDC GENERAL CONDITIONS

The City of Portland has adopted the Standard General Conditions of the Construction Contract as prepared by the Engineers Joint Contract Documents Committee (EJCDC C-700) with the supplemental conditions found in the Bidding and Contract Requirements and Specifications. It is the intent of the EJCDC C-700 guideline and Supplemental Conditions to replace the following Divisions of the MaineDOT Standard Specifications:

1. Division 100 – General Conditions; except those provisions contained in the Special Provisions and Supplemental Specifications.
2. Division 100 – Appendix A of the MaineDOT Standard Specifications.

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1.2 MaineDOT STANDARD SPECIFICATIONS

The City of Portland, Maine has adopted for this project the "State of Maine, Department of Transportation (MaineDOT), Standard Specifications, Revision of March, 2020", including all current additions or modifications thereof, Supplemental Specifications (Corrections, Additions, and Revisions to Standard Specifications), (herein referred to as “Standard Specifications”). A copy of the Standard Specifications can be found online at:

<https://www.maine.gov/mdot/contractors/publications/standardspec/>.

The Standard Specifications adopted for this project include the MaineDOT SPECIAL PROVISION DIVISION 400 HOT MIX ASPHALT dated December 17, 2020.

1.3 SPECIAL PROVISIONS AND SUPPLEMENTAL SPECIFICATIONS

The City of Portland has also made specific changes to the MaineDOT Standard Specifications to incorporate the requirements of the City of Technical and Design Standards and Guidelines. As such, the Contract Agreement, Special Provisions and Supplemental Specifications contained herein shall take precedence and shall govern in any case of conflict with the MaineDOT Standard Specification.

1. Supplemental Specifications are modifications, additions and deletions to the Standard Specifications.
 2. Special Provisions are specifications in the contract that are for additional items not covered in the Standard Specifications.
- A. If the Contractor discovers any ambiguity, error, omission, conflict, or discrepancy (“ambiguity”, etc.) related to the Contract Documents that may significantly affect the

cost, quality, conformity, or timeliness of the Work, the Contractor must comply with Section 3.03 Reporting and Resolving Discrepancies of the EJCDC Standard General Conditions (which is similar to Section 104.3.3 – Duty to Notify Department If Ambiguities Discovered of the MaineDOT Standard Specifications).

In the case of ambiguity, etc., the following components of the Contract Documents shall control in the following descending order of priority:

1. Bid Amendments (most recent to least recent)
 2. Project Specific Permit Requirements
 3. Special Provisions
 4. Notes on Plans
 5. Plans
 6. Supplemental Specifications
 7. City of Portland Supplemental Standard Details
 8. City of Portland Standard Details
 9. EJCDC C-700 Standard General Conditions with the Supplemental Conditions
 10. MaineDOT Supplemental Specifications (Corrections, Additions, and Revisions to Standard Specifications)
 11. MaineDOT Standard Specifications
- B. NO SEPARATE PAYMENT

Unless specifically stated otherwise, the cost for providing work defined in the Special Provisions is incidental to the contract and no separate payment will be made.

1.4 CONSTRUCTION SEQUENCE

- A. Construction of the work will meet the following sequencing requirements:
1. Submittal Review: No on-site construction will be allowed until individual submittal work items have been reviewed and approved by the Owner. All submittals shall meet “No Exceptions Taken” or “See Remarks” to be considered complete.
 2. Contractors Project Schedule: The Contractor shall submit to the Owner for review and acceptance a complete schedule of his proposed sequence of construction operations prior to commencing any work. This schedule shall include the Contractor's plans for doing the work.
 3. Traffic Control Plan: Prior to mobilization and the start of any work, the Contractor shall submit a traffic control plan for all aspects of pedestrian and vehicular movement (refer to special provisions).
 4. Mobilization: Upon approval of the project schedule, Contractor will be allowed to begin mobilization and project coordination work in coordination with the engineer and City at the project start. This shall include engineers office, construction signage, staging and general mobilization.
 5. Project Specific Construction Sequence Requirements:
 - a. As noted on the plans.
- B. The construction of the work will disrupt existing structures, utilities and vehicle and pedestrian access to residences along the affected streets. To maintain operation of the

nearby businesses and to minimize disruption, the construction must be divided into phases or sequenced appropriately.

- C. The Contractor shall submit to the Engineer for review and acceptance a complete schedule of his proposed sequence of construction operations prior to commencing any work. This schedule shall include the Contractor's plans for completing the work and the dates of street closures.
- D. The Contractor must submit for approval by the Owner and the Engineer a request to deviate from the above sequence, provided he can demonstrate to the Engineer that the continuity of operations and access to adjacent properties will not be adversely affected. Requests to deviate from the sequence will be reviewed at the weekly and monthly meetings.

1.5 WORKING HOURS

No work shall be performed during the following hours, without prior written approval from the Director of Public Works.

- A. From September 1 of any year through May 31 of the following year, no construction work shall be performed between 7:00 p.m. of any day and 7:00 a.m. of the following day.
- B. From June 1 of any year through August 31 of the same year, no construction work shall be performed between 8:00 p.m. of any day and 7:00 a.m. of the following day.
- C. On Saturdays, Sundays, and legal holidays, construction work shall not be performed before 8:00 a.m.

The Contractor shall maintain alternating one-way traffic at a minimum in the work zone at all times.

The definition of work for this specification shall include the starting or moving of equipment, machinery, or materials. Any day worked for four hours or more shall be considered a full working day.

1.6 NOTIFICATION OF RESIDENTS

- A. Refer to Specification Section 01050 - Coordination.
- B. Residents shall be notified by the Contractor sufficiently in advance of any construction affecting the resident's driveway and sidewalk to allow adequate time for his removal of personal vehicles. Locations of curb cuts for drive access affecting individual residents shall be brought to their attention. The Contractor shall restore access to all driveways at the end of each work day. The Contractor shall also make every effort to maintain access to the driveways at all times.

1.7 PROTECTION OF TREES

- A. The Contractor shall be responsible for the preservation of all trees on the project which are not called to be removed. Any trees damaged by the Contractor's operations shall be repaired using approved tree dressing or paint in accordance with the appropriate provisions of Section 201 of the Standard Specifications. Any tree damaged by the contractor shall result in a financial penalty of \$1,500 for each incidence. Damage shall include any and all impacts to trees to include but not limited to limb/tree breakage, damage to tree trunks, roots structure and any incidental impacts.

- B. Tree protection standards:
 - 1. Tree protection shall include construction fencing / protection of the tree root zone.
 - 2. No storage of construction equipment or materials within the drip line area of existing trees.
 - 3. If pro-active tree pruning prior to construction activities is required it shall be coordinated with the City Arborist.
 - 4. Tree protection work shall be incidental to the work and no separate payment will be made.

1.8 TRAFFIC SIGNS

- A. All existing traffic signs which are to be removed during construction shall be carefully dismantled and the posts removed and shall be stacked in an area approved by the Engineer.
 - 1. The Contractor shall protect the signs from damage while in his possession and shall repair, at no additional cost to the City, any damages cause by his operations.
 - 2. Stop signs are to be maintained at their original locations at all times during the progress of the work.
 - 3. Prior to the start of any construction work, the Contractor and Engineer shall prepare a mutually acceptable inventory of all signs within the project limits which shall be used as a guide for replacement should signs be removed for construction purposes. The signs shall be inventoried by station location and approximate offset, legend of sign and post.
 - 4. All remounted signs are to be installed on new U-Channel Posts with breakaway connections as indicated in the Standard Specifications and Supplemental Specifications.
 - 5. This work shall be considered as subsidiary obligation of the contract for which no specific payment will be made.
 - 6. New signs associated with ADA improvements shall be considered incidental to the contract.

1.9 TRAFFIC OFFICERS

- A. The presence of Portland Police will be a determination made by the Traffic Engineer based on the contractors submitted traffic control plan. If Police are required (as determined by the City), the City will hire and reimburse them. The Police Department requires 48 hours' notice for any Police detail onsite.

1.10 MAINTENANCE OF TRAFFIC

- A. The Contractor shall be responsible for the maintenance and protection of all vehicular and pedestrian traffic at all times during construction and shall erect suitable warning signs, flashers, electronic variable reader boards, barriers and temporary lighting devices of sufficient size and number to afford protection to the traveling public. The Contractor

shall be held responsible for all damage to the work due to any failure of the warning devices to properly protect the work from the traffic, pedestrians or other causes.

- B. The Contractor shall prepare and submit a detailed Traffic Control and Detour Plan that is coordinated with the construction schedule and addresses traffic control for all aspects of the project.
 - 1. The Contractor must submit their traffic plan as part of the street opening permit application which will be required for each specific project location. The traffic plan must include and meet the requirements of the contract documents together with any additional traffic control provisions to ensure the efficient and safe passage of the public.
 - 2. Guidelines for the construction and erection of barricades, lighting devices, warning signs, etc. may be found in the most recent edition of "Manual on Uniform Traffic Control Devices for Streets and Highways" published by the Department of Transportation of the Federal Highway Administration. This work shall be considered a subsidiary obligation of the contract for which no specific payment will be made.
 - 3. This project will include traffic maintenance requirements which shall be the contractor's sole responsibility to provide and maintain at the contractor's expense. The contractor shall be responsible for cooperating with the City and shall make modifications/changes to the traffic control as directed by the City. Signage and barricades may need to be relocated, modified or supplemented throughout construction as directed by the City and responsive to neighborhood and traffic flow. The Contractor shall promptly provide additional signage including custom signage as necessary and directed by the City. No extra payment will be made.
 - 4. The following project specific requirements and restrictions apply.
 - a. Local access for private vehicles, pedestrians and emergency vehicles to residential and commercial properties in the closed section of all roadways shall be provided at all times.

1.11 MATERIALS

- A. Materials shall meet the requirements specified in the specifications. Equals shall be considered so long as the Contractor can supply sufficient product material and testing data to show that the equal meets or exceeds the performance data of the product identified on the contract documents. The Engineer will determine if a product is equal.

1.12 PROJECT SURVEY QUALITY CONTROL AND CONSTRUCTION LAYOUT

- A. The definition of "Department" in Division 100 of the Standard Specifications shall be deleted and replaced with the following: "Department shall mean the Water Resources Department or Public Works Department, City of Portland, Maine acting through its Director or through his duly authorized representative."
- B. Construction Surveying.
 - 1. City Provided Services:
 - a. The City of Portland will provide coordinate locations for the Engineer's network of survey control points in the project area and the baselines shown on the plans.

Control points will be paint marked in the field. The Contractor shall be responsible for maintaining these controls during construction and providing all additional survey required for construction layout which shall be completed by a licensed Professional Engineer or Surveyor.

- b. Electronic Design Data and Digital Terrain Model (DTM): Any electronic project design data provided to the Contractor will not be deemed a part of the contract, and is supplied as a courtesy by the City. The Contractor shall not take advantage of any ambiguity or error contained in said data, and upon discovery of any ambiguity or error shall notify the Department before proceeding.

2. Contractor Provided Services

- a. Using the survey information and points provided by the Department, described in Subsection 105.6.1, Department Provided Services, the Contractor shall provide all additional survey layout necessary to complete the Work. The Contractor must notify the Department of any errors or inconsistencies regarding the data and layout provided by the Department.

C. Survey Quality Control and Construction Layout

1. The Contractor is responsible for all construction survey quality control. Construction survey quality control is generally defined as, first, performing initial field survey layout of the Work and, second, performing an independent check of the initial layout using independent survey data to assure the accuracy of the initial layout; additional iterations of checks may be required if significant discrepancies are discovered in this process. Construction survey layout quality control also requires written documentation of the layout process such that the process can be followed and repeated, if necessary, by an independent survey crew.

D. Survey Work Plan. The Contractor shall provide a Survey Work Plan to the City prior to, or at, the preconstruction meeting. The Survey Work Plan shall include:

1. Make and model of equipment and software used for project layout.
2. Make and model of equipment and software used for machine guidance and control.
3. Manufacturer-stated specifications for vertical and horizontal accuracy attainable by the equipment.
4. Equipment calibration procedures and date of last calibration.
5. Narrative of methodology used to establish any additional horizontal or vertical project control points. Field notes for new vertical control shall be submitted to the Department.
6. Site Calibration (Localization) and control verification procedures, including a timetable and tolerances. A Site Calibration report shall be submitted to the Department, including the values of calculated residuals of each point used in the calibration.

7. Type and locations of base stations to be used, including methodology for establishing on-site base broadcast positions and localization procedures used for off-site bases.
8. Describe methodology used to overcome Real Time Kinematic (RTK) signal losses in a portion or portions of the project, and methodology to ensure signals for both inspection operation areas and construction operation areas (i.e. multiple bases operating simultaneously).
9. Describe procedures used to integrate vertical refinement equipment (i.e. laser); including the process of determining and verifying transmitter set-up location and communicating any necessary adjustments to the machine control equipment.
10. Name(s) and qualifications of the Contractor's designated on-site surveyor(s) or engineer(s) responsible for performing the project layout.
11. Design software and version used to develop the Digital Terrain Model (DTM).

E. Field Layout Specifications

1. All Work accomplished through electronic layout methods and/or machine control must meet the same accuracy requirements as the conventional grading construction standards detailed in the Standard Specifications. The contractor shall not use GNSS, GPS or RTS equipment for a construction activity that requires a greater precision than the machine's capability as per the manufacturer's recommendation.

F. Basis of Payment

1. No payment shall be made by the City for the Contractor's elected use of electronic methods of project location layout and control. Any delays arising from the operation of GNSS, GPS, or RTS layout or machine control systems will not result in adjustment to the bid price or quantity of any construction items or be justification for granting any type of contract extension. Any costs incurred through incorrect use of GNSS, GPS, or RTS layout or machine control systems or re-work necessary through their use are the sole responsibility of the Contractor.

G. Survey Quality Assurance

1. It is the Department's prerogative to perform construction survey quality assurance. Construction survey quality assurance is generally defined as an independent check of the Contractor's construction survey quality control. The construction survey quality assurance process may involve physically checking the Contractor's construction survey layout using independent survey data, or may simply involve reviewing the construction survey quality control written documentation.
2. If the Department elects to physically check the Contractor's survey layout, the Contractor's designated surveyor may be required to be present. The Department will provide a minimum notice of 48 hours to the Contractor, whenever possible, if the Contractor's designated surveyor's presence is required. Any errors discovered

through the quality assurance process shall be corrected by the Contractor, at no additional cost to the Department.

1.13 ELECTRONIC FILES AND RELEASE FORM

- A. Electronic copies of the plans will be made available to the selected Contractor. The Engineer's Electronic File Release and Waiver Form identifying limitations on the Contractor's use of the data and limitations on the Engineer's liability related to the Contractor's use of electronic data will need to be filled out and signed by the Contractor before the files will be delivered.
- B. Electronic files will be provided in AutoCAD Civil3D 2019.dwg and/or LandXML file format. Translation of the files to other electronic formats is the responsibility of the Contractor.

1.14 SUBSURFACE SOILS INFORMATION

- A. All subsurface soils information, including but not limited to ledge, boring, refusal, or groundwater elevations, is approximate only and is shown on the Drawings for design purposes only and the convenience of the Contractor. The Contractor shall make their own investigations regarding the actual location and/or nature of such information and shall not rely on nor make claims for any extra payments based on the information shown on the drawings.

1.15 SHEETING AND BRACING

- A. Any sheeting and/or bracing required for the satisfactory installation of drainage and/or sanitary sewerage structures and pipes will not be paid for separately but shall be considered as incidental to the appropriate bid item. Contractor is advised that project conditions are expected to require special attention to sheeting and bracing to accommodate the site and work characteristics. Design, maintenance and all work associated with Sheeting and Bracing is the contractor's responsibility and shall be considered incidental to the cost of work. Contractor shall have a Maine Licensed Professional Engineer design all sheeting and bracing. Contractor shall ensure sheeting and bracing due not undermine or impact the bearing capacity/strength of the underlying soils.

1.16 DEWATERING:

- A. Excavation and installation of storm drains, waterlines, sewers, services and associated structures will require continuous dewatering through-out construction.
- B. Contractor is responsible for preparing and implementing a dewatering plan meeting environmental regulations and requirements stipulated within the contract documents and plans.
- C. Prior to construction, the contractor shall submit a written dewatering plan and shall meet with City representatives to review the dewatering plan.
- D. The Contractor shall make adjustments to the dewatering plan as required by the City or other agencies. Any required changes shall be considered incidental to the cost of dewatering and no extra payment will be made. All dewatering shall be run through a

pumped sediment removal system equal to “dirt bag” or alternative methods as approved by the Engineer.

- E. It is anticipated that high volumes of pumping will be required for the project. Discharge locations shall be approved by the engineer prior to construction. The contractor shall be responsible for all work and costs associated with dewatering the jobsite including any changes, modifications or special dewatering systems/requirements to ensure the site is dewatered. This work shall be considered incidental to the related pay items and no separate payment will be made.

1.17 WASTE AREAS

- A. Waste and surplus material shall not be stockpiled. The disposal of waste and surplus material and slash from tree cutting shall be as outlined in Section 203.06 – Waste Areas of the Supplemental Specifications.

1.18 OCCUPATIONAL SAFETY AND HEALTH

- A. The Contractor is hereby advised that all work to be furnished to the City shall be performed with equipment, methods, and use of personnel in conformance with the pertinent Occupational Safety and Health Act requirements of the State of Maine and with the regulations for construction as specified by the Department of Labor and Occupational Safety and Health Administration (OSHA) as currently amended.

1.19 PRECONSTRUCTION CONFERENCE

- A. A virtual preconstruction conference will be held within ten (10) days after the awarding of the contract. At this time, the contractor will be required to submit a graphically illustrated schedule and a plan showing project activities. City officials and representatives of the various utility companies involved in the project will be present at this meeting.
- B. It is the purpose of this meeting to inform the various agencies of the proposed work schedule, and to give them the opportunity of discussing any difficulties and of offering suggestions to the Contractor concerning his proposed schedule in order that full cooperation may be reached.

1.20 SCHEDULE OF OPERATIONS

- A. The contractor shall submit 3 days prior to the pre-construction meeting a detailed schedule showing the sequencing, critical path items, milestones and scheduling of the work. This schedule must show sufficient detail to insure compliance with the established complete dates above. Updates will be required as work progresses.

1.21 SETTING OF PIPES TO LINE AND GRADE

- A. If laser beam equipment is used for laying storm drain and/or sanitary sewer pipe, frequent checks shall be made to assure close adherence to line and grade. If lasers are not used,

batter boards are to be set at maximum twenty-five-foot (25') intervals and grades transferred to the boards with a transit, level, or line level. Setting pipes to grade by use of "pop" levels or carpenter levels will not be permitted. Contractor is advised the project includes setting pipes with minimal slopes. Contractor shall ensure pipe is set adhering to the line and grade requirements and shall utilize means and methods to ensure line and grade are accurate and consistent.

1.22 EXTENT OF OPEN EXCAVATION

- A. The extent of excavation open at any one time shall be controlled by OSHA regulations and by existing conditions and location of work area including work limits specified on contract drawings and required for construction.
- B. Utility trenches when subject to vehicle traffic shall be temporarily paved as noted on the plans. Furnishing install, and maintaining temporary trench pavement is incidental to the cost of the pipe. No separate payment will be made for any temporary pavement

1.23 LIMITATION OF OPERATIONS

- A. The Contractor shall conduct the work at all times in such a manner and in such sequence as will assure the least interference with traffic.
- B. The Contractor shall not open up work to the prejudice or detriment of work already started. The Engineer may require the Contractor to finish a section on which work is in progress before work is started on any additional sections, if finishing such section is essential to public convenience.
- C. Once pavement is removed from a street for utility installation, the Contractor shall work continuously on that street until base pavement is installed. The contractor may at their option install temporary pavement on opened trenches and streets. No separate or additional payment shall be made for temporary pavement.

1.24 TRENCH SUBBASE

- A. The Contractor shall be required to construct his roadway subbase concurrent to his trench backfilling operation if the street is not being reconstructed.

1.25 DUST CONTROL FOR STREET

- A. The Contractor shall apply water as the primary means of dust control. Water shall be applied as needed such that dust is prevented.
- B. Calcium chloride shall be spread only on disturbed unpaved areas. Calcium chloride shall not be spread on paved areas that are covered by granular material. These areas shall be swept clean of all granular material. Dust on paved areas shall be controlled with water before sweeping

1.26 WINTER MAINTENANCE

- A. Winter construction will be allowed on this Project as stipulated in contract documents.
- B. The Contractor agrees that the winter operations aspect of the project shall be coordinated with the City's winter efforts and the additional costs associated with the

activities not be borne by the City. Winter Maintenance shall be considered incidental to the cost of the work and no extra payment will be made.

- C. Contractor shall provide on-site response to sand/salt treatment, snow plowing, and snow removal operations within one hour of receiving a request from the City.
- D. Contractor shall provide for maintenance of the trench and driveway aprons impacted by the project's winter work. Replacement materials of sufficient strength and integrity shall be used for roadway and aprons to hold up to winter conditions. The City shall consider reasonable payment for required hot mix asphalt or concrete if it is determined that roadway conditions require placement of such for maintenance of the project winter work area.
- E. Contractor shall not re-stripe the street associated with winter work but shall ensure the delineation of the work zone as the project progresses. Re-establishment of the work zone following a storm will be required when snow removal operations have been completed. No payment will be made for the replacement of traffic control devices.
- F. The City will not reimburse for sand/salt treatment, snow plowing, or snow and ice removal operations associated with this project.
- G. In the event that a shut-down period is required, Contractor shall contact the City and a time frame shall be established under mutual agreement only.
- H. Contractor acknowledges that frozen materials shall not be used in any aspects of the project and the no payment shall be made for the methods necessary to keep materials free from freezing.

1.27 TRENCH PAVEMENT REPLACEMENT

- A. The Contractor shall be responsible for repairing any trench pavement that has experienced excess settlement, cracking or opening of pavement joints. Repair may include overlay, removal of unacceptable material and complete replacement, joint sealing or recutting pavement as required. This work may be necessary after final acceptance of the work and prior to expiration of the maintenance bond. This work shall be done at no additional cost to the City.

1.28 BYPASS PUMPING

- A. Bypass pumping may be required for some pipe installations to maintain existing sewer and storm drainage flows. Contractor shall submit a bypass pumping plan for City and PWD review and approval. The plan shall identify the equipment to be used along with the operations and maintenance procedures proposed by the Contractor to bypass flow throughout the duration of construction. No overflow of sanitary sewage or combined sewage to any overland area or receiving water is permissible. The Contractor shall be solely responsible for all damages or fines associated with overflows that occur as a result of the sewer installation work. All costs associated with bypass pumping shall be considered incidental to the work and no separate payment will be made.
- B. Bypass pumping and other required work to maintain flows shall be considered incidental to the related pipe pay item.

1.29 COSTS OF CONSTRUCTION

- A. Any materials, work or associated costs required to complete the project and not specifically associated with or identified in pay items shall be considered incidental to the costs of construction. No extra payment will be made.

1.30 CITY OF PORTLAND'S STREET EXCAVATION ORDINANCE

- A. The Contractor is hereby advised that all work shall conform to the regulations of Chapter 25 of the Municipal Code, "Streets, Sidewalks and Other Public Places", as currently amended. The Contractor shall be responsible for obtaining and completing the Street Opening Application but will not be charged for the Street Opening Permit for the Excavation.

1.31 RECORD DRAWINGS

- A. The Contractor shall keep daily records of all changes in the work, ties to all new service connections, and elevations of all inverts. Upon completion of the project, the Contractor shall deliver to the Engineer a marked-up set of plans with all changes and required information indicated in red.
- B. The Contractor shall maintain a record of all service lead locations and locations of buried fittings, etc., throughout the project. The locations shall be recorded by 3 ties from fixed permanent points. Prior to requesting final payment, the Contractor shall submit the records in triplicate bound form. The records shall be clearly legible and include the street, tax map, lot number and reference contract drawing number. A blank form is provided at the end of this section and is to be used by the Contractor for preparation of record ties.
- C. Prior to requesting final payment, the Contractor shall submit these records to the City in a clearly legible form in order to produce Record Drawings. Once all information has been received and verified, then the City will produce the record drawings from the information received.

STORM/SEWER SERVICE LATERAL LOCATION RECORD

Date Installed: _____

City of: _____

Type/Size of Service Pipe: _____

Street: _____

Connection at Sewer Main: _____

Dwelling No: _____

Depth, end of Service Pipe: _____

Occupant: _____

Length of Service Pipe Laid: _____

Owner: _____

Measured, Located by: _____

Project Contractor: _____

Location Diagram

(Provide 3 Ties to Permanent Objects)



Remarks _____

1.32 WASTE AND SALVAGE MATERIAL

- A. All waste material shall be removed from the site and the area left clean upon completion of work. Any equipment or structures damaged by the Contractor shall be repaired or replaced at no additional cost to the City. The Contractor shall notify the City of the final waste disposal location and if so located in the City shall be responsible to provide evidence of all necessary local fill permits and State permits at no extra cost to the City.
- B. All cobble stones, paving stones and granite curbing that are removed and not designated for reuse in the work shall remain the property of the City Portland and shall be transported and stockpiled by the Contractor at a designated location within the City Portland. The cost of loading, transporting unloading and stockpiling cobbles and stacking curbing is incidental to the contract and no separate payment will be made.

1.33 SANITARY FACILITIES

- A. The Contractor shall provide self-contained toilet units in sufficient numbers for use of all persons involved in the work.

1.34 UNAUTHORIZED USE OF FIRE HYDRANTS

- A. In conformance with the Maine State Department of Human Services, the Portland Water District requires the use of an approved air gap or reduced pressure zone back flow-device to assure the protection of the public water supply when filling tank trucks, street sweepers, jet machines or any other related equipment, or any other needs that require a connection to a public or private hydrant.
- B. Private Contractors providing services to the City for, street sweepers, jet machines, and lining services, are required to apply to the Portland Water District (District) for a hydrant meter and back flow device installations. The approved applicants will pay for the installation and removal of the hydrant meter and back flow device and all water recorded by the meter.

- C. The District considers any other connection or usage from a public or private hydrant as an unauthorized use of a hydrant and a theft of services. All Contractors must apply to The District for the installation of a back flow device and meter for each usage.
- D. The District will operate the hydrant and install and remove and relocate the back flow device and meter as needed. A valve is provided at the connection so the applicant can control the water without operating the hydrant. Please note size of meter requested (2" or 1"). The District can be contacted at 774-5961. All cost associated with these requirements is incidental to the contract.

1.35 WORKING DRAWINGS

- A. Submittals and shop drawings, defined as Working Drawings in the Standard Specifications Section 101.2 Definitions, shall be provided to the Engineer for review and approval. Requirements and timelines for working drawing review shall be in accordance with Section 01340 of the Specifications.

1.36 UTILITY FLOATATION

- A. Storm drains and associated structures will be subject to floatation until all utilities are installed and backfilled to subbase gravel. Contractor is responsible for implementing anti-floatation provisions during installation of utilities. This work shall be considered incidental to the related pay items.

1.37 UTILITY COORDINATION

- A. The storm drain improvement project includes construction in close proximity to sewer, water, gas, electrical and telecommunication utility service and transmission lines. The Contractor will be responsible for notifying utility representatives of the anticipated construction schedule. The Contractor will be responsible for all utility coordination, protection of existing infrastructure and any damages to existing utilities as a result of the work at no additional cost to the City.
- B. The following provisions of Section 104.4.6 of the Standard Specifications shall apply, and be modified to read as follows:

104.4.6 Utility Coordination

- A. Utility Pre-Construction Meeting: A Utility Pre-Construction Meeting will be held to coordinate the Work of the Contractor and the Work of affected Utility Companies. This meeting will be held as required by the contract provisions and the Contractors Approved Schedule but, in any event, will be held before the start of on-site construction by the Contractor that affects Utility Facilities. The Department's designated representative, Engineer, Resident Project Representative, the Contractor's Superintendent, and a representative of each affected Utility Company will attend. The Engineer will prepare minutes of the Utility Pre-Construction Meeting and distribute them to all attendees. Any

requests to revise the minutes must be made to the Engineer within 7 Days of distribution. These minutes will constitute the final record of the meeting.

B. Utilities within Right-of-Way (ROW): Except as provided otherwise in the Contract including subsection E - Temporary Relocations below, all Utility Facilities of all Utility Companies within the ROW will be relocated and adjusted as provided in the Contract by and at the expense of the affected Utility Company, provided, however, that the Contractor is responsible for scheduling its Work in accordance with the time allowed for utility relocation as provided in the Contract. Utility relocation Work may not proceed without authorization from the Department.

C. Contractor's Responsibilities:

1. The Contractor must exercise every reasonable precaution to prevent damage to Utility Facilities or interruption to utility services known to or discovered by the Contractor, whether or not shown on the Plans. Such precautions must include notice to Utility Companies before undertaking Work that could damage Utility Facilities. The Contractor must provide each Utility Company with notice at least three Business Days before the date a Utility Company will have to support any pole.
2. The Contractor must take all reasonable precautions to determine the presence of underground Utility Facilities before commencing any excavation Work and must provide all affected Utility Companies with at least 72-hour prior notice of the proposed excavation. The Contractor must comply with 23 M.R.S.A. § 3360-A, entitled "Protection of Underground Facilities," Maine's "Dig Safe" statute.
3. The Contractor must maintain initial markings (spray paint, stakes, etc.) made by the authorized representative of a Utility Company to indicate the location of underground Utility Facilities and otherwise comply with 23 M.R.S.A. § 3360-A(4).
4. The Contractor must cooperate with Utility Companies in their relocation or operations so that these operations proceed in a logical sequence, minimize duplication of Work, and avoid unnecessary interruptions to utility service.
5. If utility services are interrupted as a result of the Contractor's Work, the Contractor must **promptly** notify the appropriate Utility Company and must cooperate fully in the restoration of service. If service is interrupted, repair Work will be continuous until the service is restored. No Work can be undertaken around fire hydrants until the local fire authority has approved provisions for continued services.
6. The Contractor must schedule its Work so as to provide for all Utility Company Work and to complete the Work within the Contract Time. The estimated number of workdays required by each Utility Company to perform its relocation Work, if contained in the Contract, is provided by the Utility Companies and are estimates only. Such Utility Facility relocation times assume normal Working times (Monday through Friday, 8 hours per day), and are dependent upon normal weather, normal working conditions, and freedom from emergencies. The City is not responsible for the accuracy of these estimates. If a Utility Company fails to perform its Work within the time frames set forth in the Contract or in the minutes of the Pre-Construction Utility Meeting, and such failure impacts the Contractor's Critical Path, the

Contractor may request a suspension of work pursuant to the provisions of the contract.

7. Any clearing and tree removal that is a part of the Contract and that must be done in areas where Utility Companies are involved must be completed by the Contractor before the Utility Company can relocate its Utility Facilities. Any clearing, cutting of single trees, or limbing required for the temporary or permanent Utility Facility location must be approved by the City. The Contractor must provide the City with notice of at least four (4) days before removing or trimming any trees or other vegetation.
8. If blasting occurs on the Project, the Contractor must provide each Utility Company having Utility Facilities that could be damaged by the blast with at least 24-hour prior notice that includes the anticipated time of the initial blast.
9. If the Contractor actually observes a Utility Company Working within the Project Limits in a manner that (a) obviously violates the MUTCD, the Contractor's Traffic Control Plan, or an applicable OSHA requirement or commonly accepted safety practices, and (b) represents a clear and immediate risk of significant bodily injury to any person within the Project Limits, then the Contractor must notify the Resident and the Utility Company immediately.
10. At points where the Contractor's operations are adjacent to properties of railways, telephone, gas, water and/or power companies, or are adjacent to other property, damage to which might result in considerable expense, loss or inconvenience, work shall not be commenced until all arrangements necessary for the protection thereof have been made.
11. It is anticipated that utility poles will not be relocated prior to commencement of contract work. The Contractor is advised to schedule their work to accommodate the possibility of utility pole and overhead wire obstructions. The Contractor is responsible for supporting Utility poles during construction.
12. The Contractor shall cooperate with the owners of any underground or overhead utility lines in their removal and rearrangement operations in order that these operations may progress in a reasonable manner, and the duplication or rearrangement work may be reduced to a minimum, and that services rendered by those parties will not be unnecessarily interrupted.
13. No person, firm, or corporation, including City forces, shall make or cause to be made any opening or excavation in a City Street, way, or public place until contact has been made with all utilities to locate any existing underground gas, water, telephone, power or other installations within said street, way or public place. When gas or other flammable service to buildings is discontinued, the existing service line for such service shall be terminated at a point outside the building.
14. In the event of interruption to water or utility services as a result of accidental breakage, or as a result of being exposed or supported, the Contractor shall promptly notify the proper authority. He shall cooperate with the same authority in the restoration of such service as promptly as possible.
15. Water lines, gas lines, service connections, water and gas meter boxes, water and gas valve boxes, light standards, cableways, signals and all other utility

appurtenances within the limits of the proposed construction are to be moved by the owners with or without expense to the Contractor, unless otherwise provided for, or as noted in the plans.

16. The Contractor shall ascertain the location of existing utilities and any other necessary information by direct inquiry at the office of the following utility owners. The completeness of this listing is not guaranteed by the City of South Portland:

Electric:

Central Maine Power Company
162 Canco Road
Portland, ME 04103
Attention: Andrew Rabbe

Water:

Portland Water District
225 Douglass Street
Portland, ME 04101
Attention: Adam Sellick

Telephone:

Consolidated Communications
13 Davis Farm Road
Portland, ME 04103
Attention: Patrick Morrison

Fire Alarm:

Portland Fire Department - Electric
380 Congress Street
Portland, ME 04101
Attention: Jon Belanger

Gas:

Unitil Corporation
1075 Forest Avenue
Portland, ME 04103
Attention: Joe Renda

Cable TV:

Spectrum
118 Johnson Road
Portland, ME 04102
Attention:

Railroad:

Maine Central Railroad
P. O. Box 9701
Portland ME 04104
Attention:

Sewer:

Dept. of Public Works
212 Canco Road
Portland ME 04103
Attention: John Emerson

The completeness of the above listing is not guaranteed by the City of Portland.

17. The Contractor agrees to indemnify, defend, and hold harmless the City from and against any and all claims or causes of action arising from any act or omission of the Contractor, the Subcontractors or their respective agents, representatives, or employees for failure to comply with this Section.

- D. Temporary Relocations: The Contractor may request temporary changes of location of Utility Facilities for the Contractor's convenience. The Contractor must satisfy the City that the proposed temporary change will not interfere with the Work, the Work of Utility Companies, or the Work of other Contractors and will not impede the free and safe flow of traffic. If acceptable to the Department, the Contractor may make its own request to the Utility Company or other party affected by such temporary changes. The expense and risk of temporary changes will be borne solely by the Contractor; no changes to compensation or time will be made.
- E. Unforeseeable Utility Relocations: The Department may order utility adjustments in accordance with the provisions of the contract Section 4.03 Differing Subsurface or Physical Conditions.
- F. No Separate Payment: The cost of all Work related to utility coordination is Incidental to the Contract and no separate payment will be made.

1.38 SPECIAL PROVISION MAINEDOT DIVISION 400 PAVEMENTS

- A. The MaineDOT Special Provision Division 400 Pavements is adopted for this project with the modifications and additions reference in the Supplemental Specifications.

1.39 MAINEDOT SECTION 108 PAYMENT (ASPHALT ESCALATOR)

- A. Section 108.4.1 Price Adjustment for Hot Mix Asphalt shall apply to this project. The Asphalt Escalator clause shall only apply to items 403.207 Hot Mix Asphalt 19.0mm and 403.208 Hot Mix Asphalt 12.5mm. The asphalt escalator provisions shall not apply to pavement that is incidental to other items in this contract.

1.40 SPECIAL PROVISION SECTION 203 ROCK EXCAVATION AND BLASTING

The provisions of Section 105.2.7 Use of Explosives and 203.042 Rock Excavation and Blasting of the Standard Specifications shall apply with the following modifications.

General: This work includes rock excavation and blasting for utility trenches.

Blasting Notice to Utilities: If blasting occurs on the Project, the Contractor must provide each Utility Company having Utility Facilities that could be damaged by the blast with at least 24 hour prior notice that includes the anticipated time of the initial blast.

Time Limitations: Blasting shall be limited to between the hours of 9:00 am and 4:00 pm, Monday through Friday.

105.2.7 Use of Explosives

A. Standards When using explosives, the Contractor shall use the utmost care to protect life and property. Explosives must be transported, stored, and used in compliance with this Contract, in compliance with all applicable federal, State, and local laws, rules and regulations, and in accordance with all applicable provisions of the latest version of the Blasters' Handbook published by the International Society of Explosives Engineers (ISEE) of Cleveland, Ohio. In any case, the Contractor shall comply with the recommendations contained in Chapter 13 - "Blasting Safety" of said Blasters' Handbook, unless a qualified person conducting the blasting operations for the Contractor certifies to the Department in writing that certain provisions of said Chapter 13 are not necessary to protect life and property.

B. Blasting Zone - Signage and Flaggers The Contractor shall define a blasting zone. When using electric detonators, the blasting zone must allow safe distances from radio transmitters based upon their power output frequency. The blasting zone must include all areas within which people could be injured or property could be damaged by the blast. The Contractor shall mark Highways conspicuously at the perimeter of the blasting zone with signs in accordance with MUTCD. If applicable, the Contractor shall place signage along railroads and appropriate notice shall be provided to marine traffic. The Contractor shall provide a sufficient number of flaggers stationed outside the blasting zone to stop all approaching traffic during blasting operations.

C. Other Requirements The Contractor shall provide to the Department general liability insurance coverage covering use of explosives in accordance with Article 6 of the General Conditions. Immediately after the blast, the Contractor shall remove any debris that is obstructing Highway, pedestrian, railroad, or marine traffic flow. For related provisions, see Sections 104.4.6(C)(8)- Blasting Notice, 104.3.11 - Responsibility for Property of Others, and 110.1 - Indemnification. See related Spec 203.042

203.042 Rock Excavation and Blasting

Add 1.h. to read:

1.h. The Contractor shall observe the entire trench excavation blast area to guard against potential hazards before commencing blasting.

Add 1.i. to read:

1.i. The Resident will, at all times, have the authority to prohibit or halt the Contractor's blasting operations if it is apparent that through the methods being employed the safety and convenience of the public is being jeopardized.

Amend 3.a. to read:

3.a. Not less than two weeks prior to commencing trench drilling and blasting operations, or at any time the Contractor proposes to change drilling and blasting methods, the Contractor shall submit a Blasting Plan to the Resident for review and approval. The Blasting Plan shall contain full details of the drilling and blasting patterns and controls the Contractor proposes to use.

Add to 4.a.:

4.a.1 The preblast survey shall be completed by a Subcontractor hired by Contractor Survey to be performed by an independent business entity with a minimum of 5 years' experience in similar type surveys.

4.a.2 The Preblast survey shall include all structures within 500 feet of the blast.

4.a.3 The Preblast survey shall include but not be limited to:

- a. Still photos taken at 50 foot maximum stationing. (4" x 6" color prints).
- b. Videotape of entire construction area.
- c. Videotape of each structure within construction area to show preblast conditions. Highlight existing defects in structures and pavements. Provide some means of establishing scale of existing defects, i.e.: include tape measure or folding ruler at defect during videotaping.
- d. Videotaping must be done with commercial grade equipment to allow equipment still viewing without distortion of the viewed area.
- e. Still photos and videotape shall be retained by the preblast surveyor and shall be available for viewing by the Owner and Engineer within 24 hours upon request.

Add to 4.b.:

4.b.1. The Contractor shall design and conduct all utility trench blasting activities in such a manner that the peak particle velocities of ground vibrations, measured at the locations of the nearest aboveground structures to the blast, including residential and commercial buildings do not exceed the "safe limits" recommended by the U.S. Bureau of mines in Figure B of BUMINES RI 8507, and in no instance shall exceed 2.0 in./sec.

4.b.2. The Contractor shall design and conduct all trench blasting activities in such a manner that the peak particle velocities of ground vibrations at adjacent existing underground utilities, including vaults, ductile iron pipe, coated steel pipe and plastic pipe do not exceed 4.0 in./sec.

Add 4.d. To read:

4.d. **OVERBREAK CONTROL.** Overbreak is defined as the excessive fracturing of rock beyond the desired trench excavation limit. Blasting for the utility trench excavation must be done in such a manner as to minimize the fracturing of rock beyond the required excavation, and therefore minimize the potential for damage to nearby existing underground utilities, including vaults, ductile iron pipe, coated steel pipe and plastic pipe. No blasting will be performed to remove rock in areas 2 ft. or closer to existing underground utilities. Rock in these areas will be removed with jack hammers or similar equipment.

If the Engineer considers overbreak to be unfit for foundations, the overbreak rock shall be removed and the excavation shall be backfilled with suitable material. All such removal and backfilling shall be done by and at the expense of the Contractor.

Basis of Payment

No payment shall be made for the Contractor's elected use blasting. Any delays arising from blasting operations will not result in adjustment to the bid price or time. Any costs incurred through use explosives including re-work or repair of damaged property are the sole responsibility of the Contractor.

1.41 CAD RELEASE FORM

The AutoCAD files will be made available to the prospective bidders as well as the selected contract Contractor. An Electronic Release Form will need to be filled out, by the Contractor, and signed before the files will be delivered. The Electronic Release Form is attached to the project specifications. The price for the files will be \$105.00. Once the form and payment is received by the purchasing office, the files will be delivered by the project manager of the Public Works Department.

CAD RELEASE FORM

AN AGREEMENT BETWEEN THE CITY OF PORTLAND (HEREINAFTER "City") AND CONTRACTOR FOR TRANSFER OF COMPUTER AIDED DRAFTING (CAD) FILES ON ELECTRONIC MEDIA

City of Portland
Public Works Department
212 Canco Road
Portland, ME 04103

Recipient:

Project No. _____

Date: _____

Project Name: _____

Location: _____

The City will provide the following CAD files, dated _____ related to the Civil drawing series of the above referenced project, for the project use by the Recipient:

- | | |
|----------|----------|
| 1. _____ | 5. _____ |
| 2. _____ | 6. _____ |
| 3. _____ | 7. _____ |
| 4. _____ | 8. _____ |

Drawings were prepared on the following:

Software: AutoCAD Civil 3D Version: 2018

Recipient shall pay City a handling fee of \$105.50* (*this fee includes 5.5% Maine State Tax). Files will be in the standard format of AutoCAD Civil 3D version 2019. An additional translation fee of \$105.50* (will apply to translating the files to another CAD format or an earlier version of AutoCAD). This signed agreement and payment of fees are required prior to transferring the files.

Handling fee:	\$100.00 + \$5.50 Maine State Tax (5.5%)	= \$ 105.50
Translation fee (if requested)	_____ + \$5.50 Maine State Tax (5.5%)	= _____
	Total Cost:	= _____

Transfer method (check one): E-mail, Email address: _____
 CD-ROM
 Zip Disk

Payment type (check one): Check
 Credit Card (Visa or Master Card only)
 Visa or Master Card
Name of Cardholder: _____
Credit card no: _____
Exp. Date _____

TERMS AND CONDITIONS:

1. It is understood and agreed that all drawings, specifications, or other documents of any kind prepared by City, whether in hard copy or in electronic or machine readable format including Electronic Documents (collectively the "City's Documents"), are instruments of their services prepared solely for use in connection with the single project for which they were prepared and that City retains all common law, statutory and other reserved rights, including the copyright. This agreement is not intended in any way to alter the respective interests of the parties in the Instruments of Service as set forth in the City/Contractor Agreement, notwithstanding City's agreement to release the Electronic Documents to Recipient.

2. The Electronic Documents are provided as a convenience to the Recipient for informational purposes only in connection with the Recipient's performance of its responsibilities and obligations relating to the Project. The Electronic Documents do not replace or supplement the paper copies of the Drawings and Specifications which are, and remain, the Contract Documents for the Project. In all instances, it is the responsibility of the Recipient to insure that the Electronic Documents are consistent with the Contract Documents.

3. The parties agree that the Electronic Documents are not, nor shall they be construed to be, a product. It is expressly agreed by the Recipient that there are no warranties of any kind in such Electronic Documents or in the media in which they are contained, either express or implied.

4. City makes no representation as to the compatibility of the CAD files with any hardware or software.

5. Since the information set forth on the CAD files can be modified unintentionally or otherwise, the City reserves the right to remove all indicia of its ownership and/or involvement from each electronic display.

6. If any differences exist between printed Instruments of Service and Electronic Documents, the information contained in the printed documents shall be presumed to be correct and take precedence over the Electronic Documents.

7. Recipient agrees not to add to, modify or alter in any way, or to allow others to add to, modify or alter in any way, the Electronic Documents or any printed copies thereof.

8. The Electronic Documents are supplied in a translatable format. Any conversion of the format is solely the responsibility of the Recipient. Recipient understands and agrees that the conversion of hard copies of Instruments of Service into electronic or machine readable format or the conversion of Electronic Documents from the machine readable formats used by City to some other format may introduce errors or other inaccuracies. Recipient agrees to accept all responsibility for any errors or inaccuracies and to release City from any liability or claims for recovery of damages or expenses arising as the result of such errors or inaccuracies.

9. Where the Recipient has received specific permission to use the Electronic Documents in connection with the Recipient's obligation to prepare certain documents for Project, Recipient shall, in addition to the other obligations set forth therein, be obligated to remove City's title block from the copy of the Electronic Documents used by Recipient. It is understood and agreed that, without the separate express written permission of the City to do so, the Electronic Documents are not to be used by any contractor or any of its subcontractors of any tier of material supplier or vendor as a shop drawing or any other type of submittal or as the basis for preparing such shop drawing or submittal. The sole exception to this prohibition shall be that the Recipient may use the Electronic Documents as a clearly distinguishable separate background upon which to prepare its shop drawings or other submittal.

10. Recipient further agrees that the City's Documents were prepared for use in connection with this project only and that the Electronic Documents are supplied to Recipient for the limited use stated above only. Recipient agrees not to use, or to allow others to use, the Electronic Documents, in whole or in part, for any purpose other than as stated above.

11. The City believes that no licensing or copyright fees are due to others on account of the transfer of the CAD files, but to the extent any are, the Contractor will pay the appropriate fees and hold the City harmless from such claims.

12. Any purchase order number provided by the Contractor is for Contractor's accounting purposes only. Purchase order terms and conditions are void and are not a part of this agreement.

13. The City has prepared these CAD files for the sole purpose of plotting and printing a hard copy of the design documents. The City believes only the hard copy print to be the accurate representation of all drawing information. Hard copy written dimensions override electronic measured dimensions. User must verify computer data against hard copy prints.

14. Electronic CAD files are an inherently unstable medium and subject to bugs, deterioration, modifications, and viruses. CAD files are subject to inadvertent changes in the process of moving from one computer to another; or by compressing and decompressing the data; or by moving from one software revision to another; or any kind of manipulation of the data will lead to defects.

15. This agreement shall be governed by the laws of the State of Maine. Only printed copies of the Instrument of Service shall be signed and sealed.

16. Recipient agrees to waive any and all claims and liability against City and its subconsultants resulting in any way from any failure by Recipient to comply with the requirements of this Agreement for the Delivery of Documents in Electronic Format.

17. The Recipient agrees that no third party beneficiary status or any other right of action is created in favor of any contractor, subcontractor, materialmen or other third party against the City by virtue of this Agreement or in connection with its delivery of Electronic Documents, and no third party beneficiary status is intended.

18. Recipient further agrees to indemnify and save harmless the City, its officers and employees from any and all claims, judgments, suits, liabilities, damages, costs or expenses (including reasonable defense and attorney's fees including claims asserted in breach of contract, breach of warranty, negligence, or any other tort) arising as a result of either: 1) Recipient's failure to comply with any of the requirements of Agreement for the Delivery of Documents in Electric Format; or 2) a defect, error or omission in the Electronic Documents or the information contained therein, which defect, error or omission was not contained in the Contract Documents as defined in Paragraph 2 or where the use of such Contract Documents would have prevented the claim, judgment, suit, liability, damage, cost, or expense.

19. City reserves the right to deny a request to translate files.

AUTHORIZED ACCEPTANCE

by City

by Recipient

Signature

Signature (by officer)

Print Name and Title

Print Name and Title

Date

Date

Witness: _____

1.42 ANTI-IDLE POLICY

- A. This Special Provision is a copy of the City's Anti-Idle Policy. Although this Policy is directed to City Employees regarding the use of City vehicles, we as a City, along with its citizenry, request your compliance as well. It is our goal to protect and preserve the natural environment and improve air quality in the City of Portland. As a business partner of our City and responsible organization we will expect and greatly appreciate your assistance in this effort.

City of Portland Anti-Idle Policy

Purpose:

To inform all City employees of the need to eliminate unnecessary idling of vehicles in order to reduce the cost of City operations and to reduce emissions created by City vehicles. Our goal is to protect and preserve the natural environment and improve air quality in the City of Portland.

Policy:

It is the policy of the City of Portland to continually improve the efficient use of vehicle fuels in an effort to reduce operating costs and emissions. City vehicles will not be permitted to idle unnecessarily. Operators of City equipment will adhere to the following standards:

- 1) Idling is prohibited (with the limited exceptions listed below) when the ambient temperature is above 32 degrees F.
- 2) 10 minute maximum idle time limit when ambient temperature is 32 degrees F and below.
- 3) Vehicles will not be left idling when the operator is out of the vehicle (with the limited exceptions listed below).

For the health and safety of operators, there will be occurrences when vehicles will be left running. Examples include protection from the elements or for the use of the vehicle safety features (including the use of air conditioning in street sweepers to keep dust out of the cab).

Exceptions:

Due to the emergency nature of some City operations, the following exceptions will apply to this policy:

- Emergency response vehicles when responding to an emergency
- Fire vehicles which must maintain onboard medication at a specific temperature
- Vehicles whose batteries may be discharged because of onboard electrical equipment (i.e. emergency lights, radar, computers, etc.)

Non-Compliance:

After a reasonable period of education about this new policy, employees will be subject to progressive discipline under AR 25 if they do not comply with this policy.

1.43 ACCESSIBILITY DURING CONSTRUCTION

As of April 1, 2021 the City of Portland has adopted new guidelines for maintaining ADA compliance during construction projects. These guidelines must be adhered to for the duration of this project. CITY OF PORTLAND DPW TEMPORARY ADA GUIDANCE are attached to the Contract Documents as Appendix B.

END OF SECTION

SECTION 01010B – SUMMARY OF WORK

SUMMARY OF WORK

PART 1 - GENERAL

1.1 DESCRIPTION:

- A. Location: The Work locations include, but are not limited to, locations within the rights-of-way on the following streets and easements in the City of Portland, Maine.
 - 1. Frost Street
 - 2. Deering Avenue
 - 3. Kenilworth Street
 - 4. Sherwood Street
 - 5. Beaumont Street
 - 6. Curtis Road
 - 7. Vaill Street
 - 8. Concord Street West
 - 9. Ball Park Drive
 - 10. Ludlow Street/ Evergreen Cemetery
 - 11. Westlawn Road
 - 12. Washington Avenue
- B. Work Included: The Work includes, but is not limited to, the following:
 - 1. Sewer System Repair:
 - a. Sewer manholes
 - b. Gravity sewer
 - c. Sewer service connection
 - d. Existing flow management/ bypass pumping for installation of new sewer pipes and manholes
 - 2. Drainage System Repair
 - a. Drain manholes and catch basins
 - b. Storm drain and catch basin laterals
 - c. Underdrain
 - d. Riprap aprons and swales
 - e. Flow fill and abandonment of existing storm drain
 - f. Existing flow management/ bypass pumping for installation of new storm drain pipes, catch basins, and manholes
 - 3. All related site work including trench excavation, structural rock excavation, support of excavation, groundwater dewatering, tree and stump removal, disposal of excess excavated materials, filter fabric, bedding, backfill, compaction, road/drive subbase, paving, curb restoration, sidewalk restoration, resetting monuments, loam/seed and landscaping.
 - 4. Other miscellaneous work shown in the Specifications for a complete and operational system.
 - 5. Additional project scopes may be added throughout the duration of the contract.
- C. Related Work Specified Elsewhere
 - 1. Coordination: Section 01050

2. Construction Schedules: Section 01310
 3. Site work, piping, structures, testing requirements are specified in the supplemental specifications.
- D. Removals, Relocations and Rearrangements
1. Examine the existing site for the work of all trades which will influence the cost of the work under the bid. This work shall include removals, relocations and rearrangements which may interfere with, disturb or complicate the performance of the work under the general bid involving systems, equipment and related service lines, which shall continue to be utilized as part of the finished project. The Contractor is responsible for all coordination in this regard.
 2. Provide in the bid a sufficient amount to include all removals, relocations, rearrangements and reconnections herein specified, necessary or required to provide approved operation and coordination of the combined new and existing systems and equipment.
 3. Provide in the bid a sufficient amount to include all temporary facilities required to maintain flows during the construction period, including bypass pumping, temporary piping, temporary metering, etc. The cost shall include the cost for all labor, tools, equipment and materials necessary.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION

3.1 MAINTAIN EXISTING WORKS

A. Continuous Operations Criteria:

1. The Contractor shall conduct his operations in such a manner and sequence which shall neither result in a disruption of, nor interfere with, the functional workings of any existing utilities.
2. The Contractor shall furnish, install and operate any piping, equipment and appurtenances necessary to provide the temporary services/facilities required during construction including, but not limited to, bypass pumping, flow barriers and diversions. Temporary facilities, if required, shall have pumping capacity equal to or greater than the existing maximum capacity of the piping as determined by their size and slope.
3. The Owner will operate and maintain all existing systems and equipment not modified or impacted by the project. The Contractor shall notify and coordinate with the Owner whenever Contractor's temporary facilities or construction will interface with existing utilities.
4. The Contractor shall be responsible for the operation and maintenance of all new and temporary facilities until such time as the new facilities are accepted by the Owner.

B. Minimize Interference

1. The Contractor shall at all times conduct his operations so as to interfere as little as possible with existing works. The Contractor shall develop a program, in cooperation with the Engineer and interested officials, 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 deviations therefrom are expressly permitted

2. 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. It may be necessary to work outside of normal working hours to minimize 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.

3.2 CONSTRUCTION SEQUENCE

A. Refer to Plans and Special Provisions for sequence requirements.

END OF SECTION

SECTION 01050 – COORDINATION

COORDINATION

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Contractor is required to work in close proximity to Owner's existing facilities. The Contractor, under this Contract, will be responsible for coordinating construction activities with Owner to ensure that services, facilities, and safe working conditions are maintained.
- B. Other Construction Contractors will be interfacing with this Contract and working within the work area and in the vicinity of this Contract. The Contractor, under this contract, shall act as Construction Coordinator and shall coordinate construction activities with other Contractors working for Owner.
- C. Any damage to existing structures, equipment and property, accepted equipment or structures, and property or work in progress by others; as a result of the Contractor's or his subcontractor's operations shall be made good by the Contractor at no additional cost to the Owner.

1.2 COORDINATION WITH OTHERS

- A. City of Portland:
 1. Contractor shall coordinate access, egress, detours and traffic control, if required, at each site with the Portland Police Department and Fire Department. The Contractor shall notify Portland Police, Fire Department and Rescue Squad at least 24 hours in advance of any street closings or detours.
 2. Refer to the Special Provisions for Traffic Control requirements. The presence of Portland Police will be a determination made by the Traffic Engineer based on the Contractors submitted traffic control plan. If Police are required (as determined by the City), the City will hire and reimburse them. The Police Department requires 48 hours' notice for any Police detail onsite. Contractor shall coordinate all street and sidewalk closures at the weekly meetings.
 3. The Contractor shall be responsible for coordinating and maintaining public services to all public and private properties.

1.3 UTILITY COORDINATION

Refer to the Special Provision 1.37 and Specification Section 01200 Project Meetings

1.4 NOTIFICATION OF RESIDENTS

- A. Residents shall be notified by the Contractor sufficiently in advance of any construction affecting the resident's driveway to allow adequate time for removal of vehicles.
- B. The Contractor shall restore access to all driveways at the end of each work day. The Contractor shall also make every effort to maintain access to the driveways at all times.

1.5 NO SEPARATE PAYMENT

- A. Unless specifically stated otherwise, the cost for the Contractor's coordination of the project is incidental to the contract and no separate payment will be made.

END OF SECTION

SECTION 01200 – PROJECT MEETINGS

PROJECT MEETINGS

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Work Included: To enable orderly review during progress of the work, and to provide for systematic discussion of problems, the Engineer will conduct project meetings throughout the construction period.
- B. Related work described elsewhere: The Contractor's relations with his subcontractors and materials suppliers and discussions relative thereto, are the Contractor's responsibility and are not part of project meetings content.

1.2 QUALITY ASSURANCE

- A. Persons designated by the Contractor to attend and participate in the project meetings shall have all required authority to commit the Contractor to solutions agreed upon in the project meetings.

1.3 SUBMITTALS

- A. Agenda items: To the maximum extent practicable, advise the Engineer at least 24 hours in advance of project meetings regarding all items to be added to the agenda.
- B. Minutes: The Engineer will compile minutes of each project meeting and will furnish a copy to the Contractor. The Contractor may make and distribute such other copies as he wishes.
- C. Contractor to submit a written Monthly Progress Report to the Engineer at least two days prior to the Monthly Construction Meeting. Report shall include, at a minimum, the following
 - 1. Copy of updated project schedule.
 - 2. Work completed in previous month
 - 3. Work to be completed during upcoming month
 - 4. Discussion of overall project schedule

PART 2 - PRODUCTS

(No products are required in this Section.)

PART 3 - EXECUTION

3.1 MEETING SCHEDULE

- A. Except as noted below for Preconstruction Meeting, project meetings will be held monthly. Coordinate as necessary to establish mutually acceptable schedule for meetings.

3.2 MEETING LOCATION

- A. To the maximum extent practicable, weekly meetings will be held at the job site in the Engineer's field office.

- B. Monthly meetings will be held at the City of Portland Public Works.

3.3 PRECONSTRUCTION MEETING

- A. Preconstruction meeting will be scheduled within ten (10) days after the Effective Date of the Agreement, but before the Contractor starts work at the site. Provide attendance by authorized representatives of the Contractor and all major subcontractors. The Engineer will advise other interested parties and request their attendance.
- B. Minimum agenda: Distribute data on, and discuss:
 - 1. Identification of key project personnel for Owner, Engineer, Contractor, funding/regulatory Agencies.
 - 2. Responsibilities of Owner, Engineer, Resident Project Representative, Contractor.
 - 3. Channels and procedures for communications.
 - 4. Construction schedule, including sequence of critical work.
 - 5. Easements, permits.
 - 6. Contract Documents, including distribution of required copies of original documents and revisions.
 - 7. Processing of Shop Drawings and other data submitted to the Engineer for review.
 - 8. Processing of field decisions and Change Orders.
 - 9. Rules and regulations governing performance of the Work, including funding/regulatory Agency requirements.
 - 10. Procedures for safety and first aid, security, quality control, housekeeping, and other related matters.

3.4 PROJECT MEETINGS

- A. Attendance: To the maximum extent practicable, assign the same person or persons to represent the Contractor at project meetings throughout progress of the Work. The Superintendent shall attend. Subcontractors, materials suppliers, and others may be invited to attend those project meetings in which their aspects of the Work are involved.
- B. Minimum agenda:
 - 1. Review, revise as necessary, and approved minutes of previous meeting.
 - 2. Review progress of the Work since last meeting, including status of submittals for approval.
 - 3. Review schedule of work to be accomplished prior to next meeting.
 - 4. Discuss monthly partial payment request.
 - 5. Review status of change order requests and Work Directive Changes.
 - 6. Identify problems which impede planned progress.
 - 7. Develop corrective measures and procedures to regain planned schedule.
 - 8. Complete other current business.

END OF SECTION

SECTION 01310 – CONSTRUCTION SCHEDULES

CONSTRUCTION SCHEDULES (LONG FORM)

PART 4 - GENERAL

4.1 DESCRIPTION

- A. The scheduling of the work under the Contract shall be performed by the Contractor in accordance with the requirements of this Section. For the development of the schedule, the cost loading of the schedule, monthly payment requisitions and project status reporting requirements shall be done using computerized Critical Path Method (CPM) scheduling. The CPM Schedule shall be cost loaded based on the schedule of values in accordance with Section 01370. The CPM schedule and all reports should be prepared with Primavera P3 software. CPM, as used by this section, shall be as generally outlined in the Association of General Contractors (AGC) publication, "The Use of CPM in Construction" except that either "i-j" arrow diagrams or precedence diagramming format may be used. In case of conflicts between this section and the AGC document, this specification shall govern. The schedule shall be as stated in the General Conditions of the Construction Contract and as specified herein.
- B. Inclement Weather. The construction schedule shall include at least 5 lost working days on the CPM schedule's critical path due to inclement weather.
- C. Float time. Total float time is the period of time measured by the number of days for each non-critical path activity, and succeeding activities, before becoming part of the critical path. The float time in the schedule belongs to the project. As such, liability for delay of the project completion date rests with the party actually causing delay to the project completion date. For example, if Party A uses some, but not all of the float time and Party B later uses the remainder of the float time as well as additional time beyond the float time, Party B shall be liable for the costs associated with the time that represents a delay to the project's completion date. Change orders take up float time as soon as they are identified. No extensions will be granted for change orders unless they are shown to be on the critical path and cause of an extension of the completion date.
- D. Initial Schedules (Presented at the Preconstruction Meeting).
 1. Overview bar chart plan. The overview bar chart shall indicate the major components of the project work and the sequence relations between major components and subdivisions of major components and shall include the following:
 - a. Identification of subdivisions of major components into activities such as excavation, foundation subgrade preparation, foundation concrete, structural concrete, major mechanical work, major electrical work, heating and ventilation work, etc.
 - b. Planned durations and start dates for each subdivision work item.
 - c. Each component shall be accurately plotted on time scale sheets.
 2. Sixty Day Plan of Operation bar chart. A bar chart showing the construction activities for the first 60 days, including mobilization, permits, submittals necessary for early material and equipment procurement, submittals necessary for long lead equipment procurement, initial site work and other submittals and activities required during the first 60 days.

- E. Form of Overall Construction Schedules:
1. Narrative Report to include at a minimum the following:
 - a. The status of major project components including percent complete, amount of time ahead or behind schedule and an explanation of how the project will be brought back into schedule if delays have occurred.
 - b. Explanations for any lack of work on critical path activities planned to be performed during the last month.
 - c. Explanations for any schedule changes, including changes to the logic or to activity duration.
 - d. A list of critical activities scheduled to be performed in the next two month period.
 - e. A complete description of the construction methods to be employed.
 - f. The status of major material and equipment procurement.
 - g. The value of materials and equipment properly stored at the site, but not yet incorporated in the work-in-place.
 - h. Any delays encountered during the reporting period.
 - i. An assessment of inclement weather delays and impacts to the progress of the work.
 - j. Any other items specifically requested by the Engineer or Owner.
 2. Overview Bar Chart
 - a. Summary of current CPM schedule updated through the entire construction period.
 - b. Major project components shall be represented as time bars which shall be subdivided into various types of work.
 - c. The same status indicated by early start and finish activity information on the latest update of the CPM schedule shall be indicated.
 - d. A percent completion shall be indicated for each major component and subdivision
 3. CPM Network Schedule:
 - a. The CPM schedule shall be a time-scaled network diagram of the "i-j" activity-on-arrow or precedence type.
 - b. The network diagram shall describe the activities to be accomplished and their logical relationships and show the critical path.
 - c. The schedule shall contain sufficient detail and information to cost load the CPM schedule in accordance with the approved schedule of values. Each work activity shall be cost loaded as specified.
 - d. Provide a separate horizontal schedule line for each trade or operation and show concurrent and preceding activities.
 - e. Present in chronological order the beginning of each trade or operation showing duration and float time.
 - f. Present Shop Drawings, Project Data and Samples submittal dates, dates that reviewed copies are required, and estimated product procurement and delivery dates.
 - g. All construction activities and procurement shall be indicated in a time-scaled format and a calendar time-line shall be shown along the entire sheet length. Each activity arrow shall be plotted so that the start and finish dates are accurately represented on the calendar.

- h. All activities shall be shown using symbols that clearly distinguish between critical path activities, non-critical path activities and free float for each non-critical activity.
 - i. All activities shall be identified by a activity number responsibility code, work duration and dollar value.
 - j. Identify key dates.
 - k. Provide suitable match lines to interface between schedule sheets. Schedule sheets not to exceed 39-inch by 60-inch.
4. Computerized Schedule Report Tabulations shall include the following:
- a. Activities shall be sorted by the following:
 - i. Activity number
 - ii. Early start date
 - iii. Total float
 - iv. Responsible party (Contractor, Engineer, Owner, Subcontractor, supplier, etc.)
 - b. A table identifying the successor and predecessor activities for each activity.
 - c. Information shall be included for each activity on activity numbers, responsibility code, description, percent complete, duration, early start and finish date, late start and finish date, status (whether critical), float times, and cost value.
 - d. Each schedule report table will include the following summary data:
 - i. Project Name
 - ii. Contractor
 - iii. Type of tabulation
 - iv. Project duration
 - v. Contract Completion Date (including approved time extensions)
 - vi. Commencement Date
 - vii. Data Date and Plot Date
 - viii. Updated schedule completion date.
 - e. Provide other reports requested by the Owner or Engineer.
5. Provide separate sub-schedules, if requested by the Engineer, showing submittals, review times, procurement schedules, and delivery dates.
- F. Updated schedules:
- 1. Show all work activities including those already complete.
 - 2. Show all changes occurring since previous submission and highlight or otherwise identify changes.
 - 3. Indicate progress of each activity, show actual start and completion dates.
 - 4. Include:
 - a. Major changes in scope.
 - b. Activities modified since previous updating.
 - c. Revised projections due to changes.
 - d. Other identifiable changes.
 - 5. Provide narrative report, including:
 - a. Discussion of problem areas, including current and anticipated delay factors.
 - b. Corrective action taken, or proposed.
 - c. Description of revisions that may affect schedules.

4.2 QUALIFICATIONS

- A. The person preparing the CPM schedules and reports shall be qualified to use CPM techniques and the Primavera P3 software. Qualifications shall include a description of the construction projects on which the individual has successfully applied computerized CPM and will include at least two projects of a similar nature, scope, and value as the current project.

4.3 SUBMITTALS

- A. Submit statement identifying the individual who shall be performing the CPM scheduling and the qualification of this individual. Contractor shall identify whether this work is being carried out by a Consultant or in-house staff.
- B. Submit initial schedules as defined in 1.1.D herein, at the Preconstruction Meeting.
- C. Submit Overall construction schedule (CPM schedule, narrative report, Schedule report tabulations and overall bar chart) within 30 days of the notice to proceed.
- D. Submit Overall construction schedule to be updated on a monthly basis and to be submitted to the Engineer with the written monthly progress report at least two days prior to the monthly construction meeting.
- E. Submit updated schedules with each progress payment request.
- F. Submit 4 copies of initial and updated schedules to the Engineer.

4.4 ACCEPTANCE

- A. The acceptance of the schedule by the Engineer and Owner shall be based solely upon the schedule's compliance with the Contract requirements.
- B. The Engineer and Owner reserve the right to require adjustments, additions, or clarifications to any portion of the schedule which is determined to be insufficient for the monitoring of the work or approval of payment requests. No additional compensation will be provided for such adjustments, additions or clarifications.
- C. The Engineer will either accept or reject the monthly schedule update submittal. If accepted, the percent complete shown in the monthly update will be the basis for the application for payment to be submitted by the Contractor. If rejected, the update shall be corrected and resubmitted by the Contractor before the application for payment for the update period can be processed.

END OF SECTION

SECTION 01340 – SUBMITTALS

PART 1 – GENERAL

1.1 DESCRIPTION

- A. Work Included:
 - 1. Submit to the Engineer, Shop Drawings, Manufacturers' Certificates, Project Data, and Samples required by this section and the Supplemental Specification Sections.
- B. Related Work Specified Elsewhere:
 - 1. Special Provisions: Section 01000.
 - 2. Construction Schedules: Section 01310.
 - 3. General Conditions: Section 00700.

1.2 SHOP DRAWINGS

- A. Shop Drawings are required for identified elements of the work. Each shop drawing shall be assigned a sequential number for purposes of easy identification, and shall retain its assigned number, with appropriate subscript, on required resubmissions.
- B. Shop Drawings are generally defined as all fabrication drawings, diagrams, brochures, schedules, bills of material, manufacturers data, spare parts lists, and other data prepared by the Contractor, his subcontractors, suppliers, or manufacturers which illustrate the manufacturer, fabrication, construction, and installation of the work, or a portion thereof.
- C. The Contractor shall submit to the Engineer all Shop Drawings electronically. If they can't be submitted electronically then submit a minimum of one (1) copy of Shop Drawings and approved data. The Engineer will retain a copy (for Owner's, Engineer's and Field Representative's files) and send a copy to the Contractor for distribution to subcontractors, suppliers and manufacturers. The only exception to the above is that all shop drawings which incorporate blue line type drawings shall be submitted with only one good quality reproducible. The Engineer will return the one marked up reproducible to the Contractor.
- D. The Contractor shall provide a copy of the completed Submittal Certification Form (copy provided for Contractor's use at the end of this Specification Section) which shall be attached to every copy of each shop drawing. Shop Drawings shall show the principal dimensions, weight, structural and operating features, space required, clearances, type and/or brand of finish or shop coat, grease fittings, etc., depending on the subject of the drawing. When it is customary to do so, when the dimensions are of particular importance, or when so specified, the drawings shall be certified by the manufacturer or fabricator as correct for the work.
- E. Shop Drawings shall be submitted as a complete package by specification section, unless otherwise reviewed and approved by the Engineer. It is the intent that all information, materials and samples associated with each specification section be included as a single submittal for the Engineer's review. Any deviation from this requirement shall be requested in writing prior to any associated submittal.

- F. The Contractor shall be responsible for the prompt and timely submittal of all shop and working drawings so that there shall be no delay to the work due to the absence of such drawings.
- G. No material shall be purchased or fabricated especially for the Contract until the required shop and working drawings have been submitted as hereinabove provided and reviewed for conformance to the Contract requirements.
- H. Until the necessary review has been made, the Contractor shall not proceed with any portion of the work, the design or details of which are dependent upon the design or details of work, materials, equipment or other features for which review is required.
- I. All shop and working drawings shall be submitted to the Engineer by and/or through the Contractor, who shall be responsible for obtaining shop and working drawings from his subcontractors and returning reviewed drawings to them. Shop drawings shall be of standardized sizes to enable the Owner to maintain a permanent record of the submissions. Approved standard sizes shall be: (a) 22 inches by 34 inches; (b) 11 inches by 17 inches, and (c) 11 inches by 8-1/2 inches. Provision shall be made in preparing the shop drawings to provide a binding margin on the left hand side of the sheet. Shop drawings submitted other than as specified herein may be returned for resubmittal without being reviewed.
- J. Only drawings which have been checked and corrected by the fabricator should be submitted to the Contractor by his subcontractors and vendors. Prior to submitting drawings to the Engineer, the Contractor shall check thoroughly all such drawings to satisfy himself that the subject matter thereof conforms to the Drawings and Specifications in all respects. All drawings which are correct shall be marked with the date, checker's name, and indication of the Contractor's approval, and then shall be submitted to the Engineer.
- K. If a shop drawing shows any deviation from the Contract requirements, the Contractor shall make specific mention of the deviations in his letter of transmittal.
- L. Should the Contractor submit equipment that requires modifications to the structures, piping, layout, etc., detailed on the Drawings, he shall also submit details of the proposed modifications. If such modifications are accepted, the Contractor, at no additional cost to the Owner, shall do all work necessary to make such modifications.
- M. A maximum of two submissions of each Shop Drawing will be reviewed, checked, and commented upon without charge to the Contractor. Any additional submissions which are ordered by the Engineer to fulfill the stipulations of the Drawings and Specifications, and which are required by virtue of the Contractor's neglect or failure to comply with the requirements of the Drawings and Specifications, or to make those modifications and/or corrections ordered by the Engineer in the review of the first two submissions of each Shop Drawing, will be reviewed and checked as deemed necessary by the Engineer, and the cost of such review and checking, as determined by the Owner, and based upon Engineer's documentation of time and rates established for additional services in the Owner-Engineer Agreement for this Project, may be deducted from the Contractor to make all modifications and/or corrections as may be required by the Engineer in an accurate, complete, and timely fashion.

1.3 SAMPLES

- A. The Contractor shall submit samples when requested by the Engineer to establish conformance with the specifications, and as necessary to define color selections available.

1.4 SUBMISSION REQUIREMENTS

- A. Accompany submittals with transmittal letter, containing:
 - 1. Date.
 - 2. Project title and number.
 - 3. Contractor's name and address.
 - 4. The number of each Shop Drawing, Project Data and Sample submitted.
 - 5. Notification of deviations from Contract Documents.
 - 6. Other pertinent data.
- B. A completed Submittal Certification Form shall be attached to each copy of each shop drawing and must include:
 - 1. Identification of deviations from Contract Documents.
 - 2. Contractor's stamp, initialed or signed, certifying review of the submittal, verification of field measurements and compliance with Contract Documents.
 - 3. Where specified or when requested by the Engineer, manufacturer's certification that equipment, accessories and shop painting meet or exceed the Specification requirements.
 - 4. Where specified, manufacturer's guarantee.

1.5 RESUBMISSION REQUIREMENTS

- A. Revise initial drawings as required and resubmit as specified for initial submittal.
- B. Indicate on drawings any changes which have been made other than those required by Engineer.

1.6 ENGINEER'S REVIEW

- A. The review of shop and working drawings hereunder will be general only, and nothing contained in this specification shall relieve, diminish or alter in any respect the responsibilities of the Contractor under the Contract Documents and in particular, the specific responsibility of the Contractor for details of design and dimensions necessary for proper fitting and construction of the work as required by the Contract and for achieving the result and performance specified thereunder.

1.7 SCHEDULE OF SUBMITTAL ITEMS

Provide submittals for the following items:

- A. Aggregates:

1. Provide Submittals for the following items:
 - a. Item 203.24 Common Borrow.
 - b. Item 203.25 Granular Borrow.
 - c. Item 203.31 Crushed Stone 703.31 (Overdepth).
 - d. Item 210.1 Riprap.
 - e. Item 304.09 Aggregate Base Course .
 - f. Item 304.10 Aggregate Subbase Course.
 - g. Item 703.4 Structural Soil.
 - h. Subsurface stormwater filtration media
 2. Submit test results (including gradation analysis) and source location for all borrow material to be used at least 10 working days prior to its use on the site. Contractor shall identify and provide access to borrow sites.
 3. Submit moisture density curve for each type of soil (on site or borrow material) to be used for embankment construction or fill beneath structures or pavement.
- B. Drainage & Sewer Structures:
1. Provide Submittals for the following items:
 - a. Item 604.12, 604.13, 604.14, 604.3 Catch Basins and Flared End Sections.
 - b. Item 604.152, 604.153, 604.154, Manholes.
 2. Submit shop drawing for precast manholes, catch basins and all precast concrete items prior to fabrication.
 3. Identify components to be used and elevations of top of precast sections, base and pipe inverts, location of pipe penetrations, for each structure.
 4. Provide manufacturers' product data for frames, covers, grates, precast items, manhole sleeves, joint sealants and frost barrier.
 5. Provide anti-flotation calculations.
- C. Hot Mix Asphalt:
1. Provide Submittals for the following items:
 - a. Item 403.208 Hot Mix Asphalt 12.5mm Surface.
 - b. Item 403.21 Hot Mix Asphalt 9.5mm Surface.
 - c. Item 403.213 Hot Mix Asphalt 12.5mm Base.
 2. The Contractor shall submit, for approval, a current job mix formula (JMF).
 3. For a Superpave design, a current Maine Department of Transportation (MaineDOT)-approved Superpave JMF shall be submitted.
 4. The JMFs shall be reviewed and approved by an independent testing agency prior to submittal.
 5. The job mix formula shall state the source, gradation, and percentage of each portion of the aggregate and filler, if required. It shall state the name of the refiner and the supplier of the particular bituminous material to be used and the plant location.
- D. Pipe and fittings:
1. Provide Submittals for the following items:
 - a. Item 603.129, 603.149, 603.159, 603.169, 603.179, 603.199, 603.209, 603.219 Storm Drain Pipe.
 - b. Item 603.13, Sanitary Sewer Pipe.
 - c. Item 605.08, 605.09, 605.1, 605.12, 605.13 Underdrain Pipe.
 - d. Item 632.04 4 Inch and 6 Inch Wye Connection.
 - e. Item 632.05 Inserta-Tee Connection.
 - f. Item 632.06 6 Inch Diameter Cleanout.
 - g. Item 633.05 4 Inch and 6 Inch Diameter Sewer and Storm Service Lateral.

2. Provide manufacturers' product data for all pipes and fittings and accessories confirming products meet specifications.
- E. Curbing:
1. Provide Submittals for the following items:
 - a. Item 609.11, 609.12, 609.234, 609.3 Vertical Granite Curb.
 - b. Provide manufacturers' product data for all curb pieces confirming products meet specifications.
- F. Concrete:
1. Provide Submittals for the following item:
 - a. Item 624.141 Flowable Fill.
 2. Submit a concrete mix design certification indicating compliance with the specifications as specified in Section 608 and 502 of the specifications Concrete Related Materials.
- G. Detectable Warning Panels:
1. Provide Submittals for the following item:
 - a. Item 608.26 Detectable Warning Panels.
 2. Provide manufacturers' product data confirming products meet specifications.
- H. Erosion Control Blanket:
1. Provide Submittals for the following item:
 - a. Item 613.319 Erosion Control Blanket.
 - b. Submit manufacturers' product data for erosion control blanket confirming product meets specifications.
- I. Loam Seed and Mulch:
1. Provide Submittals for the following item:
 - a. Item 615.071 Loam Seed and Mulch.
 2. Submit seed vendor's certified statement for each grass seed mixture required, stating botanical and common name, percentage by weight, and percentages of purity, germination, and weed seed for each grass seed species.
- J. Geotextile:
1. Provide Submittals for the following item:
 - a. Item 620.54 Stabilization/Reinforcement Geotextile.
- K. Landscaping:
1. Provide Submittals for the following item:
 - a. Item 621.71 Plant 1.75-2" Caliper Tree.
 2. Submit approval from the City Arborist for the selected tree specimens.

END OF SECTION

SECTION 01380 – CONSTRUCTION PHOTOGRAPHS

CONSTRUCTION PHOTOGRAPHS

PART 5 - GENERAL

5.1 DESCRIPTION

A. Work Included:

1. Pre-Construction Record: Contractor shall utilize digital photographs and video to obtain a visual record of the project area; copies of same shall be given to the Engineer and Owner.
2. Notify Engineer at least three (3) working days prior to photographing or videoing the project area so Engineer may, at his option, observe.

5.2 QUALITY

- ###### A. Pre-Construction Record: Quality shall be such that the condition of existing pavement, curbing, driveway entrances, sidewalks, etc. can be readily determined.

5.3 SUBMITTAL OF PRINTS

- ###### A. Pre-Construction Record: Submit electronic files on thumb drive or external drive to the Engineer and Owner prior to any construction work.
- ###### B. The quality of the photos and video are subject to approval by the Engineer prior to the start of construction work in the areas shown by the photos.

END OF SECTION

SUPPLEMENTAL SPECIFICATIONS

Scope of Section:

The City of Portland, Maine has adopted for this project the "State of Maine, Department of Transportation (Maine DOT), Standard Specifications, Revision of March, 2020", as documented in Section 01000 City of Portland Special Provisions.

The City of Portland has also made specific changes to the Maine DOT Standard Specifications to incorporate the requirements of the City of Portland's Technical and Design Standards and Guidelines. As such, these **Supplemental Specifications** contain modifications, additions and deletions to the Maine DOT Standard Specification and shall take precedence and shall govern in any case of conflict.

Where any ambiguity, error, omission, conflict, or discrepancy ("ambiguity", etc.) related to the Contract Documents exists, refer to Section 01000 City of Portland Special Provisions for the order of priority of the documents.

SECTION 101 – CONTRACT INTERPRETATION

The provisions of Section 101 of the Maine DOT Maine DOT Standard Specifications shall apply with the following additions and modifications:

Note: This contract has been broken up into a series of smaller projects. Specifications listed below are applicable to work and bid items associated with each separate project.

101.2 Definitions:

Chief Engineer

The definition in the Maine DOT Standard Specifications shall be deleted and replaced with the following. Chief Engineer shall mean the Water Resources Manager, City of Portland, Maine, Public Works Department, acting directly or through his or her duly authorized representatives, who are responsible for the design of the project.

Closeout Documentation

Omit "A letter stating the amount of monies paid to DBE subcontractors to meet Contract DBE goals."

Commissioner

The definition in the Maine DOT Standard Specifications shall be deleted and replaced with the following: Commissioner shall mean the Director of Public Works, City of Portland, Maine.

Department

The definition in the Maine DOT Standard Specifications shall be deleted and replaced with the following: Department shall mean the Department of Public Works, City of Portland, Maine acting through its Director or through his duly authorized representative.

SECTION 201 – CLEARING

The provisions of Section 201 of the Maine DOT Standard Specifications shall apply with the following additions and modifications.

201.01 Description:

The Contractor shall contact the City Arborist, Parks and Forestry Operations Manager, (207) 808-5400, in the case that a determination is necessary for removal of trees or other vegetation beyond those identified on the plans.

The Contractor shall protect trees of all diameters and all shrubs, unless specifically noted for removal.

201.09 Method of Measurement:

Removal of trees 12” diameter or less, as determined by circumferential measurement at a height of 4 ½ feet above the ground, is incidental and no separate measurement will be made.

Single trees greater than 12”, as determined by circumferential measurement at a height of 4 ½ feet above the ground, and stumps will be measured by the unit each. Removal of stumps is incidental to removal of single trees and no separate measurement will be made for stump removal.

201.10 Basis of Payment:

Clearing as required for the completion of the work is incidental and no separate payment will be made.

The accepted quantity of single trees and stumps removed will be paid for at the contract unit price each. Payment for trees removed shall include the removal and disposal of the entire tree and stump. No separate payment for stump removal will be made.

Payment will be made under:

<u>Pay Item</u>		<u>Pay Unit</u>
201.24	Remove Tree and Stump	Each

SECTION 202 – REMOVING STRUCTURES AND OBSTRUCTIONS

The provisions of Section 202 of the Maine DOT Standard Specifications shall apply with the following additions and modifications:

202.011 Depth of Removal:

All structures and obstructions, with the exception of manholes and catch basins, see section 202.05, shall be removed to a depth as required to allow construction of the project as presented in the construction documents. In roadway areas, removal shall be to a depth below all subbase gravel. In areas of utility piping or structures, removal will be to a depth sufficient to allow placement of said piping and structures, including supportive materials such as bedding layers, anti-flotation slabs and foundations. Removal below subgrade depth shall only be performed at the direction of the City.

202.03 Removing Existing Superstructure, Structural Concrete, Railings, Curbs, Pipes, Sidewalks and Bridges:

This section is modified by adding the following sentence to the first paragraph: All granite curbing, tipdowns, curb inlets, sidewalk brick, and cobblestones removed and not reused in construction of the proposed project shall be delivered to the City stockyard as directed and considered incidental.

The Contractor shall be responsible for the removal without damage, cleaning and stacking at the City Stockyard, all straight and curved curbing, terminal sections and curb corners which are designated to be replaced with new curb and shall be incidental to the contract.

Each section of straight curbing shall have its overall length painted legibly and plainly on one end. Each section of circular curbing shall have its overall arc length and radius painted on one end.

The Contractor shall be responsible for cleaning and clearly numbering/identifying the existing location of all curbing designated to be removed and reset and shall be incidental to the contract.

Removing and stacking curb or edging shall include all labor, equipment, tools and materials for excavating, removing, cleaning, backfilling, handling, stacking and any incidental work necessary.

Removal of existing structural concrete, reinforced concrete, plain concrete, excavated structures, manholes, catch basins, mortared stone masonry, concrete masonry, wooden timbers/piles and any other structural elements encountered during construction are incidental to the contract and cost of construction.

Removal of existing storm drains, sewer pipes or other pipe structures, backfilling and all associated work shall be considered incidental to the costs of pipe installation. No extra payment will be made. Abandonment using flowable fill of existing storm drains, sewer pipes or other pipe structures is described in section 502 – Structural Concrete.

202.04 Removing Cobblestones (with Concrete Base)

This work shall include the removal and disposal of any existing concrete slab and/or granite pavers beneath the bituminous pavement that may be encountered during project work. The Contractor shall excavate the concrete slab and shall dispose of the excavated material off site, and shall furnish material as indicated on the plans, for backfill in place of the excavated concrete slab.

202.05 Removing Manholes or Catch Basins:

The first sentence of this subsection shall be modified by deleting “of at least 2 feet below subgrade” and substituting the following: “required for removal of entire manhole, structure or catch basin.” Associated work shall be considered incidental to the costs of new structure installation. No extra payment will be made.

202.06 Removing Bituminous Concrete Pavement:

Prior to the removal of bituminous pavement, the limit of the removal area shall be saw cut to the appropriate depth for this given location where new pavement will be matched to existing pavement. Existing bituminous asphalt or Portland Cement Concrete pavement areas to be totally removed shall be saw cut to the full existing pavement depth. The preparation of a butt joint will not require saw cutting.

The cutting equipment used shall be exclusively designed for the purpose. It shall be capable of establishing a straight and vertical cut and to minimize chipping of the edge of the existing surface to remain.

202.061 Removing Pavement Surface:

The milled surface shall have a uniform texture and provide acceptable rideability for vehicles. Should resurfacing be delayed or the resulting milled surface be unsatisfactory for any reason, a bituminous leveling course or temporary pavement may be required. The Contractor shall clean the milled surface and surrounding area of all loose material prior to use by traffic.

202.062 Pavement Butt Joints:

The equipment for removing the bituminous surface shall be a cold milling machine or a power operated planer capable of removing the existing pavement to the required depth, width, grade, and slope.

The milled surface shall have a uniform texture and provide acceptable rideability for vehicles. Should resurfacing be delayed or the resulting surface be unsatisfactory due to the work not meeting City quality requirements, a bituminous leveling course or temporary pavement may be required. The Contractor shall clean the milled surface and surrounding area of all loose material prior to use by traffic. Trimming of all butt joints is incidental to the contract. This item also shall be used to trim around existing structures that are to be matched with new pavement.

202.07 Method of Measurement:

Saw cutting pavement and roadway butt joints are incidental to the contract and shall not require measurement.

Pavement Butt Joints are incidental to the contract and include the 1-foot hand grind associated with trench patches as well as the hand grinds at the intersection of new street pavement with existing.

202.08 Basis of Payment:

Removal of the existing pavement surface including disposal for the proposed sewer and storm drain installation shall be incidental to the pipe and structure installation as indicated in section 603 and 604.

Removal of existing sidewalk and driveway, including subbase, shall be incidental to the applicable sidewalk, driveway, or pipe pay items.

Separate payment for manhole and catch basin removal shall be made whenever the center of the structure to be removed is eight feet or more from the center of a new manhole or catch basin. If the center of a manhole or catch basin to be removed is less than 8 feet from the center of a new structure, no separate payment will be made for manhole or catch basin removal, in which case the cost of manhole or catch basin removal shall be considered incidental to the cost of the new structure.

Separate payment for pipe removal, including removal of existing concrete cradle, shall be made whenever a pipe called out for demolition is outside the horizontal limits of excavation for a proposed pipe or structure. If the pipe to be removed is located within the horizontal limits of the trench excavation for the proposed pipe or structure, no separate payment will be made for removal of existing pipes, in which case the cost of the pipe removal, existing concrete cradle removal, backfilling and all associated work shall be considered incidental to the cost of the new pipe or structure installation.

The accepted quantity of removal of existing bituminous pavement surface (Milling) shall be at the contract unit price per square yard which price will be full compensation for removal of the pavement surface by a milling operation or other method, saw cutting, dust control, hauling, temporary removal of detrimental objects and all tools, equipment, labor and other materials necessary to satisfactorily complete the work.

Payment will be made under:

<u>Pay Item</u>		<u>Pay Unit</u>
202.15	Remove Existing Manhole or Catch Basin*	Each
202.195	Remove Existing Pipe*	Linear Foot
202.2	Remove Existing Bituminous Concrete Pavement*	Square Yard
202.201	Remove Concrete and Cobblestones (w/ Concrete Base)*	Square Yard
202.202	Mill Existing Surface Pavement	Square Yard

*Items not specifically associated with any project within the base bid and are included on the Bid Form to establish a unit price for additional work that may be needed.

SECTION 203 – EXCAVATION AND EMBANKMENT

The provisions of Section 203 of the Maine DOT Standard Specifications shall apply with the following additions and modifications:

203.01 Description:

The second sentence of the first paragraph shall read: "All excavation shall be classified as common excavation, contaminated soils or rock excavation, as hereby defined, unless otherwise classified as incidental to another pay item as described in the project specifications."

The second sentence of the definition for *Common Excavation* shall be modified by deleting "when each is less than 2 yd³ in volume."

The definition for *Rock Excavation* shall be modified to read by deleting "each having a volume of 2 yd³ or more" and substituting the following: "each having a volume of ½ yd³ or more".

The following paragraph shall be added to the end of the section: Soils encountered during construction containing petroleum or chemical odors, soil staining, ash, municipal solid waste asbestos containing material and/or other hazardous waste, and/or discolored groundwater, form or sheen on groundwater maybe considered a contaminated soil as determined by the Engineer. If the contractor encounters suspected contaminated soils, the Engineer shall be notified, and soils will be sampled, or field screened to evaluate the level of potential impact and to establish handling/remedial requirements. If contaminated soils are encountered, the contractor shall stockpile the material (if approved by the engineer) or stop excavation activities until the environmental impact and disposal requirements are determined. The contractor shall not be entitled to any extra compensation for delays caused by the excavation of suspected and/or contaminated soils. Any delays shall be considered incidental to the costs of construction. If soils are determined to be contaminated, the contractor shall handle the material in accordance with environmental regulations and transport the material to a properly licensed facility for disposal. This work will be paid for under pay item 203.201.

203.04 General:

The Contractor shall excavate rock if encountered to the lines and grades indicated on the drawings, shall dispose of the excavated material, and shall furnish acceptable material for backfill in place of the excavated rock, if required.

In general, rock in pipe trenches shall be excavated so as to be not less than six inches (6") from the pipe after it has been laid. If needed, before the pipe is laid, the trench shall be backfilled to the established trench profile with thoroughly compacted, suitable material or, when so specified or indicated on the drawings, with the same material as that required for bedding the pipe, furnished and placed at no additional cost to the City.

203.042 Rock Excavation and Blasting:

The Contractor shall keep explosives on the site only in such quantity as may be needed for the work under way and only during such time as they are to be used. They shall notify the Owner, in advance, of his intention to store and use explosives. Explosives shall be stored in a secure manner and separate from all tools. Caps or detonators shall be safely stored at a point over 100 feet distant from the explosives. When the need for explosives has ended, all such materials remaining on the work shall be promptly removed from the premises.

The Contractor shall observe all municipal ordinances and State and Federal laws relating to the transportation, storage, handling, and use of explosives. In the event that any of the above-mentioned laws, ordinances, or regulations require a licensed blaster to perform or supervise the work of blasting, said licensed blaster shall, at all times, have his license on the work and shall permit examination thereof by the Engineer or other officials having jurisdiction.

All operations involving explosives shall be conducted with all possible care to avoid injury to persons and property. Blasting shall be done only with such quantities and strengths of explosives and in such manner as will break the rock approximately to the intended lines and grades and yet will leave the rock not excavated in an unshattered condition. Care shall be taken to avoid excessive cracking of the rock upon or against which any structure will be built, and to prevent injury to existing pipes or other structures and property above or below ground. Rock shall be well covered with logs or mats, or both, when required. Sufficient warning shall be given to all persons in the vicinity of the work before a charge is exploded.

All blasting shall be completed within a distance of 50 feet before any portion of a masonry structure is placed or any pipe is laid.

Any site where electric blasting caps are located or where explosive charges are being placed or have been placed shall be designated as a "Blasting Area". A "Blasting Area" within three hundred (300) feet of any traveled way shall be marked by approved signs with information similar to the following:

"BLASTING AREA - TURN OFF RADIO TRANSMITTERS"

and on the reverse side:

"END OF BLASTING AREA"

The Contractor shall notify each public utility company having structures in proximity to the site of the work of his intention to use explosives and such notice shall be given sufficiently in advance to enable the companies to take such steps as they may deem necessary to protect their property from injury. Such notice shall not relieve the contractor of responsibility for any damage resulting from his blasting operations.

All persons within the danger zone of blasting operations shall be warned by the Contractor, and no blasting shall be done until the zone is cleared. Flagmen, furnished by the Contractor, shall be so stationed as to stop all approaching traffic during blasting operations.

The Contractor shall be liable for all damages to persons or property caused by blasting or explosions or arising from neglect to properly guard and protect the excavations and all portions of the work, and he shall wholly indemnify the Owner against all claims on such account. No compensation will be allowed the Contractor in any event, or under any circumstances, for loss incurred by him or arising from his neglect to fully comply with these requirements.

203.043 Excess Rock Excavation:

If rock is excavated beyond the limits of payment indicated in the drawings, specified, or authorized in writing by the Engineer, the excess excavation, whether resulting from over-breakage or other causes, shall be backfilled, by the Contractor at no additional cost to the City, as specified below in this section.

In pipe trenches, excess excavation below the elevation of the top of the bedding, cradle, or envelope shall be filled with material of the same type, placed and compacted in the same manner, as specified for bedding, cradle, or envelope. Excess excavation above said elevation shall be filled with earth as specified in the specifications at no additional cost to the City.

203.044 Blasting Records:

The Contractor shall keep and submit to the Engineer an accurate record of each blast. The record shall show the general location of the blast, the depth and number of drill holes, the kind and quantity of explosives used, and other data required for a complete record.

203.045 Shattered Rock:

If the rock below normal depth is shattered due to drilling or blasting operations of the Contractor, and the Engineer considers such shattered rock to be unfit for foundations, the shattered rock shall be removed and the excavation shall be backfilled with concrete as required, except that in pipe trenches crushed stone may be used for backfill, if approved. All such removal and backfilling shall be done by the Contractor, at no additional cost to the City.

203.046 Preparation of Rock Surfaces:

The Contractor shall remove all dirt and loose rock from the designated areas and shall clean the surface of the rock thoroughly, using steam to melt snow and ice, if necessary. Water in depressions shall then be removed as required so that the whole surface of the designated area can be inspected to determine whether seams or other defects exist.

The surface of rock foundations shall be left sufficiently rough to bond well with the masonry and embankments to be built thereon; and, if required, shall be cut to rough benches or steps.

Before any masonry or embankment is built on or against the rock, the rock shall be scrupulously freed from all vegetation, dirt, sand, clay, boulders, scale, excessively cracked rock, loose fragments, ice, snow, and other objectionable substances. Picking, barring, wedging, streams of water under sufficient pressure, stiff brushes, hammers, steam jets, and other effective means shall be used to accomplish this cleaning. All free water left on the surface of the rock shall be removed.

203.047 Removal of Boulders:

Piles of boulders or loose rock encountered within the limits of earth embankments shall be removed to a suitable place of disposal.

203.048 Disposal of Excavated Rock:

Excavated rock may be used in backfilling trenches subject to the following limitations:

1. Pieces of rock larger than permitted under the section titled Excavation and Embankment: Section 203.01, shall not be used for this purpose.
2. The quantity of rock used as backfill in any location shall not be so great as to result in the formation of voids.
3. Rock backfill shall not be placed within 18-inches of the surface of the finish grade.

Surplus excavated rock shall be disposed of as specified in Section 203.06, "Waste Areas".

203.049 Backfilling Rock Excavations:

When rock has been excavated and the excavation is to be backfilled, the backfilling above normal depth shall be done as specified under the "Excavation and Embankment, Section 203". If material suitable for

backfilling is not available in sufficient quantity from other excavations, the Contractor shall furnish suitable material from outside sources, under pay item 203.25 "Granular Borrow".

203.06 Waste Area:

This subsection is revised to read as follows:

1. Surplus Earth and Rock Excavation:

The disposal of surplus earth and rock unacceptable as trench backfill materials and excavated rock shall be the responsibility of the Contractor.

If the Contractor proposes to permanently place or permanently stockpile any surplus soil and rock, including soil or rock unsuitable for trench backfill or embankment construction, on property in the City of Portland, the Contractor or property owner shall obtain any Site Plan Permit required from the City Planning Authority or any Fill Permit required from the MaineDEP or U. S. Army Corps of Engineers, before the surplus soil and rock is permanently placed or stockpiled. The Contractor shall provide copies of the required permits to the Engineer. Stockpile locations shall meet the applicable setback requirements in the City Land Use Code.

2. Temporary Stockpiles:

If the contractor proposes to temporarily stockpile any surplus soil and rock, including soil or rock unsuitable for trench backfill or embankment construction, in the City of Portland, the contractor shall obtain approval for each stockpile location from the Engineer. Stockpile locations shall meet the applicable setback requirements in the City Land Use Code.

3. Trees, Stumps and other Material, Excepting Granular Material:

The disposal of trees, stumps, shrubs and brush shall be the responsibility of the Contractor. If the disposal site is within private property, the Contractor shall be required to obtain written permission from the landowner for use of the disposal site for the above-mentioned materials. A copy of the permission and evidence of a fill permit, if required, shall be provided to the Engineer. The Contractor or landowner shall obtain a dumping permit at 55 Portland Street.

4. Surplus Cobblestones, Bricks and Granite Curb Stone:

Cobblestones, bricks and curbing removed during construction and not incorporated into the project shall remain the property of the City and shall be cleaned to remove all excess granular material there from and hauled to a storage area or project site in the City, as directed by the Engineer. Bricks shall be palletized, and curbing shall be stockpiled in an organized manner at the approved location.

203.18 Method of Measurement:

Granular borrow required for storm drain trenches will be measured by the cubic yard compacted in place and shall include all material costs, trucking, installation and compaction in the trench. Granular borrow must be compacted in 6" lifts.

Test pits will be measured by the vertical foot.

203.19 Basis of Payment:

This subsection shall be amended by the addition of the following paragraph:

The accepted quantity of test pit excavation will be paid for at the contract unit price per vertical foot. Payment shall be full compensation for furnishing all labor, materials and equipment necessary for excavation, test excavation, backfilling, pavement replacement, disposal of materials and the protection of the utilities.

Payment will be made under:

<u>Pay Item</u>		<u>Pay Unit</u>
203.20	Common Excavation	Cubic Yard
203.201	Contaminated Soil Removal and Stock Pile*	Cubic Yard
203.24	Common Borrow	Cubic Yard
203.25	Granular Borrow*	Cubic Yard
203.28	Test Pit Excavation	Vertical Foot
203.31	Crushed Stone 703.31 (Overdepth)*	Cubic Yard

*Items not specifically associated with any project within the base bid and are included on the Bid Form to establish a unit price for additional work that may be needed.

SECTION 206 – STRUCTURAL EXCAVATION

The provisions of Section 206 of the Maine DOT Standard Specifications shall apply with the following additions and modifications:

206.01 Description:

For Structural Earth Excavation, only that trench excavation for pipe below the established trench profile as indicated on the Typical Trench Detail shall be included under this section. Trench excavation to the established profile shall be considered as incidental to the appropriate pipe and structure item. For Structural Rock Excavation, pay limits for rock excavation in trenches shall be limited to the Pay width dimensions indicated on the details. For structures, the pay limits shall be limited to the actual structure width plus 24" each side of the structure and 24" below the bottom of structure.

The following definitions shall read:

Drainage and Minor Structures shall include sewer and storm drainage pipes, culverts, catch basins, manholes, box conduit, diversion structures, vault structures and other drainage structures. Removal of existing storm drains, sewer pipes or other pipe structures, reinforced concrete, plain concrete, concrete structures, backfilling, base and subbase gravels and all associated work shall be considered incidental to the costs of construction. No extra payment will be made.

Special Backfill. The Contractor shall furnish, place and compact special backfill material as indicated on the plans or as directed and herein specified. The special backfill shall be a granular or common backfill material and shall meet the requirements of Section 703.06 (b) Aggregate Subbase - Sand (Type E) of the Supplemental and Maine DOT Standard Specifications.

The special backfill shall be spread in layers of uniform thickness not exceeding eight inches (8") before compaction and moistened and allowed to dry. Then it shall be thoroughly compacted by means of suitable power-driven tampers or other power-driven equipment to a uniform density of 95% of maximum density.

206.02 Construction Methods:

The fourth (4th) paragraph of the Maine DOT Standard Specifications shall be modified to read as follows:

When the structure is to be placed on solid bedrock, the rock shall be excavated to a firm surface, either level, stepped or serrated. When solid or disintegrated rock or boulders are encountered, the rock shall be excavated to the minimum depth indicated on the plans.

206.04 Method of Measurement:

The paragraphs in the section entitled "Drainage and Minor Structures" shall be deleted and the following paragraphs added:

When Structural Rock is encountered for sewer and storm drainage pipes, the quantity to be measured for payment will be the amount actually excavated to the "Established Trench Profile" as defined in the fourth (4) paragraph of Section 206.02 of the Supplemental Specifications provided the maximum allowable horizontal dimensions do not exceed the payment limit.

When Structural Rock is encountered for catch basins, manholes, box conduits, diversion structures, vault structures and other drainage structures, other than sewer and storm drainage pipes and culverts, the quantity to be measured for payment will be the amount actually excavated to the "Established Structure Detail".

206.05 Basis of Payment:

When material is needed for trench backfill below the established trench profile as indicated on the plans or as ordered, this material shall be crushed stone and paid for under Pay Item 203.31.

Crushed Stone for Pipe Bedding shall be backfilled as indicated on the plans or as ordered and shall be incidental to the cost of the pipe.

"Drag Boxes" if utilized by the Contractor will be allowed; however, no payment will be made for any excess excavation or backfill material used beyond the payment limit as shown on the Typical Trench Detail.

Add the following paragraph:

Excavated materials suitable for backfill shall be used to backfill normal excavations incidental to this section. Disposal of surplus excavated materials shall be in accordance with Section 203.06, Waste Areas.

Protection of existing trees, shrubs, utility poles, structures, and utilities shall be considered incidental to the pay item.

Payment will be made under:

<u>Pay Item</u>		<u>Pay Unit</u>
206.061	Structural Earth Excavation (Overdepth)*	Cubic Yard
206.07	Structural Rock Excavation – Drainage and Minor Structures	Cubic Yard

*Items not specifically associated with any project within the base bid and are included on the Bid Form to establish a unit price for additional work that may be needed.

SECTION 304 – AGGREGATE BASE AND SUBBASE COURSE

The provisions of Section 304 of the Maine DOT Standard Specifications shall apply with the following additions and modifications:

304.01 Description:

This work shall consist of furnishing and placing one or more courses of aggregates on a prepared surface in accordance with the specifications in reasonably close conformity with the lines, grades, thickness and typical cross sections, as shown on the plans or established not included in other project pay items.

304.02 Aggregate:

Sources of Aggregate and preliminary test results shall be submitted ten working days prior to any placement of material on the job. Failure of these preliminary tests will be grounds for rejection of material from that source. Aggregates will be tested on the job and shall meet these specifications as the material is incorporated into the work.

The contractor option to substitute Type E Aggregate Subbase for Type D below 9” is not allowed on this project.

304.07 Basis of Payment:

Placement of the aggregate base and subbase course, associated with the installation of proposed storm drain and/or sanitary sewer on all streets, shall be paid for under pay items 304.10 – Aggregate Subbase Course – Gravel Type D and 304.09 – Aggregate Base Course – Type A.

The costs for laboratory testing and source documentation shall be incidental to providing Type “A” and Type “D” gravel. The cost for all failing tests shall be the responsibility of the contractor.

Payment will be made under:

<u>Pay Item</u>		<u>Pay Unit</u>
304.09	Aggregate Base Course – Type A	Cubic Yard
304.10	Aggregate Subbase Course – Type D	Cubic Yard

SECTION 401 – HOT MIXED ASPHALT PAVEMENT

The provisions of Section 401 of the Maine DOT Standard Specifications shall apply with the following additions and modifications:

401.11 Preparation of Existing Surface:

All streets to be paved shall be swept of all debris (sand, grass, etc.) prior to paving. Any grass or other vegetation growing in the street shall be removed prior to paving. Tack coat shall be applied per Section 409.

Where pavement placed under this Contract joins an existing pavement, the existing pavement, when directed by the Engineer, shall be removed a minimum of 1' wide and 1 ½-inches deep in residential streets and 2-inches deep in arterial streets in order to provide a vertical butt joint. The butt joint shall also be tack coated.

All streets to be shimmed shall be reviewed with Engineer prior to placement to determine depth or grade to be achieved.

All vertical cuts in existing pavements shall be treated with an approved asphaltic tack coat material. The surface of the joint once completed shall be flush with the existing pavement. Specified compaction of bituminous pavement in all work included in this contract shall be achieved without the assistance of vibratory action of the roller unless otherwise directed.

All work under this section shall be considered incidental to the related contract pay items.

SECTION 403 – HOT MIX ASPHALT PAVEMENT

The provisions of Section 403 Maine DOT Standard Specifications shall apply with the following additions and modifications:

403.02 General:

This section shall include Hot Mix Asphalt – 12.5mm, and 9.5mm.

403.04 Method of Measurement:

The method of measurement for Hot Mix Asphalt shall be measured by the ton.

403.05 Basis of Payment:

The accepted quantity for Hot Mix Asphalt shall be measured by the ton. This price shall include saw-cutting, fine grading, tack coat, and all labor, materials and equipment necessary to complete the work.

Payment will be made under:

<u>Pay Item</u>		<u>Pay Unit</u>
403.208	Hot Mix Asphalt – 12.5mm Surface	Ton
403.21	Hot Mix Asphalt – 9.5mm Surface	Ton
403.213	Hot Mix Asphalt – 12.5mm Base	Ton

SECTION 409 – BITUMINOUS TACK COAT

The provisions of Section 409 of the Maine DOT Standard Specifications shall apply with the following additions or modifications:

409.07 Application of Bituminous Material:

The rate of application shall be 0.03 gallons per square yard for smooth surface pavement and 0.06 gallons per square yard for milled surface pavement. During application, care shall be taken to assure curbing shall not be discolored. Curbing discolored by tack coat shall be cleaned by CONTRACTOR at no cost to the CITY.

409.08 Method of Measurement:

The application of the bituminous tack coat shall be incidental to the application of Hot Mix Asphalt Pavement and shall require no measurement or payment.

409.09 Basis of Payment:

The payment for this work shall be incidental to Section 403 - Hot Mix Asphalt Pavement.

SECTION 502 – STRUCTURAL CONCRETE

The provisions of Section 502 of the Standard Specifications shall apply with the following additions or modifications:

502.01 Description

This work shall consist of the placement of Flowable Fill for Structures (Concrete Fill), including formwork and reinforcement, as detailed on the plans.

502.03 Materials

Flowable Fill for Structures:

Flowable Fill for Structures shall meet the Standard Specifications for Concrete Fill and have a 28-day design compressive strength of 500 pounds per square inch and a maximum aggregate size of 3/8-inch.

Curb shall be set in concrete – 3,000 psi (min). Refer to section 609 and project details.

502.18 Method of Measurement

Flowable Fill (concrete fill) shall be measured and paid for under the item listed in section 624.

Concrete associated with curb installation shall be incidental to 609 pay items.

SECTION 534 – PRECAST STRUCTURAL CONCRETE

The provisions of Section 534 of the Maine DOT Standard Specifications shall apply with the following additions and modifications.

534.01 Description

The Contractor shall design, manufacture, furnish, and install elements, precast structural structures and appurtenances, including catch basins, sewer manholes, and drain manholes, in accordance with the contract documents.

534.02 Materials

Structural precast elements shall meet the requirements of the following Subsection:

Structural Precast Concrete Units 712.061

Grout, concrete patching material, and geotextiles shall be one of the products listed on the Department's list of prequalified materials, unless otherwise approved by the Department.

534.04 Design Requirements

The Contractor shall design the precast structural concrete structure in accordance with the AASHTO Maine DOT Standard Specifications for Highway Bridges, current edition, by either the Load Factor Design (LFD) or Load and Resistance Factor Design (LRFD) method. The design live load shall be as follows: MS-22.5 (HS-25) for LFD method, *modified HL-93 Strength I for LRFD method. *(modify HL-93 by increasing all wheel loads by a factor of 1.25).

The Contractor shall submit design calculations and shop drawings for the precast structure to the Department for approval. A Registered Professional Engineer, licensed in accordance with State of Maine laws, shall sign and seal all design calculations and drawings. Drawings shall conform to Section 105.7 - Working Drawings of the Maine DOT Standard Specifications

The Contractor shall submit the following items for review by the Engineer at least ten working days prior to production:

1. The name and location of the manufacturer.
2. Method of manufacture and material certificates.
3. Description of method of handling, storing, transporting, and erecting the members.
4. Shop Drawings with the following minimum details:
 - A. Fully dimensioned views showing the geometry of the members, including all projections, recesses, notches, openings, block outs, and keyways.
 - B. Details and bending schedules of reinforcing steel including the size, spacing, and location. Reinforcing provided under lifting devices shall be shown in detail.
 - C. Details and locations of all items to be embedded.
 - D. Total mass (weight) of each member.
 - E. Joint system.
 - F. Special fabrication for mechanical/electrical components.
 - G. Access covers and frames.
 - H. Anti-Flotation Calculations.
 - I. All structures shall be cast with a rust inhibitor equal to Rheocrete CNI Rust Inhibitor applied at 3 gallons/cubic yard of concrete.

534.05 Basis of Payment

No payment will be made for items under this section. Catch basin and manhole structures will be paid under Section 604.

SECTION 603 – PIPE CULVERTS AND STORM DRAINS

The provisions of Section 603 of the Maine DOT Standard Specifications shall apply with the following additions and modifications:

603.011 Description:

This work shall consist of the construction of storm drains, sewer pipes by means of trenched or trenchless installation, casing pipe, service leads, hereinafter referred to as "pipe" as shown on the plans, details, and specified herein.

Where noted on the plans, the contractor shall use the specific pipe material indicated.

When the alternative of pipe material is listed in the Proposal, the Contractor shall signify his choice of pipe to be used by inserting his mark in the proper space provided. Contractor is responsible for all associated work, connections and appurtenances for the pipe selection. This shall be considered incidental to the pay item.

The Contractor shall install locating/warning tape over the centerline of all sanitary, storm, and combined sewer pipes including main lines, service leads and catch basin laterals both within the right of way and outside of the established street as required by City ordinance. Both a green warning tape and a number 10- or 12-gauge single strand coated wire shall be installed at a maximum of 24 inches below finish surface grade for the entire length of the pipe. Magnetic warning tape may be used in place of the separate warning tape and wire. The end of all services stubs shall be recorded on the included sheet entitled Storm Sewer Service Location and submitted to the City upon completion of the work.

All connections shall be made in conformance with the Plumbing Code of the City of Portland and the Maine State Plumbing Code.

603.02 Materials:

This section shall be revised to read as follows:

Materials shall meet the requirements specified for the various subsections of the specifications and listed below:

Reinforced Concrete Pipe (RCP): Pipe shall meet the following requirements.

Stand. Spec 706.02.

Polyvinyl Chloride (PVC) SDR-35 Pipe: Pipe shall meet the following requirements.

1. PVC SDR-35 pipe shall be Ring Type Sewer Pipe SDR-35.
2. PVC SDR-35 pipe shall meet ASTM D3034 for sizes 4" thru 15".
3. PVC SDR-35 shall meet ASTM F-679 for sizes 18" thru 27".
4. PVC SDR-35 rubber seals shall meet ASTM D 3212.
5. PVC Schedule 80 shall meet ASTM D 1785
6. All fittings and pipe shall have a water-tight push on joint and must meet the ASTM D3034 and ASTM D3212 standards.
7. Minimum "pipe stiffness" at 4% deflection shall be 46 psi for all sizes when tested in accordance with ASTM D2421.
8. All fittings and connectors shall meet ASTM D3034 and ASTM D 3212 Standards.
9. Joints shall be push-on rubber gasketed "Bell and Spigot" type joints using factory installed elastomeric ring gaskets. The gaskets shall be securely fixed into place by the manufacturer so that they cannot be dislodged during joint assembly.

10. The gaskets shall be of a composition and texture that is resistant to common ingredients of storm sewer, including oils and groundwater, and that will permanently endure the conditions of the proposed use.
11. Where perforated pipe is used perforations will be ½" holes every 5" on center and two rows at 120° apart.
12. Acceptable Manufacturers include:
 - a. J-M Manufacturing
 - b. IPEX
 - c. Or equal to above

High Performance Polypropylene (HPPP) Pipe: Pipe shall meet the requirements of Maine DOT Standard Specifications Section 706.06 with the additions and modifications.

1. 12" through 30" pipe shall have a smooth interior and annular exterior corrugations.
2. 12" through 30" dual wall pipe shall meet ASTM F2881 or AASHTO M330
3. Polypropylene compound for pipe and fitting production shall be impact modified copolymer meeting the material requirements of ASTM F2881, Section 5 and AASHTO M330, Section 6.1.
4. Pipe shall be joined with a gasketed integral bell and spigot joint meeting the requirements of ASTM F2881 or AASHTO M330.
5. 12" through 30" joints shall be watertight according to the requirements of ASTM D3212. Spigots shall have gaskets meeting the requirements of ASTM F477. Gasket shall be installed by the pipe manufacturer and covered with a removable, protective wrap to ensure the gasket is free from debris. A joint lubricant available from the manufacturer shall be used on the gasket and bell during assembly.
6. 12" through 30" diameters shall have an exterior bell wrap installed by the manufacturer.
7. Fittings shall conform to ASTM F2881 or AASHTO M330. Bell and spigot connections shall utilize a welded or integral bell and valley or inline gaskets meeting the watertight joint performance requirements of ASTM D3212.
8. Pipe must have minimum pipe stiffness (PS) of 46 at 5% deflection. Larger sizes shall be Triple Wall SaniTite.
9. Corrugated couplings shall be split collar, engaging at least two (2) full corrugations.
10. Acceptable Manufacturers include:
 - a. Advanced Drainage Systems (HP Storm Pipe)
 - b. Or equal to above

High Performance Polypropylene (HPPP) SaniTite Pipe: Pipe shall meet the requirements of Maine DOT Standard Specifications Section 706.06 with the additions and modifications.

1. 12" through 30" (300 to 750mm) SaniTite HP dual pipe shall have a smooth interior and annular exterior corrugations; 30"-60" SaniTite HP triplewall pipe shall have smooth interior and exterior surfaces with annular inner corrugations.
2. 12" through 30" dual wall pipe shall meet ASTM F2736
3. 30" through 60" triple wall pipe shall meet ASTM F2764
4. Pipe shall be joined with a gasketed integral bell & spigot joint meeting the requirements of ASTM F2736.
5. 12" through 60" shall be watertight according to the requirements of ASTM D3212, with the addition of a 15 psi pressure requirement. Spigot shall have two gaskets meeting the requirements of ASTM F477. Gaskets shall be installed by the pipe manufacturer and covered with a removable, protective wrap to ensure the gaskets are free from debris. A joint lubricant available from the manufacturer shall be used on the gasket and bell during assembly.
6. 12" through 60" diameters shall have a reinforced bell with a polymer composite band installed by the manufacturer
7. Pipe must have a minimum pipe stiffness (PS) of 46 @ 5% deflection.

8. Fittings and connections shall provide a watertight connection according to the requirements of ASTM D3212. Gaskets, when present, shall meet ASTM F477
9. Acceptable Manufacturers include:
 - a. Advanced Drainage Systems
 - b. Or equal to above

603.03 Construction Requirements:

Keep existing sewers and drains in operation. If existing sewers and drains are disturbed, provide for maintenance of such flows until work is completed. Do not allow raw sewage to flow or stand on ground surface or in an excavation.

603.0311 Reinforced Concrete Storm Drain Pipe:

Reinforced concrete pipe may be used for storm drain applications.

Reinforced concrete pipe shall be obtained only from a manufacturer of established good reputation in the industry. The pipe shall have a smooth and even interior surface, free from projections, indentations, or irregularities of any kind.

The joint shall be such that when joined the pipes will form a continuous and uniform line without projections, off-sets or irregularities and be capable of satisfying the specified leakage requirements.

Pipes shall be joined with rubber or rubber type gaskets that conform to the requirements established in ASTM Designation 443-67.

Each length of pipe shall be provided with proper ends made either of concrete formed on machined rings to ensure accurate joint surfaces or of metal rings. The diameters of the joints surface, depended upon to compress the gasket, shall not vary from the theoretical diameters by more than 1/16 inch. The joint shall be sealed by the rubber gasket so that the joint will remain tight under all conditions of service.

The rubber gasket shall be applied in accordance with the manufacturer's recommendations.

After the pipes are aligned in the trench and are ready to be jointed, all joint surfaces shall be cleaned. Immediately before jointing the pipe, the inside surface of the groove shall be thoroughly lubricated with a recommended lubricant. Pipe shall then be coupled immediately by carefully pushing each pipe into place without damage to pipe or gasket. The position of the gasket in the joint shall then be inspected to be sure it is properly put together and is tight.

Pipes shall be coupled by any suitable arrangement of come-along, winch, jack, or other power equipment that can exert sufficient force to couple pipe to its tightest position.

All RCP pipe where the pipe joint gap is 0.5-inches wide or more shall be sealed on the inside with cement mortar. Cement mortar if used shall be applied by trowel and the joint shall be thoroughly filled and finished smoothly with the inside surface of the pipe.

All pipe thirty-six inches in diameter or larger shall be sealed on the inside with cement mortar or with gunite by the grout-weld method using a pneumatic machine of the Nicholson, Bondactor, or equal type. Cement mortar if used shall be applied by trowel and the joint shall be thoroughly filled and finished smoothly with the inside surface of the pipe. The grout-weld seal shall be applied only by experienced and skilled workers in accordance with the instructions of the manufacturers of the machine.

The pipe shall be laid accurately to line and grade. Pipe bedded in compacted crushed stone shall not be supported on blocking, wedges, brick, or anything except the bedding material. Pipe on

concrete cradle shall be supported on solid concrete blocks or precast concrete saddles which become part of the completed cradle.

Each length of pipe shall be shoved home against the pipe previously laid, and held securely in position. Joints shall not be "pulled" or "cramped". Holes provided for jointing shall be filled and compacted.

Pipe from which a core has been cut and the resulting hole repaired, shall be placed with the cored hole located forty-five degrees above or below the horizontal centerline of the pipe.

To prevent the entrance of earth and other materials when pipe laying is not actually in progress, the open ends of pipe shall be closed by suitable temporary bulkheads. The Contractor shall take all necessary precautions to prevent floatation of the pipe because of flooding of the trench. If water is in the trench when work is resumed, the bulkheads shall not be removed until the danger of earth and other materials entering the pipe has passed.

All pipe joints and structures shall be made water tight. There shall be no visible leakage, spurting or gushing of water, sand, silt, clay or soil of any description entering the pipe lines at the joints or structures. Where there is evidence of water or soil entering the pipeline, connecting pipes or structures, defects shall be repaired.

603.1312 SDR 35 Poly Vinyl Chloride (PVC) Gravity Sewer and Drain Pipe and Fittings:

PVC pipe may be used for sanitary sewer and storm drain applications.

Open ends of pipe shall be closed by suitable temporary bulkheads to prevent entrance of earth and other materials when pipe laying is not in progress. The Contractor shall take all necessary precautions to prevent floatation of the pipe as a result of the water in the trench.

Each pipe length shall be inspected before being laid. Pipe shall be laid to conform to the lines and grades indicated on the drawings. Each pipe shall be so laid as to form a close joint with the next adjoining pipe and bring the inverts continuously to the required grade.

Bell holes shall be excavated or provided in the base material to receive the bell or coupling so that only the barrel of the pipe receives bearing pressure from the supporting material.

When each pipe has been properly bedded, enough of the backfill material shall be placed and compacted between the pipe and the sides of the trench to hold the pipe in correct alignment.

No pipe or fitting shall be permanently supported on blocks, wedges, boards or stones.

All joints shall be made in a dry trench and in accordance with the manufacturer's recommendations.

All PVC Gravity Pipe SDR 35 or equal supplied shall conform to all aspects of ASTM specification D3034-73A and/or ASTM Spec. F789 for PVC sewer pipe, joints and fittings. Joints shall be rubber gasketed "Bell and Spigot" type. Installation of materials shall be as suggested in ASTM D2321. Minimum "pipe stiffness" at 4% deflection shall be 46 psi for all sizes when tested in accordance with ASTM D2421.

It is the responsibility of the Contractor to assure that the trench and the backfill around the pipe has been compacted sufficiently to limit deflection in the pipe to no more than 4%. All flexible pipe installed under this contract shall be tested by a "go-no-go" mandrel permitting no greater than 4% deflection. Testing of the pipe shall be done in the presence of an Engineer. The Engineer shall be given a minimum of 24 hour advance notice before testing is to take place. All pipe not passing the 4% deflection limit test shall be removed and replaced at no additional cost to the City.

Pipe bundles shall be stored on a flat surface so as to support the barrels evenly. This is important as in hot weather PVC pipe will deflect or warp causing installing problems in line and grade. If a warped section is found, the Contractor shall not use such length of pipe.

In order to ensure proper compaction, alignment, and grade, and eliminate any construction problems that may be encountered, the Contractor shall be required to use only the 12-1/2 foot lengths of PVC pipe.

Pipe shall remain stacked in the original shipping bundles, and only pipe taken off the bundle for one day's laying shall be distributed along the trench.

PVC pipe will not bond to concrete or mortar and therefore connection to a cast-in-place or brick manhole and catch basin shall be made as shown on the pipe connection detail of the project plans.

603.0313 Smooth Bore High Performance Polypropylene (HPPP) Storm Drain Pipe and Fittings:

Smooth Bore High Performance Polypropylene (HPPP) dual wall (HP Storm Pipe or equal) may be used for storm drain applications and shall not be used for sanitary sewer applications.

Installation shall be in accordance with ASTM D2321 and the manufacturers installation guidelines. Each pipe length shall be inspected before being laid. Pipe shall be laid to conform to the lines and grades indicated on the drawings. Each pipe shall be so laid as to form a close joint with the next adjoining pipe and bring the inverts continuously to the required grade.

When each pipe has been properly bedded, enough of the backfill material shall be placed and compacted between the pipe and the sides of the trench to hold the pipe in correct alignment.

No pipe or fitting shall be permanently supported on blocks, wedges, boards or stones.

All joints shall be made in a dry trench and in accordance with the manufacturer's recommendations.

It is the responsibility of the Contractor to assure that the trench and the backfill around the pipe has been compacted sufficiently to limit deflection in the pipe to no more than 4%. All flexible pipe installed under this contract shall be tested by a "go-no-go" mandrel permitting no greater than 4% deflection. Testing of the pipe shall be done in the presence of an Engineer. The engineer shall be given a minimum of 24 hour advance notice before testing is to take place. All pipe not passing the 4% deflection limit test shall be removed and replaced at no additional cost to the City.

During loading, transportation and unloading, every precaution shall be taken to prevent injury to the pipe. No pipe shall be dropped from cars or trucks, or allowed to roll down slides without proper retaining ropes. During transportation each pipe shall rest on suitable pads, strips, skids or blocks securely wedged or tied in place. Any pipe damaged shall be replaced. Pipe shall remain stacked in the original shipping bundles, and only pipe taken off the bundle for one day's laying shall be distributed along the trench.

603.0314 High Performance Polypropylene (HPPP) SaniTite Pipe Gravity Sewer Drain Pipe and Fittings:

SaniTite pipe may be used for sewer line applications.

The pipe shall be ADS SaniTite High Performance Polypropylene (HPPP) pipe or approved equal and installed in accordance with the manufacturer's recommendations.

High Performance Polypropylene (HPPP) SaniTite pipe may be used for sewer applications.

Each pipe length shall be inspected before being laid. Pipe shall be laid to conform to the lines and grades indicated on the drawings. Each pipe shall be so laid as to form a close joint with the next adjoining pipe and bring the inverts continuously to the required grade.

When each pipe has been properly bedded, enough of the backfill material shall be placed and compacted between the pipe and the sides of the trench to hold the pipe in correct alignment.

No pipe shall be permanently supported on blocks, wedges, boards or stones.

All joints shall be made in a dry trench and in accordance with the manufacturer's recommendations.

It is the responsibility of the Contractor to assure that the trench and the backfill around the pipe has been compacted sufficiently to limit deflection in the pipe to no more than 4%. All flexible pipe installed under this contract shall be tested by a "go-no-go" mandrel permitting no greater than 4% deflection. Testing of the pipe shall be done in the presence of an Engineer. The engineer shall be given a minimum of 24 hour advance notice before testing is to take place. All pipe not passing the 4% deflection limit test shall be removed and replaced at no additional cost to the City.

During loading, transportation and unloading, every precaution shall be taken to prevent injury to the pipe. No pipe shall be dropped from cars or trucks, or allowed to roll down slides without proper retaining ropes. During transportation each pipe shall rest on suitable pads, strips, skids or blocks securely wedged or tied in place. Any pipe damaged shall be replaced. Pipe shall remain stacked in the original shipping bundles, and only pipe taken off the bundle for one day's laying shall be distributed along the trench.

603.0315 Rigid Insulation:

Extruded closed-cell rigid foamed polystyrene, 2-inch thickness, width of trench, Styrofoam HI-60, by Dow Chemical, or approved equal.

603.0316 Anti Seep Collars:

The following products may be used for trench dam applications.

Ripley's Trench Dams:

The Ripley's Dam shall be installed at the locations as specified in the plans. The baffle shall be self-supporting and provide a watertight seal around the main line pipe and underdrain by use of an appropriately sized Fernco flexible coupling. The baffle shall form an impenetrable barrier in the pipe envelope to the flow of water. Installation of the baffle shall be in accordance with the manufacturer guidelines. Refer to the following link for additional information: <http://www.trenchdam.com/>

Dams constructed of ABS plastic are acceptable. Underdrain material and installation shall conform to the standards listed in section 605.

Bentonite Clay Trench Dams:

The Bentonite Clay Trench Dams shall consist of granular or powdered sodium bentonite equal to Volclay® C/S Granular. Hydrate in place by addition of water. Hydrated bentonite shall have a minimum wet particle size of 94% passing the No. 200 sieve and 92% passing the No 325 sieve. The maximum moisture content of the dry granulars shall be 12%

603.033 Cleaning Inspection and Testing:

603.0331 General:

Pipe may be inspected at the manufacturing plant, or on the work site and shall be subject to rejection at any time, even though sample pipes may have been accepted as satisfactory at the manufacturing plant.

All pipe shall be subject to thorough inspection and tests. All tests shall be made in accordance with the methods prescribed by, and the acceptance or rejections shall be based on, applicable ASTM specifications.

Pipe will be inspected upon delivery and all pipe which does not conform to the requirements of this contract will be rejected and shall be immediately removed from the work area by the Contractor.

Unsatisfactory pipe will be either permanently rejected or minor repairs made. After delivery, any pipe will be rejected which has been damaged beyond the possibility of satisfactory repair.

If such pipe is found in the pipeline, it shall be removed and replaced or encased in a Class A concrete collar or envelope as directed, at no additional cost to the City.

An inspection of the interior of all mainline pipe and catch basin lateral connections installed as part of the project shall be completed prior to final paving of the project by experienced personnel trained in locating breaks, obstacles and service connections by closed circuit television. A video tape and suitable log shall be provided to the City for review prior to final paving.

603.0332 Cleaning:

All sewers and storm drains shall be thoroughly cleaned with high pressure water jetting equipment.

Movable dams shall be permitted for the purpose of cleaning storm sewers. Movable dams shall be collapsible in case of upstream line surcharging, so the dam can be removed to allow flow to resume down the storm sewer line. Movable dams must be the same size as the inside diameter of the storm sewer line being cleaned, and have a flexible scraper attached so a thorough cleaning of debris is accomplished.

603.0333 Testing:

Gravity sewers shall be tested by one of the following methods:

A. Low Pressure Air.

Approval of method will be made by the Engineer with due consideration for subsurface conditions and size and type of pipe.

The Contractor shall have the proper plugs, weirs, and other equipment to perform all required tests. Testing of each section of sewer installed shall include the portions of service laterals installed under this contract.

When low pressure air test is used, it shall be conducted in compliance with the following:

1. After completing backfill of the wastewater line, the Contractor shall, at no additional cost to the City, conduct a line acceptance test using low pressure air. The test shall be performed according to stated procedures and in the presence of the Engineer.

Procedures:

1. All pneumatic plugs shall be seal tested before being used in the actual test installation. One (1) length of pipe shall be laid on the ground and sealed at both ends with the pneumatic plugs to be checked. Air shall be introduced into the plugs at 25 psig. The sealed pipe shall be pressured to 5 psig. The plugs shall hold against this pressure without bracing and without movement of the plugs out of the pipes.

2. After a manhole to manhole reach of pipe has been backfilled and cleaned, and the pneumatic plugs are checked by the above procedure, the plugs shall be placed in the line at each manhole and inflated to 25 psig. Low pressure air shall be introduced into this sealed line until the internal air pressure reaches 4 psig greater than the average back pressure off any ground water that may be over the pipe. At least two minutes shall be allowed for the air pressure to stabilize.
3. After the stabilization period (3.5 psig minimum pressure in the pipe), the air hose from the control panel to the air supply shall be disconnected. The portion of line being tested shall be termed "acceptable" if the time required in minutes for the pressure to decrease from 3.5 to 2.5 psig (greater than average back pressure of any ground water that may be over the pipe) shall not be less than the time shown for the given diameters in the following table:

<u>Pipe Diameter</u> <u>(In Inches)</u>	<u>Minutes</u>
4.....	2.0
6.....	3.0
8.....	4.0
10.....	5.0
12.....	5.5
15.....	7.5
18.....	8.5
21.....	10.0
24.....	11.5
30.....	13
36.....	15
42.....	20
48.....	20

4. In areas where groundwater is known to exist, the Contractor shall install a one-half inch diameter capped pipe nipple, approximately 10" long, through the manhole wall on top of one of the sewer lines entering the manhole. This shall be done at the time the sewer line is installed. Immediately prior to the performance of the Line Acceptance Test, the groundwater shall be determined by removing the pipe cap, blowing air through the pipe nipple into the ground so as to clear it, and then connecting a clear plastic tube to the nipple. The hose shall be held vertically and a measurement of the height in feet shall be divided by 2.3 to establish the pounds of pressure that will be added to all readings. (For example, if the height of the water is 11-1/2 feet, then the added pressure will be 5 psig, and the 2.5 psig to 7.5 psig. The allowable drop of one pound and the timing shall remain the same.)

5. If the installation fails the air test, the contractor shall, at no additional cost to the City, determine the source of the leakage. He shall then repair or replace all defective materials and/or workmanship.

603.11 Method of Measurement:

The Engineer shall have the right to take samples of the concrete after it has been mixed, or as it is being placed in the forms, and to require cores to be cut from the finished pipe for any inspection and tests he may require. Holes left by the removal of cores shall be filled in an approved manner by the Contractor at no additional cost to the City.

Pipes will be measured by the linear foot in place within the limits specified below.

For measurement purposes the end of the pipe in closed structures will be considered at the inside face of the wall, and in masonry headwalls it will be considered to be at least the face of the headwall.

603.12 Basis of Payment:

The accepted quantities of pipe for culverts, drains and sewers will be paid for at the contract unit price per linear foot, complete in place.

Payment for all trench excavation to the established trench profile indicated within the plans shall be considered incidental and included in the pay item with the exception of structural rock excavation.

Pipe bedding materials, backfilling, backfill, are incidental to the pay items under this section

Pavement removal for the purpose of installing new storm drain or sewer pipe shall be incidental to the appropriate pipe pay item listed in this section.

Rock excavation will be paid for as Structural Rock Excavation as specified in Section 206 of the Supplemental Specifications.

Backfill material and backfilling of the trench shall be incidental to the related pipe pay item, except in the case where the Engineer requires the Contractor to backfill with Granular Borrow. Granular Borrow, in this case, shall be paid for under pay item 203.25.

Payment for approved undercuts below the established trench profile will be paid for under Item 206.061 - Structural Earth Excavation Drainage and Minor Structures (overdepth).

All sheeting, shoring, temporary bracing and dewatering will be included in this item.

Should the Contractor elect to utilize drag boxes or related box shoring structures, sheeting or other methods during installation work, overcutting will be allowed to accommodate the structures. However, no payment will be made for the excess excavation and backfill material.

Contractor is responsible for any and all engineering necessary for trench sheeting or shoring of any trench excavation designed by a professional engineer licensed in the State of Maine. No extra payment will be made for the engineered sheeting and shoring methods, materials or equipment used by the Contractor. All trench stabilization shall be considered incidental to the applicable pay items.

The cost of locating/warning tape including installation shall be considered incidental to the appropriate pipe item.

The cost of maintaining flows in existing sewer lines, drain lines and manholes and any maintenance and cleaning of said sewers or storm drainage that may be required as a result of new pipe installation shall be incidental to the related pay item and no separate payment for this work will be made.

Work associated with providing anti-floatation during installation of the pipes shall be the responsibility of the contractor and shall be considered incidental to the pay items under this section.

The accepted quantity of service leads will be paid for at the contract unit price per linear foot of pipe installed, complete in place. The amount bid for each lateral shall be full compensation for furnishing all labor, equipment, tools, adapters, reducers, and materials necessary to satisfactorily connect all laterals.

Bypass pumping will be required for some pipe installations to maintain existing sewer and storm drainage flows. Bypass pumping and other required work to maintain flows shall be considered incidental to the related pipe pay item.

The costs for PVC, PE, HPPP and HDPE fitting, bends, end caps, retainer glands and thrust blocking shall be incidental to the appropriate pipe item.

The cost for providing exterior drops to manholes, as called out on the plans and as detailed within the detail sheets, shall be incidental to the appropriate pipe item.

Payment for non-standard lengths of pipe shall be at the contract unit price per linear foot for those pay items and no additional payment shall be made.

The cost of cutting pipe and/or connectors necessary to construct new storm drain and sewer pipe, in addition to the work and materials necessary to connect new or existing pipes to existing pipes, catch basins, or manholes, shall be incidental to the appropriate pay item.

Changes to flow lines, profile grades, and pipe inverts of one foot or less shall be incidental to the appropriate pay items.

The costs to install rigid insulation shall be considered incidental to the related pay item.

Removal of existing sewer and storm drain within the trench limits of new pipe and structure excavations shall be considered incidental to the related pipe or structure pay item.

Trench Dams shall be incidental to the pipe installation cost.

Payment will be made under:

<u>Pay Item</u>		<u>Pay Unit</u>
603.129	6 Inch Diameter Storm Drain Pipe (All Depths)	Linear Foot
603.13	8 Inch Diameter Sanitary Sewer Pipe (All Depths)	Linear Foot
603.149	10 Inch Diameter Storm Drain Pipe (All Depths)	Linear Foot
603.169	15 Inch Diameter Storm Drain Pipe (All Depths)	Linear Foot
603.199	24 Inch Diameter Storm Drain Pipe (All Depths)	Linear Foot

SECTION 604 – MANHOLES, INLETS AND CATCH BASINS

The provisions of Section 604 of the Maine DOT Standard Specifications shall apply with the following additions and modifications:

604.01 Description:

This work shall consist of the construction, alteration, repair, or placement of manholes, inlets, and catch basins.

604.02 Materials:

Manhole frames and covers used on this project for both new and altered structures shall be 24" circular "sewer" and "drain" frames and covers, or approved equal. Covers shall be solid. Sewer covers shall have "Sewer" cast into the cover and storm drain covers shall have "Drain" cast into the cover. Catch basin frames and grates shall be as detailed on the plans.

The approved models for manhole frame and covers are:

EJ: Frame = 1690Z, Cover = 2160A either "SEWER" or "DRAIN" lettering

Neenah: Frame = 14960001, Cover = 14960002 "SEWER" or 14960003 "DRAIN"

The approved models of catch basin frame and covers are:

EJ: Frame = 7375Z, Grate = 2440M

Neenah: Frame = 32480001, Grate = 32480002

Locking manhole covers are required for all manholes located in grass areas. The approved models for locking frames and covers are:

EJ: 2114ZPT/2114APT Manhole Assembly

604.03 Construction Requirements:

Concrete Blocks shall not be used in any way in the construction or alteration of manholes or catch basins.

All manhole bases, barrel sections and top sections shall be marked, by the manufacturer, with the appropriate manhole station (and offset if applicable) and the street name, if more than one street is incorporated within a single contract.

Between the third and fourth paragraphs of the Subsection insert the following paragraphs.

Storm drain inverts/channels shall be constructed by brick set in cement mortar, approved fiberglass insert, or by factory pre-cast concrete.

Sewer manhole inverts/channels shall be constructed by brick set in cement mortar, approved fiberglass insert, or by factory pre-cast concrete. Such pre-cast concrete shall be epoxy coated and the shelf shall have a permanent non-skid surface. Pre-cast concrete invert shall be cured at least 7 days in a controlled environment with use of plasticizers to reduce moisture content before applying epoxy. Epoxy shall be Sikagard 62 or approved equal and shall be cured to manufacturer's specifications before delivery to the project site.

Special precautions shall be taken to provide adequate ventilation and attending personnel for the safety of all workers who may be required to enter existing sewers or sewers under construction.

It is emphasized to the Contractor that sanitary sewer and drainage construction under this contract shall be coordinated with existing sewer facilities so that continuous service and handling of existing flows is accomplished.

In the existing fifth paragraph, first sentence of that Subsection delete only "Metal frames and traps", and substitute therefore "Metal frames, other appurtenances, and traps".

The outside surface of any masonry work for catch basins and manholes shall be plastered with mortar from 1/4 inch to 3/8 inch thick. The masonry shall be properly wetted before the plaster is applied. The plaster shall be carefully spread and troweled so that all cracks are thoroughly worked out. After hardening, the plaster shall be carefully checked by being tapped for bond and soundness.

All brick masonry surfaces with mortar shall be waterproofed with one coat of DEHYDRATINE 6 TROWEL MASTIC, DEHYDRATINE 10 SEMI-MASTIC or approved equal.

All poured concrete or precast concrete surfaces shall be waterproofed with two heavy coats of bituminous waterproofing materials. The material shall be MINWAX FIBROUS BRUSH COAT made by the Minwax Company, New York, New York; TREMCO 121 FOUNDATION COATING, made by the Tremco Manufacturing Company, Cleveland, Ohio; INERTOL NO-7 made by Inertol Company, Newark, New Jersey or approved equal.

All waterproofing material shall be applied according to the manufacturer's specifications and directions.

Catch basins shall be constructed as shown on the "Standard Details, Catch Basins and Inlets" of the contract drawings. Unless otherwise indicated, catch basins shall have A-4 inlet stones and sediment hoods which shall be incidental to the contract unit price of the structure.

Vacuum Testing of Manholes:

All manholes constructed by the Contractor shall be vacuum tested for leakage in the presence of an Engineer after installation and prior to backfilling. Vacuum testing shall be performed in accordance with ASTM C1244. The vacuum test requirement will apply to any existing manhole altered.

The Contractor shall furnish all labor, equipment, and any appurtenant items necessary to satisfactorily perform the vacuum test. All testing equipment shall be approved for vacuum testing manholes.

Procedure:

All lifting holes shall be plugged with an approved non-shrink grout inside and out. Manhole joints shall be grouted from the outside only. All pipes entering the manhole shall be plugged. The Contractor shall securely brace the plugs in order to keep them from being drawn into the manhole. The test head shall be placed at the inside of the top of the cone section of the manhole and the seal inflated in accordance with the manufacturer's recommendations.

A vacuum of 10 inches of mercury shall be drawn and the vacuum pump shut off. With the valves closed, the time for the vacuum to drop to 9 inches of mercury shall not be less than that shown below:

DEPTH (Feet)	MANHOLE DIAMETER (Inches)		
	48	60	72
0-8	20	26	33
10	25	33	41
12	30	39	49
14	35	46	57
16	40	52	67
18	45	59	73
20	50	65	81
22	55	72	89
24	59	78	97
26	64	85	105
28	69	91	113
30	74	98	121

(Times shown are minimum elapsed times, in seconds, for a drop in vacuum of 1 inch of mercury.)

If the manhole fails the initial rest, necessary repairs shall be made with a non-shrink grout to manhole exterior, while the vacuum is still being drawn. Retesting shall proceed until a satisfactory test is obtained.

604.031 Drainage Structures Abandoned or Removed:

The existing castings on manholes and/or catch basins to be abandoned or removed shall be carefully removed, cleaned and delivered to the City stockyard as directed. All such castings shall become the property of the City.

Inlet stones for catch basins to be abandoned or removed shall be carefully removed, cleaned and delivered to the City Stockyard as directed.

The inlets and outlets of structures to be abandoned shall be plugged with bricks and mortar and filled with flowable fill unless specified to be removed. The structure shall be completely removed.

The existing masonry of structures to be removed shall be completely removed. The inlets and outlets shall be fully plugged with bricks and mortar. The cavity shall be completely filled with selected excavated materials placed in six (6") inch layers and thoroughly compacted.

604.032 Remove Existing Drainage Structures and Replace with New Drainage Structures:

The existing castings on manholes and/or catch basins to be removed and replaced shall be carefully removed, cleaned and delivered to a City stockyard as directed. All such castings shall become the property of the City. Existing inlet stones for catch basins to be replaced shall be carefully removed, cleaned and delivered to a City Stockyard as directed and shall be incidental to the cost of said item.

604.04 Altering, Adjusting and Rebuilding Catch Basins and Manholes:

Replace existing manhole frame and cover shall include removal of existing frame and cover, reconstructing riser brick and furnishing and installing a new frame and cover that meets the City's specifications.

Modify manhole or catch basin shall include making alterations as indicated on the plans or as required by field conditions. Alterations may include (as applicable) coring new inlet or outlet pipe holes, adjustments to manhole invert channels caused by new pipe connections, waterproofing, replacement of inlet stone, replacement of outlet trap.

Adjust existing structure to grade shall include adjusting a catch basin frame and grate or manhole frame and cover to grade. Adjusting manholes and catch basins to grade shall include removing and resetting curb inlet stone and terminal curbs (as applicable), removing and resetting frame and cover/grate, and fully reconstructing riser brick to install frame at finish grade.

Core inlet/outlet pipe hole in catch basin or manhole shall include equipment and labor costs to coring a new hole in a catch basin or manhole. Costs for connection boot or mortaring pipe in place are incidental to cost of the pipe.

604.045 Winterization:

The Contractor will have the choice of two methods for winterizing the new catch basin and manhole frames and covers.

1. The Contractor may elect to leave the frames and covers at or below grade with the binder pavement during the winter. This item would then include the removal of pavement in the spring from around the frame, the raising of the frame to the proper elevation for the final paving and the replacement of the binder pavement that was removed from around the frame.
2. Or, the Contractor may elect to set the frame and cover at the finish grade for the street and provide a 4-foot-wide hand placed pavement ramp/taper around the frame to protect it during the winter plowing operations. This item would then include the placement of pavement ramp around the frame in the fall and the removal of pavement ramp in the spring.

In either event, the Contractor maintains responsibility for the frame and cover during with winter months. In the event of a loose frame and cover, the removal of the pavement ramp, or damage to the frame and cover, it is the Contractors responsibility to respond with replacement of damaged structure or additional pavement material to safeguard the public and structure.

In the event the Contractor does not bring the frame and cover to grade for the winter months then the work to install the frame and cover in the spring will not be considered a Winterization item but considered the completion of the initial manhole installation.

In the event of a structure requiring additional winterizing mix after surface is no longer available, QPR mix may be substituted as an alternate material.

604.05 Method of Measurement:

Under this Subsection the following sections shall be amended and expanded as follows

Subsection (a) of the Maine DOT Standard Specifications shall be deleted and the following paragraph shall be included: Complete structures. Each catch basin and manhole will be measured per each complete.

Subsections (c) and (d) of the Maine DOT Standard Specifications shall be deleted and the following paragraph shall be included: All castings or other appurtenances installed as shown on the plans or as required shall not be measured for payment and shall be incidental to the pay items of new structures.

Each existing drainage structure to be abandoned or removed will be incidental to the installation of new drainage structures.

Each existing drainage structure to be removed and replaced with a new drainage structure will be considered as one unit, including inlet stone, frame, grate, sediment hood, adjustment to grade, connection of the storm drain pipe(s) to basin and installation of new inlet/outlet.

Removing and resetting granite curb associated with structure installation shall be considered incidental.

604.06 Basis of Payment:

The first paragraph shall be amended by adding the following sentences:

The cost of furnishing and installing castings, stubs and other appurtenances shall be considered as incidental to the structure and no separate payment will be made therefore.

The following paragraphs shall be added:

The cost of pavement removal necessary for the installation of each catch basin or manhole shall be incidental to the cost of each structure.

The cost of excavation and backfill of all catch basins or manholes, either new, abandoned, or removed and/or replaced shall be included in the cost of the specific work for each type of structure.

The cost of furnishing and installing curb inlet stones shall be incidental to the catch basin structures and no separate payment shall be made.

The cost of resetting curb inlet stones shall be considered incidental to the cost of adjusting catch basins to grade and no separate payments will be made. The cost of delivering inlet stones and/or castings to the City or other approved sites shall be considered as incidental to the contract items involved.

Pavement and gravel construction/reconstruction to provide "dish" for catch basins shall be incidental to the catch basin structure and no separate payment will be made. Refer to "Typical Pavement Grading for Catch Basin Inlets" detail for "dish" construction.

The cost of maintaining flows in existing sewer lines and manholes and any maintenance and cleaning of said sewers that may be required as a result of new manhole installations shall be incidental to the related pay item and no separate payment for this work will be made.

Contractor shall pay special attention to maintaining flows in existing sewers. Work shall be coordinated with the Engineer and will require special consideration and work to maintain sewer, drainage and CSO's during project construction. This work shall be considered incidental to the costs of construction.

The cost of cutting pipe and/or connectors necessary to construction new storm drain and sewer pipe, in addition to the work and materials necessary to connect new or existing pipes to existing pipes, catch basins, or manholes, shall be incidental to the appropriate pay item. Changes to flow lines, profile grades, and pipe inverts of one foot or less shall also be incidental to appropriate pay item.

The cost of winterizing frames and covers shall be incidental to pay items in this section.

Connection of existing pipes to proposed structures, including all necessary, excavation, fittings and backfill shall be considered incidental to the respective structure and no separate payment shall be made.

Altering catch basin shall include the cost of coring and installing new pipe into existing structure, all pavement removal necessary for the catch basin alteration, and all labor, materials, and equipment necessary to satisfactorily complete the work.

Altering manhole shall include the cost of coring and installing new pipe into existing structure, all pavement removal necessary for the manhole alteration, and all labor, materials, and equipment necessary to satisfactorily complete the work.

Payment will be made under:

<u>Pay Item</u>		<u>Pay Unit</u>
604.032	Abandon Manhole or Catch Basin*	Each
604.12	2 Foot Diameter Catch Basin with Beehive Grate	Each
604.13	4 Foot Diameter Catch Basin	Each
604.14	5 Foot Diameter Catch Basin with High Flow Double Grate	Each
604.152	4 Foot Diameter Manhole	Vertical Foot
604.153	5 Foot Diameter Manhole*	Vertical Foot
604.154	6 Foot Diameter Manhole*	Vertical Foot
604.19	Alter Manhole or Catch Basin	Each
604.24	Catch Basin, Type F*	Each
604.30	24 Inch Diameter RCP Flared End Section with Trash Guard	Each

*Items not specifically associated with any project within the base bid and are included on the Bid Form to establish a unit price for additional work that may be needed.

SECTION 605 – UNDERDRAINS

The provisions of Section 605 of the Standard Specifications shall apply with the following additions and modifications:

605.02 Materials

Bedding material around underdrain shall conform to requirements of Maine Dot’s Subsection 703.31. Pipe material for 4, 6 or 10-inch underdrains shall be SDR-35. Pipe material for 15” under-drains shall be SDR-35 or High-Density polypropylene conforming to specifications listed in section 603. Note: Alternate under-drain methods may be proposed by the contractor during construction for City review.

605.04 Underdrain Construction

Underdrain shall be constructed in accordance with the Standard Specifications and as shown on the plans and detail sheets of the Contract Drawings.

605.06 Method of Measurement

Underdrain will be measured by the linear foot, complete in place.

605.07 Basis of Payment

The accepted quantity of underdrain will be paid for at the contract unit price per linear foot, complete in place.

Trench Excavation, dewatering, couplings, connections of pipe, crushed stone, sand, subbase gravel, underdrain fabric wrap, and all other appurtenances necessary to satisfactorily complete the work shall be considered as incidental to the cost of supplying and installing the underdrain.

Payment will be made under:

<u>Pay Item</u>		<u>Pay Unit</u>
605.09	6 Inch Diameter Underdrain, Type “B”	Linear Foot
605.10	10 Inch Diameter Underdrain, Type “B”	Linear Foot
605.12	15 Inch Diameter Underdrain, Type “B”	Linear Foot
605.13	18 Inch Diameter Underdrain, Type “B”	Linear Foot

SECTION 608 – SIDEWALKS AND DRIVEWAYS

The provisions of Section 608 of the Maine DOT Standard Specifications shall apply with the following additions and modifications:

608.01 Description:

This work shall consist of the construction of brick sidewalks on bituminous base, asphalt sidewalks and driveways on a crushed gravel base. Limits of the work where new sidewalk matches existing shall be cleanly saw cut prior to demolition operations. This work shall also include the construction of sidewalk ramps at locations shown on plans. The sidewalk ramps shall be in accordance with the sidewalk ramp typical details and with the current Americans with Disabilities Act requirements.

608.02 Materials:

Materials shall meet the requirements specified in the following sections as well as curb specifications in Section 609.

608.031 Portland Cement Concrete Sidewalk and Driveway Materials:

Materials shall conform to the requirements of the various subsections of the specifications listed below:

Portland Cement Concrete:	Shall conform to the requirements of Section 502 of the Maine DOT Standard Specifications for Structural Concrete, Class "A"
Preformed Expansion Joint Filler:	Shall conform to the requirements of subsection 705.01 of the Maine DOT Standard Specifications
Welded Steel Wire Fabric	Shall be 6" x 6" mesh with No. 10 wire and shall conform to the requirements of AASHTO designation M55, Welded Steel Wire Fabric for Concrete Reinforcement. All welded wire fabric shall comply with American Iron and Steel (AIS) requirements.
MicroFibers Reinforcement	Shall meet the material specifications described in ASTM C-1116, Type III, Section 4.1.3 "Synthetic Fiber-Reinforcement Concrete and Shotcrete. Fibers shall be ½" in length applied at 1.5 lbs./CY.

Construction Methods:

- a. Subgrade: the subgrade shall be shaped parallel to the proposed surface of the walks and drives and shall be thoroughly compacted. All depressions occurring shall be filled with suitable material and again compacted until the surface is smooth and hard.
- b. Foundation: After the subgrade has been prepared, the base shall be constructed as shown on the Details.
- c. Forms: Side and transverse forms shall be smooth, free from warp, or sufficient strength to resist springing out of shape, and a depth to conform to the thickness of the proposed walks and drives.

- d. Reinforcing: Welded wire fabric shall be placed 2 inches above the crushed grave, and 2 inches from all finished edges, expansion joints and curbs. All fabric joints shall be overlapped a minimum of 1 foot and properly tied.
- e. Placing Concrete: The foundation shall be thoroughly moistened immediately prior to the placing on the concrete. The proportioning, mixing, and placing of the concrete shall be in accordance with the requirements of Section 502 – Structural Concrete.
- f. Finishing: The surface shall be finished to produce a broomlike pattern. No plastering of the surface with mortar will be permitted. The finish shall result if a surface of uniform texture and uniform color. All outside edges of the slab and all joints shall be rounded with a ¼” radius edging tool.
- g. Joints: Slabs shall be –placed alternately in lengths not exceed 30 feet or as directed and shall be separated be an expansion joint of preformed expansion filler ½ inch in thickness.
- h. The sidewalk surface shall be scored in block units of not more than 40 square feet as directed. The depth of the scoring shall be at least one quarter of the thickness of the slabs.
- i. When a concrete sidewalk is constructed adjacent to a building, retaining wall or other fixed structure, a ¼ inch thick preformed joint filler shall be used between the slab and the structure.
- j. Curing: Concrete shall be cured for at least 72 hours, Curing shall be by means of Thomson’s Water Seal as manufactured by E.A. Thompson Co, Inc. of Memphis, Tennessee, boiled linseed oil, white pigmented curing compound, or by other approved methods. During the curing period, all traffic, both pedestrian and vehicular, shall be excluded. Vehicular traffic shall be excluded for such additional time as field conditions may require.
- k. Restoring Disturbed Sidewalks: The Contractor shall restore all cement concrete sidewalks disturbed by construction operations to the conditions that existed prior to the construction. The thickness of the slab shall be equal to or greater than the existing. Welded steel wire fabric shall be required for all sections greater than three (3) feet in length or width.

A 12” bituminous strip shall be placed at the gutter line on all concrete driveways as a transition between the driveway and street.

608.032 Bituminous Sidewalks & Driveways:

Materials:

Material for bituminous concrete base courses and surface courses for sidewalks and driveways shall conform to the requirements of Section 403 of the Maine DOT Standard Specifications for Hot Mix Asphalt. Crushed gravel base shall conform to the requirements of Section 304 of these specifications for Aggregate Base Course - Crushed, Type "B".

Construction Methods:

1. **Excavation:** Excavation shall be made to the required depth and width. The foundation shall be shaped and compacted to a firm even surface conforming to the section shown on the plans and typical details. All soft and yielding material shall be removed and replaced with acceptable material.
2. **Sidewalk Construction:** Sidewalks shall be constructed as shown on the Details. Replacement or reconstruction of sidewalk ramps shall be completed as shown on the details. Ramps shall be concrete with detectable warnings.
3. **Driveway Construction:** Driveways shall be constructed as shown on the Details.
4. **Placing Bituminous Material:** Bituminous material shall be placed on the compacted base course in two courses, one base and one surface, so as to give the required depth when rolled. Compaction shall be accomplished by means of a power roller having a minimum total weight of 2,000 pounds with a minimum of 65 pounds per inch of width of the drive roll or by satisfactory

power vibratory compaction equipment. In areas inaccessible to other equipment, hand tamping will be permitted. In any case the bituminous material shall be uniformly compacted.

608.034 Brick Sidewalk:

Materials shall conform to the requirements of the various subsections of the specifications listed below:

New Brick: Conform to the various subsections of the specifications listed below.

Brick - Brick shall conform to requirements of ASTM Maine DOT Standard Specifications for Building Brick (made of clay or shale) Designation C62-66 for Grade SW with the following modifications:

- a. The absorption limits shall be from 8 to 12 per cent for the average of 5 bricks.
- b. The compressive strength shall not be less than 8000 pounds per square inch (psi).
- c. The modulus of rupture shall not be less than 1000 pounds per square inch (psi).
- d. The bricks shall be No. 1, wire cut type for paving.

Bricks shall be of standard size (2-1/4" x 3-3/4" x 8") with permissible variations not to exceed 1/16" in depth, 1/8" in width or 1/4" in length.

Bricks shall be as manufactured by the Pine Hall Brick Co. of Madison, North Carolina or an approved equal. Prior to ordering the brick, samples shall be submitted in whole straps to show color range.

All base courses and joints shall conform to the applicable subsections of Division 700 of the Maine DOT Standard Specifications.

Construction Methods:

- a. Subgrade: The subgrade for the sidewalks and driveways shall be shaped parallel to the proposed surface of the walks and drives and shall be thoroughly compacted. All depressions occurring shall be filled with a suitable material and again compacted until the surface is smooth and hard.
- b. Foundation: After the subgrade has been prepared, a foundation of crushed gravel shall be placed upon it. After being thoroughly compacted, the foundation shall have a thickness as shown on the plans and typical details and shall be parallel to the proposed surface of the work.
- c. Bituminous Base: A layer of hot bituminous pavement grading "B" shall be spread upon the properly prepared crushed gravel. After being thoroughly compacted, the bituminous base Sand-Cement Base: A layer of sand-cement base course material one (1") inch in thickness shall be spread upon the properly prepared bituminous base course. The course shall be thoroughly compacted and present a hard smooth surface parallel to the proposed finished slope and grade of the walks and drives. The ratio shall be six (6) parts of washed mortar sand to one (1) part Portland Cement.
- d. Brick Placement: After the sand base course has been properly prepared, the brick shall be placed in the pattern shown on the plans and typical details. The brick shall be placed as closely together as possible and the sand joints between the brick shall be no wider than that allowed by the natural texture of the brick itself. **NO OPEN JOINTS WILL BE ALLOWED.** Brick shall be saw cut to fit spaces requiring less than a whole brick. No cut brick shall be less than two (2") inches in length. A journeyman brick mason shall supervise all brick placement.

After the bricks are carefully set upon the properly prepared sand-cement base, a plank or heavy sheet of plywood covering several course of brick shall be placed upon the bricks and carefully rammed with a heavy hammer until the bricks reach a firm, unyielding bed and present a surface of the proper slope and grade. Any divergence from line and grade shall be corrected by taking up and relaying the bricks. After the ramming of the bricks, a sufficient amount of sand-cement shall be spread over the surface and thoroughly swept or raked so as to fill the joints. All surplus

sand-cement remaining on the sidewalk and driveway after the joints have been properly filled, shall be carefully removed by sweeping. Care shall be taken to avoid raking out the joints during removal of excess sand-cement. A final application of sand only shall be spread on the sidewalk. The application of sand shall then be removed by sweeping while the aforementioned precautions are being exercised.

A 12" wide bituminous strip shall be placed at the gutter line and at the back edge of the brick driveway as a transition between the brick and adjoining surfaces.

A course shall have a minimum thickness of two (2") inches and shall be parallel to the proposed finish grade.

608.05 Method of Measurement:

Reinforced concrete, brick, and bituminous sidewalks including ramp areas, and concrete, brick and bituminous driveways, and driveway apron adjustment will be measured by the square yard of finished surface, complete in place. Ramp area measured does not include detectable warning panel area.

Any temporary asphalt sidewalk patches will be considered incidental to the storm drain installation. No extra payment will be made.

608.06 Basis of Payment:

The accepted quantity of reinforced concrete sidewalk, hot bituminous sidewalk, and hot bituminous driveway apron will be paid for at the contract unit price per square yard, complete in place. This price shall include the cost of excavation including removal of existing surface, base and subbase aggregates, and all labor, and other materials and equipment necessary to satisfactorily complete the work. There shall be no unit price adjustment for machine placed versus hand placed hot mix asphalt.

Detectable Warning Panels will be paid for at the contract unit price per square yard, as stated in Supplemental Specification Section 608A.

Payment will be made under:

<u>Pay Item</u>		<u>Pay Unit</u>
608.15	Reinforced Concrete Sidewalk	Square Yard
608.50	Hot Bituminous Sidewalk	Square yard
608.51	Hot Bituminous Driveway Apron	Square Yard
608.52	Reinforced Concrete Driveway Apron	Square Yard

SECTION 608A – DETECTABLE WARNINGS

The provisions of Section 608 of the Maine DOT Standard Specifications shall apply with the following additions and modifications:

608.01 Description:

This work includes the installation of detectable warning panels in curb ramps at the locations shown in the plans and in accordance with the plans or as established by Project Personnel. Any existing detectable warning panels that are disturbed will be restored as described in this section. Castings shall have an integral non-slip texture on and between the truncated dome shapes. Castings shall be DURALAST® Natural Finish (Uncoated) or approved equal. Approved equal must meet the requirements of this specification.

608.02 Materials:

Manufacturer shall certify that all castings conform to either Gray Iron ASTM A48 Class 35 B and/or AASHTO M105, Class 35B gray iron and/or ASTM A536 Ductile Iron. Castings must contain a minimum of 85% recycled content. They shall meet all Americans with Disabilities Act Accessibility Guidelines (ADAAG) requirements for truncated domes, and when installed, shall be capable of producing the pattern of domes as shown in the plans.

All detectable warning plates shall have the product name or series number (example: DURALAST® logo), country of origin and the manufacturer's identification or name (EJ) permanently cast on the top surface. The bottom of the casting shall have the approved part number and production date (example: mm/dd/yy) for tracking purposes.

DWP must comply with ADAAG requirements for dome size, dome spacing and color contrast. All DWP must have an integral iron anchor tab to ensure proper restraint in the concrete slab. Square and Rectangular Plates will be provided with optional bolting for assurance of proper dome spacing during installation. Square and Rectangular castings shall be provided in incremental sizes such as: 18" x 24", 24" x 24", 24" x 30" or 24". Radial castings shall be provided in radii such as: 10', 15', 17.5', 20', 25', 30', or 35'. Castings shall be of uniform quality, free from sand holes, gas holes, cracks, shrinkage and other surface defects. Castings shall be reasonably well cleaned by shot blasting. Runners, risers, fins and other cast-on pieces shall be removed from the castings and such areas shall be ground smooth. As-cast dimensions may vary within accepted foundry tolerances as outlined in the Iron Castings Handbook published by the American Foundrymen's Society, Inc. Nominally, casting dimensional tolerances shall be +/- 1/16 inch per foot. Castings shall be furnished uncoated or as specified by the purchaser.

Cast in place concrete shall meet specifications for MaineDOT Class A structural concrete, minimum compressive strength 4,000 PSI. Portland cement concrete shall meet the requirements of Section 502, Structural Concrete, Class A.

Construction Requirements:

The detectable warning panels shall extend the full width of the ramp. The installation of the detectable warning panels shall be in accordance with the manufacturer's recommendation. Prior to starting this work, the Contractor shall submit for approval the name of the selected supplier, manufacturer's literature describing the product, installation procedures, and routine maintenance required.

Existing Concrete or Asphalt Ramp:

Existing concrete or asphalt shall be saw cut to a dimension 4 inches larger than the detectable warning panel area. New concrete shall be placed in the resulting opening and finished, and the new panels set into the wet concrete according to manufacturer recommendations. New panels shall be set square with

the curb edge and the base of the truncated domes shall be flush with adjacent surfaces to allow proper drainage.

Existing and New Brick Ramps:

Existing brick shall be removed to a dimension 4 inches larger than the detectable warning panel area. New brick shall be placed to a dimension 4 inches larger than the panel area. New concrete shall be placed in the resulting opening and finished, and the new panels set into the wet concrete according to manufacturer recommendations. New panels shall be set square with the curb edge and the base of the truncated domes shall be flush with adjacent surfaces to allow proper drainage.

New Concrete or Asphalt Ramp

New concrete shall be placed and finished for the ramp, and the new detectable warning panel set into the wet concrete, according to manufacturer's recommendations. New panels shall be set square with the curb edge and the base of the truncated domes shall be flush with adjacent surfaces to allow proper drainage.

New Asphalt Ramps

Asphalt shall be saw cut and removed to provide an opening that will allow for the dimensions of the detectable warning panel, surrounded by an additional 4" border on all sides of the panel. New concrete shall be placed in the resulting opening and finished, and the new panels set into the wet concrete according to manufacturer recommendations. New panels shall be set square with the curb edge and the base of the truncated domes shall be flush with adjacent surfaces to allow proper drainage.

608.03 Method of Measurement:

The detectable warning panel will be measured by the surface area of the completed panel in place.

608.04 Basis of Payment:

Payment will be full compensation at the contract unit price for all labor, materials, and equipment required to install the detectable warning panel. This shall include surface preparation and removal of concrete or asphalt, and necessary replacement concrete.

Payment will be made under:

Pay Item

Pay Unit

608.26 Detectable Warning Panel

Square Foot

SECTION 609 – CURB

The provisions of Section 609 of the Maine DOT Standard Specifications shall apply with the following additions and modifications:

609.01 Description:

This work shall include all straight and circular Vertical Curb Type 1 to be set including new terminal curb and sidewalk ramp curb. Material shall be in accordance with Section 712.04 except that drill holes through the curb will not be allowed.

This work shall include all new precast Portland Cement Concrete Curbing and Vertical Granite Curb to be set including new and reset existing curb; and all bituminous curbing to be replaced.

609.03 Vertical Stone Curb, Terminal Section and Transition Sections:

All joints of the curb shall have a four inch (4") by eight and one half inch (8-1/2") pad on the back side. The pad shall be filter fabric such as that used for underdrain or for roadway stabilization. The pad shall be placed in full contact with the curb from a half inch (1/2") below top of curb to two inches (2") below gutter grade and backfilled to hold in place.

Any curb with a joint greater than 1/2" shall be mortared.

All curbing shall be partially backfilled with 3,000 psi poured in place concrete, per the detail included in the bid documents. Wood shims or brick may be used to set the curb and are considered incidental to this item. This shall be incidental to the new or reset curb pay item.

609.081 Removing and Stacking Vertical Curbing, Terminal Curbing, Transition Sections, Curb Inlets, and Curb Corners (Type 1):

The Contractor shall be responsible for the removal without damage, cleaning and stacking at a City designated location, all straight and curved curbing, terminal sections and curb corners which are designated to be replaced with new curb and shall be incidental to Item 609.11. Removal of curbing so designated shall be in accordance with the requirements of Subsection 609.08.

Removing and stacking curb or edging shall include all labor, equipment, tools and materials for excavating, removing, cleaning, backfilling, handling, stacking and any incidental work necessary.

609.09 Method of Measurement:

All proposed new straight and circular curb to be set will be measured by the linear foot along the face of the curb, complete in place. Tipdown curb will be measured by each, complete in place.

Removal and resetting of existing vertical curb shall be measured by the linear foot.

Furnishing and installing catch basin curb inlet stones shall be incidental to the catch basin structures and no separate measurement shall be made.

609.10 Basis of Payment:

The accepted quantity of curb will be paid for at the contract unit price per linear foot, complete in place. Tip down curb shall be paid for at the contract unit price per each, complete in place. This price

shall include the cost of excavation including removal of existing surface, base and subbase aggregates, and all labor, and other materials and equipment necessary to satisfactorily complete the work. Concrete backfill (3,000 psi) shall be incidental to the unit price. Saw cutting of curb is considered incidental to the unit price.

The cost of resetting or furnishing and installing catch basin curb inlet stones shall be incidental to the catch basin structures and no separate payment shall be made.

Payment will be made under:

<u>Pay Item</u>		<u>Pay Unit</u>
609.234	Terminal Curb, Type 1 – 4 foot	Each
609.38	Remove and Reset Type 1 Curb	Linear Foot

SECTION 610 – RIPRAP

The provisions of Section 610 of the Standard Specifications shall apply with the following additions or modifications:

610.01 Description

Provide riprap protection as shown on the plans, including excavation, geotextile, gravel material, stone and all materials, labor and equipment form complete installation.

610.05 Method of Measurement

Riprap shall be measured by the cubic yard of material installed per the project plans and details.

610.06 Basis of Payment

The cost of installing riprap reinforcement as shown on the plans including excavation, geotextile, gravel material, stone and all materials, labor and equipment for complete installation shall be paid out by the item listed below.

Payment will be made under:

Pay Item

610.10

Riprap

Pay Unit

Cubic Yard

SECTION 613 – EROSION CONTROL BLANKETS

The provisions of Section 613 of the Standard Specifications shall apply with the following additions or modifications:

613.01 Description

This work shall consist of furnishing and installing erosion control blankets on areas specified on the plans and in accordance with the manufacturer instructions or as called for on the plans or otherwise authorized.

613.02 Materials

The erosion control blanket shall be North American BioNet SC150BN or approved equivalent.

613.05 Installation

Installation shall be in accordance with the manufacturer’s guidelines.

613.08 Method of Measurement

Erosion control blanket will be measured by the square yard based on the area measured on the ground.

613.09 Basis of Payment

Erosion control blankets will be paid for at the contract unit price per square yard complete in place and accepted. Such payment shall be full compensation for furnishing and installing the blankets and initial seeding under blanket in accordance with this specification and for all required maintenance.

Payment will be made under:

Pay Item

Pay Unit

613.319

Erosion Control Blanket

Square Yard

SECTION 615 – LOAM, SEED & MULCH

The Supplemental Specification shall replace Section 615, 618 and 619 of the Maine DOT Standard Specifications:

615.01 Description:

This work shall consist of loaming, seeding and mulching areas as shown on the plans or as required. Include restoration of existing lawn and seeded areas disturbed by Work as well as new lawn and seeded areas indicated.

Seeding Season: Unless variance is requested in writing and approved by Department of Public Works, perform seeding only during the following periods: April 15 to July 1 and August 15 to September 30.

615.02 Submittals:

Loam/topsoil testing: Provide soils testing by an approved soil testing laboratory for any loam/topsoil to be used. Submit the following: pH, mechanical analysis, percentage of organic content, recommendations on type and quantity of additives to establish satisfactory pH level and supply of nutrients to bring topsoil to satisfactory level for planting.

Certification: Submit manufacturers or vendors certified analysis for soil amendments and fertilizer materials. Submit other data substantiating that materials comply with specified requirements.

Seed Mix: Submit certificate that seed mix meets the specified grass species, proportions and minimum percentages of purity, germination and maximum percentage of weed seed.

Seeding Schedule: Submit proposed schedule for seeding work. Once accepted, revise dates only after request in writing including documentation of reason for delays, and approval of the Department of Public Works.

615.03 Warranty:

Lawns & Seeded Areas: Warranty lawns through one (1) years from acceptance date of Project. Make necessary repairs to grades, lawn areas and paving required because of seeding repairs or replacements. Such repairs shall be done at no additional cost to the City.

615.04 Materials:

Loam/topsoil: Conform to the requirements of Section 615. Loam shall have a finished depth of four (4) inches, unless noted otherwise on the plans and shall be screened and free of foreign materials greater than 1 inch in every dimension. Acidity range shall be between 5.0 and 7.0 and shall contain not less than 6% organic matter by weight as determined by loss on ignition of moisture-free samples dried at 65 degrees Celsius.

Soil amendments:

1. Fertilizer: Provide a complete fertilizer and a standard product complying with the State and United States fertilizer laws. Deliver to site in original unopened containers which shall bear the manufacturer's name and guaranteed statement of analysis. At least 40% by weight of the nitrogen content of fertilizer shall be derived from organic materials. Fertilizer shall

contain not less than 10% nitrogen, 10% phosphorus, and 10% potash by weight of ingredients or as otherwise indicated by topsoil test results.

2. Superphosphate: Finely ground phosphate rock as commonly used for agricultural purposes, containing not less than 18 percent available phosphoric acid.
3. Ground limestone: Dolomitic limestone and contain not less than 85% of total carbonates and magnesium, ground to such fineness that 50% will pass a 100 mesh sieve and 90% will pass through a 20 mesh sieve. Coarser material will be accepted provided the specified rates of application are increased proportionately on the basis of quantities passing the 100 mesh sieve.
4. Humus: Reed peat, sedge peat or moss peat furnished air dried, finely shredded and suitable for horticultural use.
5. Compost: Commercially processed, well composted food waste, wood ash, leaf and yard waste, wood waste, shredded paper and other acceptable materials and containing no chemicals or ingredients harmful to plants. Compost processing temperatures should exceed 131 degrees to kill any weed seeds and disease organisms.

Seed mix: Provide fresh, clean, new-crop seed complying with tolerance for purity and germination established by Official Seed Analysts of North America. Provide seed mixture composed of grass species, proportions and minimum percentages of purity, germination, and maximum percentage of weed seed, as specified. Purchase seed only from a recognized distributor, and composed of the following varieties mixed in proportions indicated. Seed shall test to minimum percentages of purity and germination specified.

Grass Seed Mixture	Proportion by Weight	%Germination
KenBlue Kentucky Bluegrass	20%	80
Trifecta Perennial Ryegrass	30%	80
Creeping Red Fescue	40%	85
Chewings Fescue	10%	80

Mulch:

1. Mechanical method: Provide long fibered hay or straw mulch free from noxious weeds and other undesirable material. Use no material which is excessively wet, decayed or compacted as to inhibit even and uniform spreading. Use no chopped hay, grass clippings or other short fibered material unless approved by the Department of Public Works.
2. Hydraulic spray method: Provide cellulose fiber mulch consisting of natural wood, recycled paper or humus cellulose fiber containing no materials which will inhibit seed germination or plant growth. Add sufficient quantity of non-toxic water soluble green dye to provide a definite color contrast to ground surface to aid in uniform distribution.

615.05 Execution:

Preparation: Planting soil (loam/topsoil) depths shall be not less than 4 inches unless otherwise noted. Loosen subgrade of lawn areas to a minimum depth of 4 inches.

Remove stones over 1 ½ inches in any dimensions and sticks, roots, rubbish and other extraneous matter.

1. Limit preparation to areas which will be planted promptly after preparation.
2. Place topsoil and add specified soil amendments and mix thoroughly into the loam.
3. Fine Grading: Fine grade lawn areas to smooth, even surface with loose, uniformly fine texture. Roll, rake and drag lawn areas, remove ridges and fill depressions as required to meet finish grades. Remove all lumps, clots, stones, roots and other extraneous matter greater than 1 inch size. Roll to compact topsoil surface sufficient to support pedestrian traffic without leaving footprints greater than ½ inch deep.
4. Moisten prepared lawn areas before planting if soil is dry. Water thoroughly and allow surface moisture to dry before planting lawns. Do not create a muddy soil condition.
5. Restore lawn areas to specified soil condition if eroded or otherwise disturbed after fine grading and prior to planting.

Loam Additives:

1. Applying fertilizers: Apply commercial fertilizer and work thoroughly into topsoil.
2. Applying Superphosphate: Incorporate superphosphate into topsoil with application of commercial fertilizer at rate of 25 pounds per 1,000 square feet or at rate determined from test results.
3. Applying ground limestone: After topsoil has been spread and graded, and if recommended as result of the soil analysis, apply ground limestone at rate of 50 pounds per 1,000 square feet or at rate recommended by Testing Laboratory.

Hydroseeding:

1. Hydroseeding method is required for seeding except as otherwise approved by City.
2. Apply slurry uniformly to all areas to be seeded. Provide rate of application as required to obtain specified seed sowing rate.
3. Do not use wet seed or seed which is moldy or otherwise damaged in transit or storage.
4. Application rate: Sow seed mixture at rate of five and one-half (5.5) pounds per 1,000 square feet unless otherwise indicated in specifications.
5. Protect seeded areas against erosion by spreading specified mulch after completion of seeding operations. Spread uniformly to form a continuous blanket not less than 1 ½ inch loose measurement over seeded areas.

Cleanup and Protection:

1. During seeding work, keep pavements clean and work areas in orderly condition.
2. Protect seeding work and materials from damage due to seeding operations, other work operations and trespassers. Maintain protection during installation and maintenance periods. Treat, repair or replace damaged seeding work as directed.

Maintenance and Acceptance:

1. Begin maintenance immediately after seeding.
2. Maintain grassed areas by watering (on a daily basis during germination), fertilizing, weeding, mowing whenever the grass height exceeds 3 inches, trimming and other operations such as rolling, regrading and replanting as required to establish a smooth, acceptable lawn, free or eroded or bare areas.
3. Maintain each lawn area until acceptance of such area.
4. Include protection such as placement of signs and barricades.
5. Repair damaged areas which do not produce a satisfactory stand of grass to re-establish the intended condition; re-fertilize, re-seed and re-mulch as required to produce satisfactory results.
6. If maintenance period extends from fall of one growing season into the following spring, Contractor shall be required to provide a spring fertilization to all lawn areas in early spring.

Maintenance Periods:

Maintain grassed areas for not less than 60 days after completion of seeding.

Acceptance:

When seeding work is completed, including maintenance, City will, upon request, make an inspection to determine acceptability.

1. Seeding work may be inspected for acceptance in parts agreeable to City provided work offered for inspection is complete, including maintenance.
2. Where inspected seeding work does not comply with requirements, replace rejected work and continue specified maintenance until re-inspected by City and found to be acceptable. Remove rejected plants and materials promptly from the site.
3. Acceptance of seeded areas will be given only upon attainment of a reasonably thick uniform stand of grass of not less than 80% permanent grass coverage, free from weeds or sizable thin or bare spots larger than 100 square inches.
4. If all other Work of Contract has been completed and some seeded areas still have not been accepted, Contractor shall maintain such period for an additional 60 days, exclusive of periods stated below. Seeded areas will be accepted upon attainment of a reasonably thick uniform stand of grass.
5. Maintenance Exclusion Period: November 15 through April 15. Note that if maintenance period extends into spring of following year, Contractor shall apply spring fertilization to seeded areas according to soil test requirements. If at or near the end of such 60 day period, unacceptable areas still remain, City may direct a final re-seeding by Contractor or authorize the contract value of performing such work deducted from monies due to Contractor.
6. Acceptance of any seeded area shall be in writing. After acceptance, Contractor will be relieved of further expense for maintaining such areas, other than for damage caused by an Work under the Contract.

615.06 Method of Measurement:

Loam Seed and Mulch will be paid by the square yard.

615.07 Basis of Payment:

The accepted quantity of Loam, Seed and Mulch will be paid for by square yard at the contract unit price. This item shall include the cost of excavation and all labor, materials, and equipment necessary to satisfactorily provide loam, seed, and mulch in all areas disturbed by Contractor's operations. All costs for watering, furnishing labor and equipment for mowing will not be paid for separately, but shall be considered as incidental to this pay item.

Payment will be made under:

Pay Item

Pay Unit

615.071

Loam, Seed, and Mulch

Square Yard

SECTION 620 – GEOTEXTILE

The provisions of Section 620 of the Standard Specifications shall apply with the following additions or modifications:

620.01 Description

This work shall consist of furnishing and installing geotextile fabric as shown on the plans as well as installing geogrid as part of the access road construction.

620.02 Materials

Geotextile Fabric for Rip Rap application shall be woven Mirafi 600x series fabric or equal.

Geogrid for construction of the access road shall be TENSAR Geogrid Bx 1200 or equal.

620.06 Basis of Payment

Payment for geotextile fabric will be considered incidental to the installation of the riprap swales and aprons.

Payment for the access road geogrid will be paid for by the square yard under item 620.54.

Payment will be made under:

<u>Pay Item</u>		<u>Pay Unit</u>
620.54	Stabilization/Reinforcement Geotextile	Square Yard

SECTION 621 – LANDSCAPING

The provisions of Section 621 of the Standard Specifications shall apply with the following additions and modifications.

621.01 Description

This work shall consist of CONTRACTOR furnishing and planting trees, shrubs, vines, and other plants and shall include all planting operations and material as well as the care and replacement of plants during the establishment period, all in accordance with the specifications, planting plans and schedules and the directions of the OWNER's Representative.

Landscaping shall include the placement of loam and mulch in planting beds as shown on the drawings.

621.36 Maintenance Period

Contractor shall adhere to all provisions of 621.36 in the Standard Specifications, March 2020 edition.

621.37 Method of Measurement

The quantity of plants to be measured for payment shall be the number of individual plants furnished and planted as required and accepted excluding replacements.

Wood fiber mulch for the planting and tree areas shall be incidental to the installation of the landscape plants. No separate measurement or payment will be made.

621.38 Basis of payment

Each item of "Plant 1.75-2" Caliper Tree" shall be paid for at the contract unit price for each accepted plant furnished and placed. Payment shall constitute full compensation for; furnishing and placing plants, digging, delivering, rodent protection, preparing plant pits, beds and drains; planting, watering, fertilizing, mulching, pruning, and the cleanup of planting areas; for all, fertilizer, mulch and other necessary materials; all labor, equipment, tools, Maintenance Period work, Replacement and Bonding (if required by Special Provision) and any other incidentals necessary to complete the work.

Payment will be made under:

<u>Pay Item</u>	<u>Pay Unit</u>
621.71 Plant 1.75-2" Caliper Tree	Each

SECTION 622 – TREE PROTECTION

The following items shall be considered additions to the Maine DOT Standard Specifications under Section 622.

622.01 Description

This section applies to all work within the critical root zone of existing trees within and adjacent to the project area.

- a. The Critical Root Zone (CRZ) shall be defined as the area for each tree which contains the estimated minimal amount of both structural and feeder roots that must be protected to minimize tree damage and retain structural stability.
- b. The CRZ for each tree is calculated based on the Tree Species Tolerance to construction impacts and age class, as outlined in the International Society of Arboriculture's *Best Management Practices: Managing Trees During Construction* (K. Fite, T. Smiley, 2008). Although CRZs will differ by species and tree age, zones range from ½ foot per one inch DBH (diameter at breast height) to 1½ foot per one inch DBH. If the species tolerance is unknown, then the 1½ foot per one inch DBH standard is assumed.
- c. To the extent possible, the Contractor shall limit encroachment of the CRZ during construction activities.

622.011 Removal of Existing Infrastructure

Extreme care must be exercised in removing curbing, sidewalk or pavement in the CRZ, lifting rather than dragging paving pieces. Tools and equipment for this activity shall be approved by the Engineer prior to the start of excavation.

622.012 Methods of Excavation

Any excavation for utility or infrastructure installation within a CRZ shall be done by hand or pneumatic excavation, or micro tunneling. Trenching shall not occur within the CRZ unless absolutely necessary and without prior approval of the Engineer.

622.013 Treatment of Exposed Roots

Where such excavation does occur for the removal of existing features or the installation of new work, the excavated area shall be backfilled immediately. Exposed roots shall be covered with burlap or other approved material, and kept constantly moist. Burlap shall be checked a minimum of two (2) times a day, once in the morning and once in the afternoon in order to maintain appropriate levels of moisture, until backfill is complete. If directed, soaker hoses shall be installed to facilitate properly moist conditions of excavated areas.

622.014 Root Pruning

No roots over one (2) inch diameter should be shaved or cut without the approval of the City Arborist. If small roots must be cut this should be done with a sharp implement to leave a clean finish. Use of heavy equipment such as a backhoe to cut roots is prohibited.

622.015 Canopy Pruning

If clearance pruning is proposed, it shall not take place without the written permission of the City Arborist, and shall only be performed with professional equipment as per the City's standards and specifications for such work. No trees shall be pruned or removed without the written permission of the City Arborist. Tree work is to be performed by an arborist holding certification from the International Society of Arboriculture (ISA). The City Arborist is to receive notification 48 hours before any tree work is to begin.

622.016 Adjustments in Grade

Soil Removal: Any removal of soil within the CRZ shall be performed under the supervision of a Consulting Arborist. Soil removal within the CRZ shall be as described in 614.03.

Soil Addition: Soil addition of up to three (3) inches additional depth *may* be permitted with the written approval of the City Arborist.

622.017 General Requirements

In addition to those requirements detailed above:

- a. All contact between equipment and overhead tree limbs should be avoided. Bending or breakage of limbs is prohibited. Stockpiling of materials.
- b. Under no circumstances should equipment and materials be stockpiled within the CRZs.
- c. Disposal of wastewater and other debris. No contaminants or wastewater from construction activities should be disposed of within or around protected areas.
- d. Parking. No vehicle shall be parked within or driven onto CRZs.
- e. Exhaust fumes and excessive heat should always be directed away from trees to prevent scorching.
- f. All trees within and directly adjacent to the construction area shall be encircled with wooden tree guards. Tree guards shall remain in place through construction and shall be removed upon project completion.

622.08 Basis of Payment

The payment for this work shall be incidental to the project.

SECTION 623 - MONUMENTS

The provisions of Section 623 and the Standard Specifications shall apply with the following additions and modifications.

623.02 MATERIALS:

All right-of-way monuments and bench monuments shall be of granite unless otherwise ordered by the Engineer and shall conform to the dimensions as shown on the Standard Details.

The concrete fill around the monuments shall meet the requirements of Section 502 of the Standard Specifications for Structural Concrete, Class "A".

623.03 GENERAL:

When project circumstances require the relocation of an existing monument due to conflicts with other design elements, the City will approve alternative monument locations where a replacement monument(s) will be installed per the current City Standard Details.

Existing monuments in gravel which are designated to be removed and relocated shall be completely removed, cleaned, and delivered to an approved City stockyard. Existing granite monuments in concrete which are designated to be removed shall be completely removed and delivered to an approved City stockyard. All granite monuments removed shall remain the property of the City.

The City will establish the necessary survey for monuments to be installed as designated on the plans. The Contractor shall give advance notice to the City when survey services are needed for resetting and/or relocating any existing monuments.

The City will provide monument boxes with covers or drip boxes with covers to be installed by the Contractor at no additional cost to the City in cases where a small number are needed. It is advisable to order said items ahead of time from local suppliers for projects where more than one or two are needed.

If ledge is encountered, the Contractor shall contact the City for approved alternate installation methods and requirements. Existing right-of-way and bench monuments which are not designated to be removed shall not be disturbed during construction. Any monuments so disturbed shall be replaced by new granite monuments at no additional cost to the City. The City will provide the location for monuments which require replacement.

Adjustments to Existing Monuments

The Contractor shall install a drip box over existing right-of-way or bench monuments when the proposed finished grade of a reconstructed or new sidewalk is higher than the existing monument. Existing monuments may need to be lowered prior to placement of the drip box.

When the proposed finished grade of a reconstructed or new sidewalk is lower than the elevation of the top of an existing monument, the monument will need to be lowered and a drip box will need to be installed.

The Contractor's method of altering the elevation of the monument shall be pre-approved by the City's survey section. The cut shall be smooth and level; chopping the monument lower with a hammer drill or jackhammer is not acceptable.

Marks, drill holes, and copper/brass bolts in monuments that have been adjusted must be replaced by licensed land surveyors before the close of the job.

Existing drip boxes should be reused where possible or returned to the City. New drip boxes, as required, shall be ordered by the contractor per the existing standard detail's specification. The City may provide new drip boxes in certain cases to be installed at no additional cost to the City.

Other property markers discovered during construction should be protected and preserved when possible to avoid destruction of said property markers. If such markers are disturbed during construction, they shall be replaced by a licensed land surveyor at no additional cost to the City. If a monument is damaged or disturbed during construction, it shall be replaced by the contractor at no additional cost to the City.

623.04 METHOD OF MEASUREMENT:

The resetting/relocation of granite monuments will be measured by each, complete in place. Adjustments to existing monuments (cutting to facilitate installation of a drip box or when proposed finished grade is below the existing monument) will be measured by each, complete in place.

Excavation in solid rock will be measured by the cubic yard determined from actual depth of hole with a diameter of two feet (2').

623.05 BASIS OF PAYMENT:

New monuments will be paid through Item 623.03 – Monument. The accepted quantity of granite monuments will be paid for at the contract unit price per each, complete in place. Payment for installing monuments shall include excavation, labor, materials, and equipment necessary to satisfactorily complete the work. Procuring and installing new drip boxes shall be incidental to Pay Item 623.03. Removal, disposal, and cleaning if required, shall be considered incidental to other items in the contract.

Adjustments to existing monuments (cutting to reduce the elevation of the top or adjusting the cover to grade) shall be paid for under Pay Item 623.04, and payment shall include excavation, cutting the existing monument, and all labor, materials, and equipment necessary to satisfactorily complete the work. Resetting existing drip boxes or procuring and installing new drip boxes shall be incidental to Pay Item 623.04.

Resetting existing drip boxes or procuring and installing new drip boxes when no adjustment to the elevation or location of an existing monument is required shall be incidental to the project.

Payment will be made under:

<u>Pay Item</u>		<u>Pay Unit</u>
623.03	Monument	Each
623.04	Adjust Monument to Grade	Each

SECTION 624 – MASONRY PLUG

624.01 Description:

This work shall consist of the construction of Masonry Plugs as shown on the plans and details and specified herein and the construction and placement of flowable concrete fill in abandoned pipelines as shown on the plans and specified herein.

624.02 Materials:

Materials shall meet the requirements for the various subsections of the specifications listed below:

Bricks shall conform to requirements of ASTM Maine DOT Standard Specifications for Sewer Brick, Designation C-32-63, Grade MA and SA.

Masonry Mortar shall conform to Section 705 of the Maine DOT Standard Specifications.

Flowable concrete fill: Self consolidating excavatable mixture of Portland Cement, fine aggregate, water and admixtures. Flowability shall be measured in accordance with ASTM D6103. Mix shall be proportioned to produce a 28-day compressive strength of approximately 500 psi. Compressive strength shall be measured in accordance with ASTM D4832. Materials shall meet the following requirements:

Portland Cement Type I	ASTM C150
Fly Ash	ASTM C618
Fine Aggregate/Mineral Filler	Maine DOT Standard Specification Section 703.01
Air Entraining Admixtures	Per manufacturer's specifications
Water	Potable

624.03 Construction Methods:

Excavation shall be made to the required depth and width to perform the work as required.

624.04 Method of Measurement:

The installation of a masonry plug into a pipe with a diameter of less than 8 inches shall be incidental to the project and shall require no measurement or payment. The installation of a plug into a pipe with a diameter of 8 inches and larger shall be paid for on a per each basis, complete in place.

The method of measure for flowable fill shall be by cubic yard and based on length and diameter of existing pipe.

624.05 Basis of Payment:

The accepted quantity of Masonry Plugs in pipes 8 inches and larger will be paid for at the contract unit price, which price shall include the cost of all excavation, bricks, mortar, all labor, materials, and any equipment necessary to satisfactorily complete the work.

The accepted quantity of Flowable Fill will be paid for at the contract unit price per cubic yard.

Payment will be made under:

<u>Pay Item</u>		<u>Pay Unit</u>
624.14	Masonry Plug 8 Inch or Greater	Each
624.141	Flowable Fill	Cubic Yard

SECTION 627 – PAVEMENT MARKINGS

The provisions of Section 627 of the Maine DOT Standard Specifications shall apply with the following additions or modifications:

627.01 Description:

This work shall consist of providing pavement lines and markings shown on the plans and in all areas where existing pavement markings are damaged or removed by Contractor's operations. Pavement markings will be incidental to the work and no separate payment will be made.

627.09 Method of Measurement

Unless otherwise specified all pavement markings shall be re-painted in their existing locations. All pavement markings shall not be measured and are to be considered incidental to project work.

SECTION 629 – HAND LABOR

The provisions of Section 629 of the Maine DOT Standard Specifications shall apply with the following additions and modifications:

Payment will be made under:

<u>Pay Item</u>		<u>Pay Unit</u>
629.05	Hand Labor, Straight Time	Hour
629.06	Mason, Straight Time*	Hour

*Items not specifically associated with any project within the base bid and are included on the Bid Form to establish a unit price for additional work that may be needed.

SECTION 631 – EQUIPMENT RENTAL

The provisions of Section 631 of the Maine DOT Standard Specifications shall apply with the following additions and modifications:

Payment will be made under:

<u>Pay Item</u>		<u>Pay Unit</u>
631.11	Trench Box	Day
631.12	All Purpose Large Capacity Excavator (Including Operator)	Hour
631.14	Plate Compactor	Day
631.15	Utility Truck	Hour
631.172	Truck – Large or Small (Including Operator)	Hour
631.22	Front End Loader (Including Operator)*	Hour
631.36	Foreman, Straight Time	Hour

*Items not specifically associated with any project within the base bid and are included on the Bid Form to establish a unit price for additional work that may be needed.

SECTION 632 - WYES OR TEES FOR HOUSE CONNECTIONS

632.01 Description:

This work shall consist of the furnishing and satisfactory connection of all Wye/Inserta-Tee Pipe Sections and Cleanouts to the main sewer and storm drain. If a wye is installed for a future house connection, the wye shall be closed with an approved stopper in accordance with the manufacturer's specifications. If a wye is installed for reconnection to an existing lateral, sufficient new lateral pipe shall be installed to make a clean reconnection as shown on the "Typical House Lateral Reconnection Detail". The Contractor shall be responsible for locating and reconnecting existing sewer laterals to the new sewer.

This work shall also include the connection of storm drain leads from catch basins to the mainline storm drain as shown on the drawings. Where possible a pre-fabricated tee connection shall be used. Connection of catch basin leads to storm drain larger than 24" in diameter may be performed with the use of a coring machine and suitable connection device. The connecting pipe shall be at least half the size of the main line pipe in order to use a coring tee-type connection. All proposed cores must be approved and witnessed by the Engineer.

632.02 Method of Measurement:

Wye pipe, Inserta-Tee, and Cleanout connections will be measured by each unit complete in place.

632.03 Basis of Payment:

The accepted quantities of wye pipe sections will be paid for at the contract unit price per each. The price bid for wye pipe sections shall be full compensation for furnishing, laying, and jointing the house laterals to the main sewers. The price bid for wye pipe sections involving large diameter storm drain shall be full compensation for furnishing, core drilling and joining storm drain laterals to main storm drain. Payment for trench excavation, with the exception of structural rock excavation, will be included in this item. Pipe bedding materials, backfilling and backfill materials shall also be included in this item for payment.

The accepted quantities for Inserta-Tee connections will be paid for at the contract unit price per each. The price bid for Inserta-Tee connections shall be full compensation for furnishing, laying and jointing the catch basin laterals to the main storm drain. The price for Inserta-Tee connections involving large diameter storm drain shall be full compensation for furnishing, core drilling and joining storm drain laterals to main storm drain. Payment for trench excavation, with the exception of structural rock excavation, will be included in this item. Pipe bedding materials, backfilling and backfill materials shall also be included in this item for payment.

The accepted quantities for cleanouts will be paid for at the contract unit price per each. The price bid for cleanouts shall be full compensation for furnishing and installing the cleanout as depicted in the project plans and details.

Payment for the new lateral pipe at each connection will be paid for under Section 633.

Payment will be made under:

<u>Pay Item</u>		<u>Pay Unit</u>
632.04	4 Inch and 6 Inch Wye Connection	Each
632.05	Inserta-Tee Connection	Each
632.06	4 Inch and 6 Inch Diameter Cleanout	Each

SECTION 633 – HOUSE SEWER LATERALS

633.01 Description:

This work shall consist of the satisfactory connection or reconnection of all proposed and existing laterals to the new sewer as shown in the contract drawings. All connections shall be made in conformance with the Plumbing Code of the City of Portland and the Maine State Plumbing Code. The Contractor shall be responsible for locating and reconnecting existing sewer laterals to new sewer. The Contractor shall install locating/warning tape over the centerline of all sanitary and storm sewer laterals as required by City ordinance. Both a green warning tape and a number 10 or 12 gauge single strand coated wire shall be installed at a maximum of 24 inches below finish surface grade for the entire length of the pipe. Magnetic warning tape may be used in place of the separate warning tape and wire.

633.02 Method of Measurement:

House laterals will be measured by the linear foot complete in place.

633.03 Basis of Payment:

The accepted quantity of house laterals will be paid for at the contract unit price per linear foot of pipe installed, complete in place. The amount bid for each lateral shall be full compensation for furnishing all labor, equipment, tools, adaptors, reducers, and materials necessary to satisfactorily connect all laterals.

The costs for PVC, PE, HPPP and HDPE fitting, bends, end caps, and retainer glands shall be incidental to the appropriate pipe item.

Payment for non-standard lengths of pipe shall be at the contract unit price per linear foot for those pay items and no additional payment shall be made.

The cost of locating/warning tape including installation shall be considered incidental to the appropriate lateral.

Payment for trench excavation, with the exception of structural rock excavation, will be included in this item. Pipe bedding materials, backfilling and backfilling materials shall also be included in this item for payment.

Payment will be made under:

<u>Pay Item</u>		<u>Pay Unit</u>
633.05	4 Inch and 6 Inch Diameter Sewer and Storm Service Lateral	Linear Foot

SECTION 637 – DUST CONTROL

The provisions of Section 637 of the Maine DOT Standard Specifications shall apply with the following additions or modifications:

637.01 Description:

This work shall consist of applying water and calcium chloride to control dust resulting from traffic and Contractor's operations.

637.06 Basis of Payment:

Dust control will be incidental to project work. No separate payment will be made for dust control.

SECTION 645 – HIGHWAY SIGNING

The provisions of Section 645 of the Maine DOT Standard Specifications shall apply with the following additions or modifications:

645.01 Description:

This work shall include demount and reinstallation of road signs, regulatory, parking, warning, confirmation, street name, and other miscellaneous signs as shown on the plans. All remounted signs are to be installed on new U-Channel Posts with breakaway connections as indicated in the Maine DOT Standard Specifications.

645.08 Method of Measurement:

Demount and Reinstall Regulatory, Warning, Confirmation and Route Sign will be incidental to the contract.

645.09 Basis of Payment:

No separate payment will be made for highway signing. It will be considered incidental to the project work.

SECTION 652 – MAINTENANCE OF TRAFFIC

The provisions of Section 652 of the Maine DOT Standard Specifications shall apply with the following additions and modifications:

652.3.6 Traffic Control:

The Contractor shall refer to the Special Provisions for additional Maintenance of Traffic requirements.

The Contractor shall be responsible for the maintenance and protection of all vehicular and pedestrian traffic at all times during construction and shall erect suitable warning signs, flashers, electronic variable reader boards, barriers and temporary lighting devices of sufficient size and number to afford protection to the traveling public. The Contractor shall be held responsible for all damage to the work due to any failure of the warning devices to properly protect the work from the traffic, pedestrians or other causes.

The Contractor must submit a traffic plan to the City of Portland as part of the street opening permit application for each project location. The traffic plan must include all traffic control provisions to ensure the efficient and safe passage of the public.

Guidelines for the construction and erection of barricades, lighting devices, warning signs, etc. may be found in the most recent edition of “Manual on Uniform Traffic Control Devices for Streets and Highways” published by the Department of Transportation of the Federal Highway Administration. This work shall be considered a subsidiary obligation of the contract for which no specific payment will be made.

This project will include unique traffic maintenance requirements which shall be the contractor’s sole responsibility to provide and maintain at the contractor’s expense. The Contractor’s plan may require modifications to be responsive to actual conditions encountered and to accommodate unforeseen traffic congestion or movements. The contractor shall be responsible for cooperating with the City and shall make modifications/changes to the traffic control as directed by the City. No extra payment will be made.

The following project specific traffic control requirements, work times, and the allowable roadway and lane closures/restrictions are listed below:

1. During commuter hours (7:00 a.m. to 9:00 a.m. and 3:30 p.m. to 6:00 pm) two way traffic on all arterial streets must be maintained.
2. In all other instances traffic may be reduced to flagger controlled one-way traffic flow.
3. Particular care should be taken to provide proper pedestrian access throughout the duration of the project. If any portion of sidewalk will be closed an ADA accessible path of travel shall be constructed for pedestrians throughout the closure. Follow the Temporary ADA Guidelines that is provided with this specification.
4. During winter conditions such as snow, sleet or freezing rain, or during other severe weather events, the City reserves the right to restrict work as necessary to safeguard the traveling public.

The contractor shall coordinate with the City to temporarily prohibit on street parking as necessary to complete any work. This will be requested as part of an Occupancy Permit. All fee’s will be waived by the City.

Contractor is responsible for traffic control flaggers and work zone security and safety. Where required, contractor shall provide an adequate number of flaggers per day as specified on the approved traffic control plan. Work zone security and safety and flaggers shall be incidental to pay item 652.39 (where applicable).

652.7 Method of Payment:

The accepted lump sum payment for Work Zone Traffic Control will be paid at the time of project completion for each project location as specified on the project bid forms.

652.8 Basis of Payment:

When listed as a bid item, preparation of traffic control plans, construction signage, including temporary construction signs for barrels, cones, barriers, maintenance of traffic control devices and other necessary incidentals to maintain traffic in accordance with the specifications and the MUTCD shall be paid by Lump Sum. Flaggers are incidental to the Work Zone Traffic Control item. **If not listed in the bid items for a specific project, Work Zone Traffic Control shall be incidental to project work.**

Cost for Variable Electronic Message Boards shall be incidental to the Work Zone Traffic Control item.

Payment will be made under:

Pay Item

Pay Unit

652.39

Work Zone Traffic Control

Lump Sum

SECTION 654 – SOIL BACKFILL COMPACATION TESTING

654.01 Description:

This work shall consist of furnishing an approved certified soil testing laboratory, when required, to conduct in-place density tests of backfill materials in the field and all related laboratory tests. The testing shall be bid under the appropriate line item.

654.02 General:

Field tests shall be performed at the minimum frequency of 1 test per 50 linear feet of pipe trench, and no less than 1 test per trench at the top of the base course.

Upon completion of the field test, the results shall be made available to the Engineer on site. Copies of all test results shall be transmitted to the Engineering Department of the City of Portland.

The minimum in-place densities shall meet or exceed the laboratory maximum density as determined by ASTM D 1557 - 78 as follows:

Embankment	Ninety percent	(90%)
Trench Backfill	Ninety-five percent	(95%)
Aggregate Base Course and Aggregate Subbase Course	Ninety-five percent	(95%)

Frequency: One density test, at top of aggregate subbase, every 50 linear feet of pipe trench, no less than one test per trench, located within limited of paved roadway.

654.03 Method of Measurement:

Density tests will be measured by each conducted. Roadway tests will be conducted at 50' intervals. If the initial tests do not meet the specifications, the areas shall be retested at no additional cost to the City.

654.04 Basis of Payment:

The accepted quantities of density tests will be paid for at the contract unit price per each.

Payment will be made under:

<u>Pay Item</u>		<u>Pay Unit</u>
654.08	Density Test	Each

SECTION 656 – TEMPORARY SOIL EROSION AND WATER POLLUTION CONTROL

The provisions of Section 656 of the Maine DOT Standard Specifications shall apply with the following additions and modifications:

656.01 Description:

Contractor shall provide temporary soil and water pollution control as called out on the plans and as necessary. Catch basin filter sacks shall be installed in all existing catch basins with the limits of work, and immediately downgradient as determined by the Engineer. This work shall also consist of applying water and calcium chloride to control dust resulting from traffic and Contractor's operations.

This work shall also include temporary bypass pumping of sanitary and/or combined sewer flows during sewer replacement, including all labor, materials, and equipment necessary to maintain sewer flows throughout the duration of the project.

Calcium chloride shall not be used on paved roadways.

656.5 Basis of Payment:

Temporary soil erosion and water pollution control shall be incidental to the project work.

Failure by the Contractor to follow Maine DOT Standard Specification or Special Provision – Section 656 will result in a violation letter and a reduction in payment as shown in the schedule list in 656.5.1 (see below). The Department's Resident or any other representative of The Department reserves the right to suspend the work at any time and request a meeting to discuss violations and remedies. The Department shall not be held responsible for any delay in the work due to any suspension under this item.

ORIGINAL CONTRACT AMOUNT

<u>From</u>	<u>Up to and</u>	<u>Amount of Penalty Damages per Violation</u>		
<u>More Than</u>	<u>Including</u>	<u>1st</u>	<u>2nd</u>	<u>3rd & Subsequent</u>
\$0	\$1,000,000	\$250	\$500	\$1,250
\$1,000,000	\$2,000,000	\$500	\$1,000	\$2,500
\$2,000,000	\$4,000,000	\$1,000	\$2,000	\$5,000
\$4,000,000	and more	\$2,000	\$4,000	\$10,000

SECTION 659 – MOBILIZATION

The provisions of Section 659 of the Maine DOT Standard Specifications shall apply with the following additions and modifications:

659.01 Description:

Mobilization shall consist of preparatory work and operations including, but not limited to those necessary to the movement of personnel, equipment, supplies and incidentals to the project site; and for all other work and operations which must be performed or costs incurred prior to beginning work on the various items on the project site

Mobilization includes the mobilization and demobilization of all resources as many times as necessary during the Work. Mobilization includes all costs associated with the General Conditions of the Contract including the cost of all bonds and insurance and pre-construction submittals.

659.011 Method of Measurement:

Mobilization and General Conditions will be measured as a Lump Sum for each individual project location. The maximum amount that the City will pay for Mobilization is 10% of the Bid less the amount bid for Mobilization for each project location.

659.02 Basis of Payment:

The lump sum price for Mobilization of each project location will be paid upon completion of the work for each individual project location.

The total sum of payments under this item shall not exceed the original Contract amount bid regardless of the fact that the Contractor may shut down their work on the Project or move equipment away from the Project and then back again.

Payment will be made under:

<u>Pay Item</u>		<u>Pay Unit</u>
659.10	Mobilization	Lump Sum

SECTION 700 – MATERIALS

The following are revisions and additions to the Material Details Division of the Maine DOT Standard Specifications. Provisions contained herein shall be considered to supplement or supersede those portions of the Maine DOT Standard Specifications as they apply to the Contract.

The GENERAL STATEMENT of this Division is hereby revised to read as follows:

All materials which are to be used in the work for which there is no prescribed testing by the project engineer or other certified laboratories, the Contractor shall, prior to final acceptance as specified in subsection 107.9.4, submit a Materials Certification Letter similar to:

Company Letterhead

Mr. _____ Resident Date _____

Address _____ Project No. _____

_____ Town _____

"This is to certify that the below listed materials, which are incorporated into the above designated project, comply with the pertinent specified material requirements of the contract. Processing, project testing and inspection control of raw materials are in conformity with the applicable drawings and/or standards of all articles furnished. (List only those items used.)

- Castings, Grates, Frames and Traps
- Concrete Blocks, Bricks, Precast Sections, Appurtenant Structures
- Culverts, Underdrain, Sanitary Sewer Pipe and Storm Drain Pipe
- Regulatory Signs and Posts

All records and documents pertinent to this letter and not submitted herewith shall be maintained available by the undersigned for a period of not less than three (3) years from the date of completion of the project.

The Materials Certification letter shall be signed by a person having legal authority to bind the Contractor.

Materials for which the above Certificate is acceptable may be subject to random sampling and testing by the City. Certified materials which fail to meet specification requirements may not be accepted.

SECTION 703 – AGGREGATES

The provisions of Section 703 of the Maine DOT Standard Specifications shall apply with the following additions and modifications:

703.02 Coarse Aggregate for Concrete:

Designated Aggregate Size

Sieve Size	Per Cent Passing Sieve				
	2 in.	1½ in.	1 in.	¾ in.	½ in.
2 in.	95-100	100	-	-	-
1-1/2 in.	-	95-100	100	-	-
1 in.	50-70	-	90-100	100	-
3/4 in.	-	50-70	-	90-100	100
1/2 in.	15-30	-	25-60	-	90-100
3/8 in.	-	10-30	-	20-55	-
No. 4	0-5	0-5	0-10	0-10	0-15
F.M. (+0.20)	7.45	7.20	6.95	6.70	6.10

Aggregate used in concrete shall not exceed the following maximum designated sizes:

- a. 2 inches for mass concrete
- b. 1-1/2 inch for piles, pile caps, footings, foundation mats, and walls 8 inches or more thick
- c. 3/4 inch for slabs, beams, and girders.
- d. 1/2 inch for fireproofing on steel columns and beams
- e. 1 inch for all other concrete

703.06 (a) Aggregate Base:

Aggregate base - crushed, type "A" shall not contain particles of rock which will not pass the two inch (2") square mesh sieve, and shall conform to the type "A" aggregate, as listed in the subsection of the Maine DOT Standard Specifications.

"Crushed" shall be defined as consisting of rock particles with at least 50 per cent of the portion retained on the 1/4 inch square mesh sieve, having a minimum of 2 fracture faces.

703.06 (c) Aggregate Subbase:

Sand subbase shall not contain particles of rock which will not pass the one inch (1") square mesh sieve, and shall conform to the type "F" Aggregate, as listed in this subsection of the Maine DOT Standard Specifications.

Gravel subbase shall conform to type "D" Aggregate, as listed in this subsection of the Maine DOT Standard Specifications.

703.18 Common Borrow:

Common borrow shall not contain any particle of bituminous material.

703.19 Granular Borrow:

Granular borrow shall contain no particles which will not pass a three inch (3") square mesh sieve.

703.20 Gravel Borrow:

Gravel borrow shall not contain particles of rock which will not pass three inch ("3") square mesh sieve.

703.30 Crushed Stone for Pipe Bedding and Underdrain:

"Crushed Stone" shall be defined as rock of uniform quality and shall consist of clean, angular fragments of quarried rock, free from soft disintegrated pieces or other objectionable matter.

Crushed stone used as a bedding material for pipe and underdrain shall be uniformly graded and shall meet the follow gradations.

Sieve Designation	Percentage by Weight Passing
	Square Mesh Sieve
3/4 – inch-----	100
3/8 – inch-----	20-55
No. 4-----	0-10

The stone shall be free from vegetable matter, lumps or balls of clay, and other deleterious substances.

703.40 Structural Soil:

Structural Soil is a two-part system consisting of rigid stone and uncompacted soil which provides a load bearing paving base while supporting tree root growth. The structural soil shall consist of the below two components:

1. A uniformly sized, highly angular crushed stone ranging from ¾ to 1 ½ inches in diameter with no fine materials and with 40% porosity when compacted.
2. An uncompacted soil filling the voids of the compacted crushed stone. The uncompacted soil shall consist of 2% to 5% organic matter and a minimum of 20% clay.

703.5 Method of Measurement:

Structural soil shall be measured by the cubic yard and utilized only where called out on the plans.

703.6 Basis of Payment:

The cubic yard quantity of structural soil shall be paid under bid item 703.40 and installed to the extents shown in the "Structural Soil Installation" detail.

Payment will be made under:

Pay Item

Pay Unit

703.40

Structural Soil

Cubic Yard

APPENDIX A – PORTLAND WATER DISTRICT SPECIFICATIONS



**Portland
Water
District**

From Sebago Lake to Casco Bay

DEERING AVENUE
**WATER SERVICE &
HYDRANT REPLACEMENT**

DEERING AVENUE
PORTLAND, MAINE

Prepared By:
PORTLAND WATER DISTRICT
225 Douglass Street
Portland, ME 04104

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DIVISION 1
GENERAL REQUIREMENTS

Section 01010

Summary of Work

PART 1 - GENERAL

1.01 SUMMARY

- A. The Contractor shall furnish and install water services, hydrant, and appurtenances in Deering Avenue as shown on the Drawings and specified herein.
- B. The Contractor shall perform leakage and pressure tests and disinfect the installed water main as specified herein.

1.02 DUTIES OF THE OWNER

- A. The Owner will locate the terminal points of the work and will also locate any of its facilities lying in close proximity which would in any way be a hazard to the Contractor's operations.
- B. The Owner will operate any valves or hydrants which may be found desirable or necessary to be used for any purpose.
- C. The Owner will notify customers of all work involving temporary shutdown of service.

1.03 DUTIES OF THE CONTRACTOR

- A. The Contractor shall be responsible for the preservation of all public and private property, and shall use every precaution necessary to prevent damage thereto.
- B. Provide water mains to supply the Owner with a satisfactory, watertight pipeline, laid to proper line and grade in accordance with these contract documents, to the satisfaction of the Owner. The Contractor shall leave the site in a condition, which is suitable to the Owner, abutting landowners and any municipal or state authorities having jurisdiction over the areas involved.
- C. The Contractor shall furnish plant and equipment which will be efficient, appropriate and large enough to secure a satisfactory quality of work and a rate of progress which will ensure the completion of the work within the time stipulated in the Contract.
- D. The Contractor must give the District adequate notice of all planned activities such as shutdowns to allow time for customer notification.
- E. The Contractor will furnish all fuel, gasoline, oil, etc. for the operation of his equipment, all tools and equipment, and all labor and supervision necessary for the handling of material, for excavation, installation, backfilling and cleaning the site as required. He will dispose of excess spoil and restore the land surface to the original contour over the entire length of the project. Restoration shall be made to the satisfaction of the Engineer.
- F. The Contractor will perform the pressure and leakage test and disinfection of the main as described herein in the presence of the Engineer or Owner.
- G. The Contractor shall install and maintain a temporary water system sufficient to maintain service to all customers during the water main replacement.

- H. The Contractor shall obtain all necessary street opening permits and comply with all rules and regulations associated with those permits. Any fees associated to obtaining these permits shall be the responsibility of the Contractor.
- I. The Contractor shall be hold or acquire any required municipal licensure or approval to perform work within the municipality. Any fees associated to obtaining these licenses or approvals shall be the responsibility of the Contractor.
- J. The Contractor shall schedule a Pre-Construction Meeting with the District's Construction Scheduler three to four weeks ahead of planned start of construction.
- K. The Contractor shall schedule construction inspection services with the District's Construction Scheduler two weeks ahead of planned start of construction.
- L. The Contractor shall be responsible for coordinating with homeowners, residents, and business owners related to the impact of their work. This shall include but not be limited to coordination related to impact to access to driveways, water service disruption due to temporary water connections, access to premises for shutting valving, and finding suitable time(s) for shutdowns of water service.

PART 2 – PRODUCTS

(NOT USED)

PART 3 - EXECUTION

(NOT USED)

-- END OF SECTION --

Section 01250

Measurement and Payment

PART 1 - GENERAL

1.01 METHOD OF MEASUREMENT AND BASIS OF PAYMENT

- A. All measurements for payments will be based on completed work performed in strict accordance with the drawings and specifications, and on the contract bidding and payment item schedules. All work completed under the contract will be measured by the Owner according to the methods outlined below. In cases where the payment clause in the specifications relating to any unit or lump sum price stated in the contract requires that the said unit or lump sum price cover and be considered compensation for certain work or material essential to the item, this same item will not be measured or paid for under any other pay item which may appear elsewhere in the specifications.
- B. The Contractor, in case of unit price items measured for payment, shall be paid for the actual amount of work accepted and for the actual amount of materials in place. At the end of each day's work, the Contractor's authorized representative shall meet with the Owner's representative and determine the quantities of unit price work accomplished or completed during the work day. The Owner's representative will then prepare two "Daily Quantity Reports" which shall be signed by both the Contractor's representative and the District's representative. These completed forms will provide the basis for the Contractor's partial payment requests. Items not appearing on the Daily Quantity Report will not be included for payment.

1.02 INCIDENTAL WORK

- A. Incidental work items for which separate payment is not made include (but are not limited to) the following items:
 - 1. Dewatering
 - 2. Dust Control
 - 3. Erosion control
 - 4. Traffic control plan
 - 5. Construction signs
 - 6. Trench boxes, steel and/or wood sheeting as required, including that left in place
 - 7. Clean-up
 - 8. Loaming and seeding
 - 9. Restoration of property
 - 10. Repair and replacement of utilities damaged by construction activity and corresponding proper disposal of removed materials
 - 11. Crossing other utilities
 - 12. Bonds, insurance, shop drawings, warranties and other submittals required by the contract documents
 - 13. Temporary construction and other facilities not to be permanently incorporated into the work necessary for construction sequencing and maintenance of operations. Inclusive of but not limited to temporary water supply system and pavement restoration of temporary water supply system trenches outside the limits of payment for pavement associated with permanent water infrastructure replacements.
 - 14. Permits not otherwise paid for or provided by the Owner

15. Facilities for storage of materials to be incorporated into the Work
16. Test pits to determine existing utility locations, soil conditions, and as required to complete the Work
17. Excavation under/near and/or crossing other utilities, including any equipment/supports required for that work
18. Assessment of potential obstructions to project work (e.g., existing pipes, services, conduits, ducts, sewers, etc.) and all arrangements with owners of those obstructions to allow for the project work to take place.
19. Protection of existing trees, buildings, structures, and utilities (both public and private) including poles, signs, services to buildings, buried utilities, gas pipes, water pipes, hydrants, sewers, drains, and electric and telephone cables, whether or not they are shown on the Drawings. The Contractor shall carefully support and protect all such structures and utilities from injury of any kind.
20. Mobilization/demobilization.
21. Clearing, grubbing, and stripping.
22. Saw cutting, removal, and disposal of existing pavement, concrete, and/or cobblestones.
23. Resetting or replacement of existing street signs
24. Pre-construction photographs/videos (as necessary).
25. Providing material for and installation of rigid foam board insulation as instructed by the Owner in areas where service pipe and/or water main is installed without proper cover or is installed within close proximity to sewer/storm manholes.

1.03 PAYMENT ITEMS

A. Item W-1 - Hydrant Assembly

1. Method of Measurement: Each.
2. Basis of Payment: Payment of the unit price established in the Bid shall be full compensation for excavation, shoring and bracing, dewatering, valve box, 6-inch ductile iron pipe, hydrant, fittings, hydrant extensions (if required), restrained joint gaskets (if necessary), removal and disposal of existing hydrant and appurtenances, thrust blocks, backfilling, testing, and associated work as specified and shown on Drawings. Separate payment shall be made for aggregate subbase gravel, aggregate base gravel, restoration, and Hot Mix Asphalts.
3. Schedule of Payment: Installation – 100%

B. Item W-2 - Copper Services

1. Method of Measurement: Each.
2. Basis of Payment: Payment of the unit price established in the Bid shall be full compensation for excavation, shoring and bracing, dewatering, pipe, fittings, connection to existing service, service box, rod, curb stop, select backfill, backfilling, testing, and associated work as specified and shown on Drawings. Separate payment shall be made for aggregate subbase gravel, aggregate base gravel, restoration and Hot Mix Asphalts.
3. Schedule of Payment: Installation – 100%

PART 2 – PRODUCTS

(NOT USED)

PART 3 - EXECUTION

(NOT USED)

-- END OF SECTION --

Section 01300

Submittals

PART 1 - GENERAL

1.01 GENERAL REQUIREMENTS

- A. For all products to be incorporated into the Work submit to the Owner for approval sufficient information in the form of shop drawings, product data and/or samples such that the Owner can determine that the product is in compliance with the Technical Specifications and Drawings.
- B. Submit two (2) copies of each submittal. One (1) copy will be returned to the Contractor. Each copy shall include a cover sheet which clearly identifies the product and corresponding specification section. Each cover sheet shall bear the Contractor's stamp and signature certifying that the submittal is in full compliance with the Contract Documents or that any deviations from the Contract Documents are clearly identified on a separate sheet(s) labeled "Deviations From Contract Documents" and attached to the cover sheet.
- C. The Owner shall review the submittals and indicate their status as:
 - 1. "A" - Approved Subject to the Requirements of the Contract
 - 2. "B" - Approved as Noted, Subject to the Requirements of the Contract
 - 3. "C" - Revise as Noted, Resubmittal Required
 - 4. "D" - Not Approved
- D. Owner's review is only for general conformance with the design concept and general conformance with the information given in the Contract Documents. Corrections or comments made during the review do not relieve the Contractor from compliance with the requirements of the Contract Documents.
- E. Re-submittals: Make re-submittals under procedures specified for submittals; identify changes made since previous submittal.
- F. Contractor shall be responsible for the delays and or additional expenses that result from the Contractor's failure to submit a complete submittal and/or to identify portions of the submittal that does not conform to the specifications.

PART 2 - PRODUCTS

(NOT USED)

PART 3 - EXECUTION

(NOT USED)

-- END OF SECTION --

DIVISION 2

SITE WORK

Section 02315

Earthwork for Water Main Construction

PART 1 - GENERAL

1.01 DESCRIPTION

- A. This section includes all excavation for water mains, hydrants and appurtenances, including drainage, sheeting and bracing, backfilling, disposal of surplus material, and miscellaneous grading. All work shall be done as indicated on the drawings and as herein specified.
- B. Excavation for water mains shall be the width and depth as indicated on the standard details. Excavation for hydrants and appurtenances shall provide suitable room for their construction.
- C. The Contractor shall furnish and place all sheeting, bracing and supports, and necessary dewatering, and shall carry out the excavation in such a manner as to eliminate all possibilities of undermining or disturbing existing pipelines, utilities, roadways, shoulders and/or structures.
- D. The Contractor shall furnish, place and compact various types of bedding material and trench sand as called for in the specifications or as directed. The types and quality of bedding and backfill material are specified in this section, but its use for pipe bedding, backfill, replacement of unsuitable material excavated below trench grade, and other uses are as specified elsewhere.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Bedding Material

- 1. Screened or crushed gravel bedding material shall be hard durable particles free from organic matter, lumps of clay and other deleterious substances. The gradation shall meet the requirements of the following table and MDOT specifications Section 703.06 Type B aggregate.

<u>Sieve Size</u> <u>Designation</u>	<u>% By Weight</u>
½ inch	35 - 75
¼ inch	25 - 60
No. 40	0 - 25
No. 200	0 - 5.0

- 2. Select backfill as specified below may be used for bedding material.
- 3. Bedding material shall not contain particles of rock which have any dimensions greater than 4”.

B. Select Backfill

- 1. Suitable native material with all particles of rock which have any dimensions greater than 4” removed.

2. Sand backfill shall be hard, durable particles of granular material with 100% passing the 1/2" sieve and between 0-15% passing the #200 mesh. All percentages are by weight. Sand shall be graded so as to secure the required compaction.

C. Backfill

1. Suitable native material that does not contain stone or rock particles with any dimensions greater than 8".
2. Bank Run gravel borrow consisting of uniformly graded granular material having no rocks with a maximum dimension greater than 8" and that portion passing a 3-inch square mesh sieve shall contain no more than 70% passing 1/4 inch mesh sieve and not more than 10% passing a No. 200 mesh sieve.

PART 3 - EXECUTION

3.01 EXCAVATION

- A. When any pavement, regardless of type, must be cut, it shall be done in a neat and symmetrical manner by use of a saw, chisel, or other suitable method. In no case shall pavement be torn up with a backhoe bucket except between and inside of cuts previously made as above. Should any further pavement be broken, outside of the cuts, as by blasting, such damaged pavement shall be cut out in a neat and orderly fashion.
- B. The Contractor shall perform all excavation of every description and of whatever substances encountered to the depths shown on the drawings or directed by the Engineer.
- C. No extras will be allowed for quicksand excavation, muck excavation, or any other type unless specifically provided for in the bidding schedule.
- D. Surplus excavated material may be used at other parts of the construction project as required for fill, etc. Excess material shall be disposed of by the Contractor.
- E. The sidewalls of all trench excavation shall be kept as nearly vertical as possible in all roadways, lawns, near homes, etc. by sheeting, bracing, or other means. The width of the trench at a point six (6) inches above the top of the water pipe shall not be greater than the width detailed. If the type of excavated material will not allow the width detailed, then the trench shall be properly sheeted and braced. The cost of sheeting, bracing, or other means is included in the cost of the pipelines and no extras will be allowed.
- F. The excavation shall be made to secure a flat bottom trench (undisturbed earth bottom) for the full length of the pipe so as to give a uniform support to the pipe and shall be in accordance with ANSI A21.50 (AWWA C150), Type 2 Laying Condition.
- G. The bottom of the trench shall be accurately graded to provide support to the full length of the pipe barrel. Excavate at each bell to prevent bell from bearing on trench bottom.

3.02 EXCAVATION BELOW TRENCH GRADE

- A. By mistake of Contractor: Where the bottom of the trench shall, by mistake of the Contractor, have been taken out to a greater depth than required, it shall be refilled to the proper grade

with bedding material, and all to be placed and compacted as specified at no additional cost to the Owner.

- B. By instruction from Engineer: If, in the opinion of the Engineer, existing material below trench grade is unsuitable for properly laying the pipe, the Contractor will excavate and remove the unsuitable material and replace the same with bedding material as authorized by the Engineer and properly compacted to his satisfaction. The Contractor will be paid under the item titled "Unsuitable Material Excavated Below Trench Grade."

3.03 EXCAVATION NEAR EXISTING UTILITIES, ETC

- A. It will be necessary to excavate near existing pipes, drains and other utilities in certain locations. Some of these have been indicated on the drawings, but no attempt has been made to show all of the services and the completeness and accuracy of the information given is not guaranteed. The Contractor shall call "Dig-Safe" at least three business days in advance of any excavation to allow utilities to locate underground facilities.
- B. As the excavation approaches pipes, conduits, or other underground structures and utilities, digging by machinery shall be discontinued and the excavation shall be done by means of hand tools.
- C. If the utility is of the opinion that at any point sufficient or proper support has not been provided, they may order additional supports placed at the expense of the Contractor. Compliance with such order shall not relieve the Contractor from his responsibility for the sufficiency of such supports. It shall be the responsibility of the Contractor to prevent damage to or displacement of utilities and to consult with and request the concurrence of the utility company's representative in this matter at all locations. The cost of protecting such utilities shall be considered incidental to the cost of laying the pipe.

3.04 TRENCH SURCHARGES

- A. The excavated material shall be placed adjacent to the excavation in a manner to cause no excessive surcharge on the trench bank nor to obstruct free access to hydrants and valves. Should traffic or other conditions make it impractical or unsafe to stack material adjacent to trench, it shall be hauled and stored at a location provided by the Contractor and at the expense of the Contractor. When required, it shall be re-handled and used in backfilling the trench by the Contractor and at his expense.

3.05 SHEETING AND BRACING

- A. The Contractor shall be responsible for the design, construction, maintenance and safety of all sheeting and bracing required to support the sides of the excavation and to prevent the movement of earth which could in any way damage or endanger adjacent structures, utilities, roadways, increase the width of the excavation to more than that specified, or delay the work.
- B. All sheeting, bracing and shoring is to be included in prices bid for several items of work in bidding schedule and will not be paid for as separate items.
- C. No shoring shall be left in place unless so directed by the Engineer.

3.06 DRAINAGE AND DEWATERING OF EXCAVATIONS

- A. The Contractor shall conduct his operations so as to prevent at all times the accumulation of water, ice and snow in excavations or in the vicinity of excavated areas so as to prevent water from interfering with the progress or quality of the work. Under no conditions shall water be allowed to rise in unbackfilled trenches after pipe has been placed.
- B. Accumulated water, ice and snow shall be promptly removed and disposed of by dewatering. Disposal shall be carried out in a manner which will not create a hazard to public health; nor cause injury to public or private property, work completed or in progress, or public streets; nor cause any interference in the use of streets and roads by the public. Pipes under construction shall not be used for drainage of excavations.
- C. During construction, when an unstable condition in the pipe sub-grade has been created due to the Contractor'S excavation, the sub-grade shall be stabilized by dewatering or other means accepted by the Engineer.

3.07 BACKFILLING – GENERAL

- A. In general and unless other material is indicated on the drawings or is specified, material used for backfilling trenches and excavations around structures shall be suitable material which was removed in the course of making the construction excavations or as specified.
- B. Frozen materials shall not be placed in the backfill, nor shall material be placed upon frozen material. Previous frozen material shall be removed or shall be otherwise treated as required before new backfill is placed.
- C. Backfilling shall be done as soon as practical after the pipe has been laid and jointed.

3.08 SUITABLE BACKFILL MATERIAL

- A. Suitable backfill material shall be the following or a combination of the following:
 - 1. Excavated material that will compact to the compaction requirements.
 - 2. Material that does not contain rocks larger than 8" in any dimension.
 - 3. Dry clay backfill free from lumps.
 - 4. Wet clay that alone would pump but when mixed with sand and/or gravel will be stable and will compact.

3.09 BACKFILLING PIPE TRENCHES

- A. As soon as practicable after the pipes have been laid and jointed, backfilling shall begin and shall proceed until it is completed or has sufficient backfill to allow pipe testing.
 - 1. The first layer of suitable backfill material shall be brought half-way up the pipe and compacted to 80% maximum density and then the normal backfilling shall begin and shall be compacted as specified.
 - 2. All backfill shall be thoroughly compacted by hand tamping as placed, by use of mechanical or vibratory compactors, or by other acceptable methods.

3. Remainder of the trench shall be backfilled as follows:
 - a. In paved areas, road shoulders and seeded areas, the entire depth of trenches above the center line of the pipe shall be backfilled in eight (8) inch layers with suitable backfill material and each layer thoroughly and carefully compacted as specified. Bring backfill up to bottom of gravel base and/or loam.
 - b. In other areas, the trench above the center- line of the pipe shall have suitable backfill material placed and compacted in eighteen (18) inch maximum layers as specified.
- B. The nature of the excavated materials will govern both their acceptability for backfill and the method best suited for their placement and compaction in the backfill.
 1. Both the materials and the methods shall be subject to the acceptance of the Engineer.
 2. No stones or rock larger than 8" in the greatest dimension shall be placed in the backfill.
- C. Backfilling in public right-of-way, along the streets or highways in or along shoulder, berm or backslope shall be done in accordance with the specifications and requirements of the state or municipality, whichever is responsible for the street or highway involved. Responsibility for the fulfillment of permit conditions or any other applicable requirements of the street or highway authority shall be the obligation of the Contractor. Surface restoration shall be carried out to the satisfaction of the street or highway authority or as shown on the plans.
- D. Backfilling shall follow pipe laying as closely as reasonable, so that a minimum of trench shall be open at any time. The regulations of the highway authorities shall be observed as regards the amount of trench to be open at any one time. Over night, and especially over weekends and holidays, the amount of open trench shall be kept at an absolute minimum. Any caved-in trench, especially after heavy rain and flooding, shall be cleaned out and the bottom consolidated before any additional pipe shall be laid.

3.10 TOP OF BACKFILL

- A. In paved and shoulder areas, backfill shall be carried up to pavement or shoulder sub-grade ready to receive the gravel base. In other areas, backfill shall be brought up to adjacent finished grade minus the depth of any required topsoil and so as to provide a finished surface slightly mounded over the trench. Any trenches improperly backfilled, or where settlement occurs, shall be reopened to the depth required for proper compaction, and shall then be refilled and compacted with the surface restored to required grade and degree of compaction, mounded over, and smoothed off, at no additional expense.
- B. In unpaved areas, the gravel topping shall be left in a smooth and even condition, with no large stone on or in the surface. In cases where a paved surface has been broken, a temporary bituminous patch and/or a permanent paving restoration shall be made as required by the appropriate local or state road authority.

3.11 COMPACTION

- A. Compaction densities specified herein shall be the percentage of the maximum density obtainable at optimum moisture content as determined and controlled in accordance with

AASHTO Standard T-180, Method A or D depending on the material size. Field density tests shall be made in accordance with AASHTO Standard T-147.

- B. Each layer of backfill shall be moistened or dried as required and shall be compacted to the following densities, unless otherwise specified in the project specifications.
 - 1. Bedding material: 80%
 - 2. Suitable backfill material under paved or shoulder areas: 90%
 - 3. Gravel base
 - a. Under paved areas: 95%
 - b. In shoulder areas: 90%
 - c. As replacement for unsuitable material excavated below grade: 90%
 - 4. Loam areas: 90%
 - 5. All other areas: 85%
- C. Methods and equipment proposed for compaction shall be subject to prior acceptance by the Engineer. Compaction generally shall be done with vibrating equipment. Displacement of, or injury to, the pipe and structure shall be avoided. Movement of in-place pipe or structures shall be at the Contractor'S risk. Any pipe or structure damaged thereby shall be replaced or repaired as directed by the Engineer and at the expense of the Contractor.
- D. Testing:
 - 1. Field density tests may be ordered by the Engineer for each foot of depth of backfill at an average interval of 200 feet along the trench.
 - 2. The Contractor shall furnish all necessary samples for laboratory tests and shall provide assistance and cooperation during field tests. The Contractor shall plan his operations to allow adequate time for laboratory tests and to permit taking of field density tests during compaction.
 - 3. Any costs of retesting required as a result of failure to meet compaction requirements shall be borne by the Contractor.

3.12 FILL AND GRADING

- A. Excavated material not required for backfilling around pipes or structures may be used for fill in areas which require material for re-grading.
- B. The re-grading shall be carried out as directed by the Engineer, so that all surface water will drain towards brooks or drainage pipes.
- C. All material shall be of such nature that after it has been placed and properly compacted, it will make a dense and stable fill.

3.13 PROTECTION OF EXISTING STRUCTURES

- A. All existing pipes, wires, poles, fences, property line markers and other items, which must be preserved in place without being temporarily or permanently relocated, shall be carefully supported and protected from injury by the Contractor, at no additional cost to the Owner. Should such items be injured, they shall be restored by the Contractor, without compensation therefore, to at least as good condition as that in which they were found immediately before the work was begun.

3.14 ACCOMMODATION OF TRAFFIC

- A. The Contractor shall construct and maintain, without extra compensation, such adequate and proper bridges over excavations as may be necessary or as directed for the safe accommodation of pedestrians and vehicles. The Contractor shall furnish and erect, without cost to the Owner, substantial barricades at crossing of trenches, or along the trench, to protect the traveling public.
- B. The Contractor shall not obstruct fire hydrants.

-- END OF SECTION --

Section 02537

Water Distribution System

PART 1 - GENERAL

1.01 SCOPE

- A. This section includes the furnishing and installing of ductile iron and PVC water pipe and ductile iron or cast iron fittings as specified.

1.02 SUBMITTALS

- A. Submittals shall be provided by the Contractor to the Owner as outlined in Section 01300 for the following items related to the water distribution system, as required by the specific project. Not required for Owner supplied materials:

1. Bolts
2. Cast Iron or Ductile Iron Split Repair Sleeve
3. Corporation Stop
4. Copper Pipe
5. Curb Stop
6. Cut in Sleeve
7. Ductile Iron Fittings
8. Ductile Iron Pipe
9. Insertion Valve
10. Fire Hydrant
11. Pipe Joint Restraint
12. Polyethylene Encasement (Poly Wrap)
13. PVC Pipe
14. Resilient Seated Gate Valve
15. Restrained Joint Gaskets
16. Service Box and Rod
17. Service Saddle
18. Stainless Steel Repair Clamp

- 19. Tapping Sleeve
- 20. Temporary plug
- 21. Tracer Wire & Marking Tape
- 22. Valve Box

PART 2 - PRODUCTS

2.01 GENERAL

- A. Upon approval of the proposed Manufacturer and Product Series, the Contractor shall utilize that source for said material for the entirety of the Work unless otherwise approved by the Engineer to maintain consistency throughout the project.
- B. Pipe delivered for construction shall be strung and protected so as to prevent entrance of any foreign material.
- C. Any defective or imperfect materials furnished by the Contractor shall be marked as such and removed immediately from the site. Satisfactory materials shall be substituted for that rejected at no additional cost to the Owner.
- D. All materials, products and coating that contact drinking water shall be certified to meet NSF/ANSI Standard 61 – latest revision, Drinking Water System Components – Health Effects.

2.02 BOLTS

- A. Stainless Steel: Type 304 – contains the addition of Molybdenum to the nickel-chromium steels.
- B. High Strength/Low Alloy Steel: Trade name for cold formed T-head bolts containing alloying elements such as copper, nickel, and chrome (Cor-Blu).

2.03 CAST IRON OR DUCTILE IRON SPLIT REPAIR SLEEVE

- A. Split repair sleeve shall be mechanical joint.
- B. The side rubber gaskets shall be rectangular to cross-section and shall fit into grooved channels in the casting. These gaskets shall extend the entire length of the sleeve.
- C. Split repair sleeve shall be AB-CD pattern to permit use of plain rubber and duck-tipped gaskets for various O.D. piping sizes.
- D. All side bolts shall be Stainless Steel (Type 304) or silicone bronze.
- E. Interior and exterior to be bituminous coated with a minimum of 4 mils D.F.T.
- F. The sleeve shall be provided with a 2-inch F.I.P.T. test port with brass plug.

2.04 CORPORATION STOP

- A. Conforming to AWWA C-800.

- B. 3/4-inch to 2-inch curb stops shall be ball valve design with brass ball that is Teflon coated or brass ball with Teflon seats.
- C. The ball shall be supported by seats which are water tight in either direction.
- D. The valve shall have a full port opening.
- E. The body of the corporation stop shall be of heavy-duty design.
- F. The valve working pressure shall be 300-psi.
- G. Approved Manufacturers:
 - 1. A.Y. McDonald
 - 2. Cambridge Brass
 - 3. Ford Meter Box Co.
 - 4. Mueller Co.

2.05 COPPER PIPE

- A. Conforming to ASTM B88.
- B. Pipe shall be Type K.
- C. Conforming to NSF/ANSI 61.

2.06 CURB STOP

- A. Conforming to AWWA C-800.
- B. 3/4-inch to 2-inch curb stops shall be ball valve design with brass ball that is Teflon coated or brass ball with Teflon seats.
- C. The ball shall be supported by seats which are water tight in either direction.
- D. The valve shall have a full-port opening.
- E. The valve shall open with 1/4 turn (90°) with a check or stop.
- F. The valve shall not have a drain.
- G. The valve stem shall have 2 "O" rings and a bronze ring lock which holds the stem solidly in the valve body.
- H. The valve body shall be of heavy-duty design.
- I. The valve working pressure shall be 300-psi.
- J. Approved Manufacturers:

1. A.Y. McDonald
2. Cambridge Brass
3. Ford Meter Box Co.
4. Mueller Co.

2.07 CUT-IN SLEEVE

- A. The sleeve shall be mechanical joint to plain-end type.
- B. The sleeve shall fit over either AB or CD pattern pipe.
- C. Interior coating– Seal-coated – AWWA C104-74, min. 4 mils D.F.T.
- D. Exterior coating – Bituminous coated, min. 4 mils D.F.T.
- E. Mechanical joint connections
 1. Glands: Duck-tipped for AB pipe, Plain Gaskets for CD pipe
- F. Cut-in sleeves shall have at least one stop-screw in sizes up through 10-inch and at least 2 stop-screws in 12-inch size.
- G. The stop-screw “O” ring shall be recessed into the body of the sleeve between stop-screw and body.
- H. Approved Manufacturers
 1. Mueller Co.

2.08 DUCTILE IRON FITTINGS

- A. Fittings include but are not limited to bends, reducers, off-sets, tees and sleeves.
- B. Material shall be ASTM A536 (latest revision), grade 70-50-05, in accordance with AWWA C110 (latest revision) for fittings larger than 24-inch and C153 (latest revision) for fittings 3-inch through 24-inch.
- C. Fittings shall be cement lined AWWA C104 (latest revision) or fusion bonded epoxy coated with a 5-mil nominal thickness per AWWA C550 and C116.
- D. Interior seal coated AWWA C104 with minimum of 4 mils dry film thickness.
- E. Exterior bituminous coated, 4 mils minimum dry film thickness or fusion bonded epoxy coated with a 5-mil nominal thickness per AWWA C550 and C116.
- F. Sleeves shall not be cement lined, but shall be bituminous coated inside to 4 mils dry film thickness. All sleeves shall be long body type.
- G. Class 350 pressure rating in accordance with AWWA C153 - 3-inch - 24-inch sizes.

- H. Class 250 pressure rating in accordance with AWWA C110 - 30-inch - 48-inch sizes.
- I. The "compact design" fittings must provide adequate space for the MJ joint and accessories to be installed without special tools (i.e., Lowell wrench can be used).

2.09 DUCTILE IRON PIPE

- A. Ductile iron pipe shall meet requirements of AWWA Standard C-151 (latest revision) and be cement lined and seal coated to meet AWWA Standard C-104 (latest revision).
- B. Joints shall meet requirements of AWWA C-111 (latest revision).
- C. Interior seal coated, bituminous paint oil cut, emulsion not acceptable, thickness minimum of 2 mils dry film thickness.
- D. Exterior bituminous coated with minimum of 2 mils dry film thickness.
- E. The exterior of ductile iron pipe shall be coated with a layer of arc-sprayed zinc per ISO 8179. The zinc coating system shall conform to ISO 8179-1
- F. Class 52 wall thickness.
- G. State nominal laying length and mark shorter lengths near bell.
- H. Approved Manufacturers
 - 1. American Cast Iron Pipe
 - 2. U.S. Pipe

2.010 INSERTION VALVE

- A. Valve shall meet or exceed all requirements of ANSI/AWWA C-515 and ANSI/NSF 61.
- B. Valve shall have a working pressure rating of 350psi.
- C. Valve body, bonnet, stuffing box, and operating nut shall be made of ductile iron meeting ASTM A536. Body and bonnet shall meet the minimum wall thickness outlined in AWWA C-515. Operating nut shall be two (2) inch square.
- D. Valve shall have a non-rising stem.
- E. Valve ends shall be mechanical joint.
- F. Valve stem diameter and number of turns shall be in line with AWWA C-515. Valve stem shall be bronze alloy meeting ASTM B98.
- G. Valve shall be of type such that it shall seat on itself.
- H. Valve shall open right.
- I. Concrete base support shall be installed as required by the Manufacturer.

J. Approved manufacturers

1. Mueller PERMASEAL
2. TEAM InsertValve

2.011 FIRE HYDRANT

A. The hydrant shall open right.

B. Operating nut shall be DI or bronze, pentagon in shape with dimensions:

1. Top 1-13/16-inch tapering to 1-7/8-inch on bottom

C. Nozzles:

1. Two (2) each: 2-1/2-inch National Standard Thread
2. One (1) each: 4-1/2-inch National Standard Thread

D. Port covers shall be supplied without chains and shall have the same size pentagon operator as specified in 3.0(b) above.

E. Traffic model hydrant with breakaway feature.

F. Barrel Length

1. 6 ft. cover, 6.5 ft. bury; or
2. 5.5 ft. cover, 6 ft. bury; or
3. 5 ft. cover, 5.5 bury

G. Hydrant shoe or base shall have 6-inch MJ inlet and 5-1/4-inch valve opening with non-draining bronze seat that is permanently plugged. Valve seat and sub-seat arrangement shall be bronze to bronze. Horizontal and vertical blocking planes manufactured into hydrant base.

H. Protective Coatings

1. All paintings and coatings shall be a minimum of 3 mils total dry film thickness, unless noted
2. The internal area of the hydrant base, which is normally exposed to water and which includes the internal body of hydrant shoes, including lower valve plate, shall be epoxy coated
3. All internal and external cast iron or ductile iron components shall be coated with an approved bituminous coating, 3 mils minimum.
4. Coatings for upper barrel - exterior:
 - a. Surface preparation blast clean SSPC-SP-6
 - b. Primer Sherwin Williams Red Oxide E61RC21, 1.5 mils, dry

- c. Finish coat Sherwin Williams – Regal Yellow, F78Y30, 1.5 mils, dry or sufficient paint to hide the second coat
 - d. Total dry film thickness - 3 mils minimum
- 5. Coatings for bonnet, operating nut, port cap:
 - a. Surface preparation: Blast clean, SSPC-SP-6
 - b. Exterior primer
 - c. Exterior aluminum
 - d. Total dry film thickness: 3 mils minimum.
- I. The Owner shall install flow indicator collars on all new hydrants.
- J. Approved Hydrants:
 - 1. Clow Medallion
 - 2. American Darling Models: B62B-1, B62B-5
 - 3. Kennedy Guardian

2.012 HIGH DENSITY POLYETHYLENE PIPE AND FITTINGS

- A. HDPE pipe shall be manufactured in accordance with AWWA C906. This material shall have a long-term Hydrostatic Strength of 1600 psi when tested in accordance with ASTM D2837. HDPE shall be manufactured from PE 4710 polyethylene compounds that meet or exceed ASTM D3350 cell classification 445574. The manufacturer shall comply with NSF Standard 61 and/or Standard 14 and must be certified by the NSF International for potable water.
- B. The pipe and fittings shall have a Standard Dimension Ratio (SDR) of 11 and be rated for a working pressure of 200 psi at a temperature of 75 degrees Fahrenheit with a service life of 50 years. All pipe and fittings shall be ductile iron pipe size.

2.013 PIPE JOINT RESTRAINT

- A. Use in conjunction with mechanical joint fittings.
- B. The joint restraint ring and its wedging components shall be made of ductile iron conforming to ASTM A536-80.
- C. Dimensions of the restrainer must allow use with standard M.J. bell conforming to AWWA C111 and AWWA C153.
- D. Restrainer must restrain up to 350-psi of working pressure in 3-inch to 16-inch sizes and 250-psi of working pressure in 18-inch to 48-inch sizes with a 2:1 safety factor.
- E. Torque limiting twist off nuts shall be used to ensure proper actuation of the restraining wedges where applicable.

F. Approved Manufactures

1. Sigma ONE-LOK
2. Ford Uni-Flange Series 1400
3. EBAA Mega Lug
4. Romac Grip Ring
5. Star Grip Series 300
6. Romac Romagrip
7. MJ FIELD LOK Gasket

2.014 POLYETHYLENE ENCASEMENT

- A. Tube type polyethylene encasement shall be installed on all ductile iron pipe and fittings in accordance with AWWA Standard C105 - latest revision, Method A.
- B. Polyethylene encasement shall be V-Bio variety containing three layers of low-density polyethylene.
- C. Circumferential wraps of tape or plastic tie straps shall be placed at 2-ft. intervals along the barrel of the pipe.
- D. The polyethylene encasement shall prevent contact between the pipe and the surrounding backfill and bedding material but is not intended to be a completely airtight or watertight enclosure. All lumps of clay, mud, cinders, and so forth, on the pipe surface shall be removed prior to installation of the polyethylene encasement. During installation, care shall be exercised to prevent soil or embankment material from becoming trapped between the pipe and the polyethylene.
- E. The polyethylene film shall be fitted to the contour of the pipe to affect a snug, but not tight, encasement with minimum space between the polyethylene and the pipe. Sufficient slack shall be provided in contouring to prevent stretching the polyethylene where it bridges irregular surfaces, such as bell-spigot interfaces, bolted joints, or fittings, and to prevent damage to the polyethylene due to backfilling operations. Overlaps and ends shall be secured with adhesive tape, string, plastic tie straps, or any other material capable of holding the polyethylene encasement in place until backfilling operations are complete.
- F. Three layers of polyethylene adhesive tape shall be wrapped around any polywrapped pipe where a tapping machine will be placed. All copper services connected to a pipe wrapped in polyethylene encasement shall be wrapped within three feet of the pipe.

2.015 PVC PIPE

- A. Pipe shall be AWWA C-900 Pressure Class 305-psi (SDR-14).
- B. The pipe shall conform to standard ASTM 2241.

- C. The pipe shall be provided in 20-foot lengths. If approved by the Engineer, field cutting per Manufacturer's recommended practices.
- D. The gasket or O-Ring material shall be rubber meeting ASTM F 477 and of the "permanent use" type.
- E. Where pipe slip joints are called to be restrained, restrained joint gaskets shall be internally installed from the manufacturer.
- F. All small diameter service connections shall be made with tapping saddles.
- G. Tracer wire and marking tape shall be installed along the length of the main.
- H. Approved Manufacturers:
 - 1. J-M Manufacturing - Blue Brute
 - 2. Certainteed – Yelomine
 - 3. Victaulic – Aquamine
 - 4. IPEX – Blue Brute

2.016 RESILIENT SEATED GATE VALVE

- A. Valve shall meet the latest revision of the AWWA C-515 and AWWA C-509 standards for 4-inch diameter valves and larger and 2-inch diameter valves, respectively.
- B. Valve shall have a smooth unobstructed water way which shall be a minimum diameter of the valve.
- C. Valve shall be rated for zero leak rate at 200-psi differential working pressure and have a 400-psi hydrostatic test for structural integrity.
- D. Sealing - Valve shall have a minimum of 2 "O" rings situated such that the "O" rings above the thrust collar can be replaced with the valve under pressure and in the open position.
- E. Valve stem shall:
 - 1. open right with a stem nut made of copper-alloy
 - 2. non-rising
 - 3. include a thrust collar integrally cast to the stem
 - 4. include with two (2) thrust washers, placed one above and one below the stem thrust collar
 - 5. constructed of copper-alloy or stainless steel
 - 6. such that the thrust washers are made of a synthetic polymer with physical properties required or stainless steel

- F. The body, including the stuffing box and the bonnet, shall be constructed of cast iron or ductile iron, meeting the latest revision of AWWA C-153
- G. Wedge shall be constructed of ductile iron (less guiding mechanism), fully encapsulated and permanently bonded with a resilient elastomer, constructed such to allow the flushing of any interior exposed surface during operations.
- H. Coatings
 - 1. the internal and external valve body, including the stuffing box, bonnet, and interior of the wedge shall be fusion bonded epoxy coated with 8 mils D.F.T.
 - 2. interior shall meet latest version of AWWA C-550
 - 3. shall be holiday free, interior and exterior, per testing method described in AWWA C-550, Sec. 5.1
- I. Operating nut shall be two inch (2-inch) square gray iron or ductile iron with a hold down nut (made of 316 stainless steel or silicone bronze), for tapered stems. Or, a stainless-steel pin inserted through the stem for full diameter stems.
- J. Bolts – The seal plate and bonnet bolts shall be stainless steel (Type 316 or Type 304)
- K. Valves 12-inch nominal diameter and smaller shall be directly operated by the nut on the valve stem and mounted vertically. Number of turns to open or close shall match the formula: $(3 \times D) + 2$ within +/- 2 turns. For example, a 12-inch valve should open or close with $(3 \times 12) + 2 = 38$ turns of the operating nut.
- L. Valves larger than 12-inch nominal diameter shall be designed to be installed horizontally and shall have bevel gear operators driven by the operating nut. Valves 14-inch – 24-inch nominal diameter shall have 4:1 bevel gear operators. Valves with 30-inch – 36-inch nominal diameters shall have 6:1 bevel gear operators and valves with 42-inch – 48-inch nominal diameters shall have 8:1 bevel gear operators. Number of turns to open or close shall match the formula: $((3 \times D) + 2)$ times the bevel gear ratio within +/- 4 turns. For example, a 24-inch valve should open or close with approximately $((3 \times 24) + 2) \times 4 = 296$ turns of the operating nut.
- M. Contractor may be required to supply a valve for inspection and approval of the coating system.
- N. Approved Manufacturers (4-inch diameter and larger)
 - 1. AFC Series 2500
 - 2. Mueller A-2361/62
 - 3. Clow Model 2638
- O. Approved Manufacturers (2-inch diameter)
 - 1. Mueller A-2361/62
 - 2. Clow Model 2639/2640

2.017 RESTRAINED JOINT GASKETS

- A. accepted restrained joint gaskets in the Portland Water District distribution system shall be rated in accordance with the performance requirements of ANSI/AWWA C111/A21.11.
- B. Required applications:
 - 1. Any hydrant branch or service with a distance greater than 18-foot shall have an approved restrained joint gasket in the bell ends.
 - 2. Where a casing is required, all joints within the casing shall have an approved restrained joint gasket unless restrained joint pipe is used.
 - 3. At any time as required by the Owner or Engineer.
 - 4. Any live service tap where there is a joint between the connection and the end of the service
- C. Approved Manufacturers
 - 1. American Fast-Grip Gasket – American Pipe
 - 2. Field Lok 350 Gasket – US Pipe

2.018 SERVICE BOX AND ROD

- A. Service box
 - 1. Shall be 1.0-inch Schedule 40 steel pipe with top having 1.0-inch N.P.T. pipe threads for screw-on cover or coupling.
 - 2. Shall be Erie style with 6-foot slide-type riser.
 - 3. Any extension of a service box requires a threaded merchant coupling with no set screw.
 - 4. Approved Manufacturers: Laroche, Clow Canada, Bibby
- B. Cover
 - 1. Shall be Quincy type (heavy duty) cover that screws on Service Box (1.1 above)
 - 2. Shall be tapped with a 1-inch rope thread with a solid brass plug with pentagon operating head
 - 3. Approved Manufacturers: Bibby, Laroche, Clow Canada, QWP
- C. Service box foot piece
 - 1. The standard foot piece shall be heavy duty (Ford style or equal) cast iron design.
 - 2. The large, heavy-duty foot piece shall have an arch that will fit over 2-inch ball-valve curb stops

3. Approved Manufacturer: Laroche

D. Service Rod

1. Shall have a self-aligning design
2. 36-inch length for all services
3. 24-inch length for air valves
4. Shall be round and constructed of stainless steel (304) with an epoxy coating (minimum 4 mil D.F.T.)
5. Shall have a yoke design that is an integral part of the rod
6. The curb-stop attachment pin shall be a brass cotter pin
7. The rod “wrench-flat” shall have a minimum thickness of 1/4-inch tapered to 1/16-inch and width of 5/8-inch or 1/2-inch.
8. Diameter:
 - a. 1/2-inch for 1/2-inch, 3/4-inch, and 1-inch services
 - b. 5/8-inch diameter for 1.5-inch and 2-inch services
9. Approved Manufacturer: North American Manufacture

2.019 SERVICE SADDLE

A. GENERAL

1. The saddle body shall be constructed of epoxy coated ductile iron.
2. The sealing gasket(s) shall be either Buna-N rubber or SBR rubber (ASTM D2000).
3. Service saddles shall be of a CC tap type.

B. PVC MAIN REQUIREMENTS

1. Service saddles installed on PVC mains shall have stainless steel straps.

C. HDPE MAIN REQUIREMENTS

1. Service saddles installed on HDPE mains shall have spring washers.

D. Approved Manufacturers:

MAIN TYPE	MAIN SIZE	TAP SIZE	APPROVED SADDLES
CAST & DI	4-inch - 12-inch	1.5-inch	Smith-Blair 313 Smith-Blair 331
CAST & DI	4-inch - 12-inch	2-inch	Smith-Blair 313
CAST & DI	16-inch	1.5-inch & 2-inch	Smith-Blair 313
CAST & DI	20-inch - 36-inch	1.5-inch & 2-inch	Smith-Blair 366
PVC	2-inch	3/4-inch & 1-inch	Smith-Blair 315 Smith-Blair 317 Smith-Blair 397
PVC	4-inch - 12-inch	3/4-inch - 2-inch	Smith-Blair 317 Smith-Blair 397
HDPE	2-inch	3/4-inch & 1-inch	Smith-Blair 317
HDPE	4-inch - 12-inch	3/4-inch - 2-inch	Smith-Blair 317

2.020 STAINLESS STEEL REPAIR CLAMP

- A. The sleeve shall be of full circle design, either one piece or two pieces, for pipe sizes 2-inch through 12-inch
- B. Body: Shall be 18-8 stainless steel shell.
- C. Gasket: Shall be full length and diameter of the body size. This gasket shall form a multiple O-ring, or grid, sealing barrier for the entire length and circumference. Shall be virgin SBR rubber (ASTM D2000 AA 415)
- D. Lugs, sidebar, and lifting bar shall be heavy gauge 18-8 stainless steel with TIG/MIG welding and chemical passivation of all welds.
- E. Bolts and Nuts shall be Teflon coated 18-8 heavy gauge stainless steel.
- F. Armor: The armor, or bridging plate between the side bars shall be heavy gauge 18-8 stainless steel bonded to the gasket to bridge the lug area.

2.021 TAPPING SLEEVE

- A. For sizes 12-inch and smaller tapping sleeve shall be ductile iron, stainless steel, or approved fabricated steel.
 - 1. Tapping sleeve shall be mechanical joint with recessed outlet flange for tapping valve.
 - 2. Tapping sleeve shall conform to AWWA C-207, Class D, with rated maximum working pressure of 200-psi.
 - 3. The side rubber gaskets shall be rectangular in cross-section and fit into grooved channels in the casting. These gaskets shall extend the entire length of the sleeve and shall not require cutting or trimming to match MJ end gaskets.

4. Tapping sleeve shall be AB-CD pattern to permit use of plain rubber and duck-tipped gaskets for various O.D. piping sizes.
5. All flange outlet bolts shall be stainless steel (Type 304).
6. Interior and exterior to be bituminous coated with a minimum of 4 mils dry film thickness or fusion bonded epoxy coated.
7. The sleeve shall be provided with a 3/4-inch F.I.P.T. test port and brass lug.
8. Approved Manufacturers
 - a. AFC
 - b. Mueller Co.
 - c. US Pipe
 - d. Tyler / Union
 - e. Powerseal Model 3490 and 3490 MJ (Fabricated Steel)
 - f. Romac SST

B. For sizes 16-inch and larger tapping sleeve shall be fabricated steel:

1. Body and Flange - A-36
2. Coating - Fusion-bonded epoxy coating with minimum D.F.T. of 5 mils, inside and out
3. Bolts, Nuts - Stainless Steel (Type 304)
4. Gaskets – SBR
5. Flange - AWWA Class D plate flange with ANSI 150# drilling, proper recessing for tapping valves
6. Sleeves shall be provided with 3/4-inch F.I.P.T. test port and plug
7. Approved Manufacturers
 - a. Romac FTS 420
 - b. Ford FTSC
 - c. Smith Blair 622
 - d. JCM 412
 - e. Powerseal Model 3490 and 3490 MJ (up to 24-inch)
 - f. JCM 415 or approved equal (for RCCP pipe only)

2.022 TRACER WIRE & MARKING TAPE

A. Water Main Marking Tape

1. Lineguard III by Tri-Sales, Inc., 2" wide, green; detectable with magnetic locators, or approved equal.

B. Tracer Wire

1. Copperhead Industries part number 1230-SF, or approved equal.

C. Tracer Wire Splice Kits:

1. 3M Brand DBR Direct Bury Splice Kit, or approved equal.

D. Grounding Rod

1. Copperhead 1-lb, Drive-In Magnesium anode (part number ANO-1005 with part number SCB-01SR Connector), or equal.

2.023 VALVE BOX

A. General

1. Material shall be cast iron or ductile iron free from defects.
2. Interior and exterior of all components shall be bituminous coated with a minimum of 4 mils dry film thickness.
3. The minimum total length of valve box top and bottom sections shall be as follows:
 - a. Projects in Windham, Raymond, Standish: 78-inches.
 - b. Projects in all other municipalities: 72-inches.
4. Valve boxes shall be two (2) piece sets (i.e., top and bottom section).
5. Valve box sections and cover shall be round.
6. Valve box sections shall be of a slide or slip design.
7. Valve box bottom sections are not required to be of the same manufacturer as the top section.
8. Valve box top section and cover must be of the same manufacturer.

B. Valve Box Bottom-Section

1. The valve box bottom section shall have a bell-type base with bottom lip and have an inside diameter between 5-inches and 5.5-inches.
2. Approved manufacturers:

- a. Bibby St-Croix
 - b. EJ
 - c. Bingham & Taylor
 - d. Tyler Union
 - e. Sigma
- C. Valve Box Top-Section
- 1. The valve box top section shall not have a top flange or “bead” or bottom flange and have an inside diameter of between 6-inches and 6.5-inches measured from the base.
 - 2. Approved manufacturers:
 - a. Bibby St-Croix
 - b. EJ
 - c. Bingham & Taylor
 - d. Sigma
- D. Valve Box Cover
- 1. The valve box cover shall be a drop-type design and have a 2-inch depth.
 - 2. The word ‘water’ shall be cast into the cover
 - 3. Approved manufacturers:
 - a. Bibby St-Croix
 - b. EJ
 - c. Bingham & Taylor

PART 3 - EXECUTION

3.01 PIPE LAYING CONDITIONS

- A. Pipe shall not be laid in water, or when trench conditions or weather conditions are unsuitable for such work.
- B. The interior of each pipe shall be inspected while being joined to see that the alignment is preserved and to assure that no dirt or debris has entered the pipe after laying and partial backfilling.
- C. Pipe fittings and accessories shall be carefully lowered into the trench, piece by piece, by means of derrick, crane, slings and other suitable tools and equipment, in a manner such as to prevent

damage to the material or to its protective coating and linings. No chain or slings shall be passed through the inside bore of any pipe or valve or fitting. Under no circumstances shall piping materials be dropped or dumped into the trench.

3.02 LAYING DUCTILE IRON & PVC PIPE

- A. As soon as the excavation is completed and the existing trench bottom has been brought to the proper grade, the pipe shall be laid.
- B. All pipe, before being lowered into the trench, shall be inspected inside and out. Both ends shall be cleaned and any visible dirt or debris removed from inside the pipe and the interior of all affected pipe and fittings shall be swabbed with a 5% hypochlorite solution immediately before they are installed. Care shall be taken to lay the pipe to true lines and grades as shown on the drawings.
- C. Coupling holes shall be excavated so that the barrel of the pipe shall bear upon the trench bottom.
- D. Blocking under the pipe will not be permitted.
- E. Each section shall rest upon the pipe bed for the full length of its barrel.
- F. The circular rubber gasket shall be inserted in the gasket seat provided. A thin film of gasket lubricant shall be applied to the inside surface of the gasket. Gasket lubricant shall be a solution of vegetable soap or other solution supplied by the pipe manufacturer.
- G. The spigot end of the pipe shall be cleaned with an approved soap solution and entered into the rubber gasket in the bell, using care to keep the joint from contacting the ground. The joint shall then be completed by forcing the plain end to the seat of the bell. Pipe which is not furnished with a depth mark shall be marked before assembly to assure that the spigot end is inserted to the full depth of the joint.
- H. Pipe shall be aligned with the preceding unit and laid so as to form a close joint with the adjoining pipe and bring the inverts continuously to the required line and grade.
- I. No length of pipe shall be laid until the previous length has had sufficient material tamped about it to firmly secure it in place so as to prevent any movement or disturbance.
- J. Under no circumstances shall pipe be laid in water, and no pipe shall be laid when trench conditions or weather are unsuitable for such work, except by permission of the Engineer.
- K. The pipe shall be laid with the bell ends facing the direction of the laying, unless otherwise permitted by the Engineer.
- L. Joints, when made, shall be done in the manner prescribed by the manufacturer of the pipe. In the case of rubber gasket joints, these joints shall be made up in accordance with the American National Standards for the jointing of cast iron pressure pipe and fittings. (ANSI/AWWA C111/A21.11).
- M. Joints of all pipes in the trench shall be completed before work is stopped; and all openings in the pipeline shall be closed with watertight plugs when pipe laying is stopped at the close of the day's work or for other reasons.

- N. Thrust blocks shall be used behind tees, bends, or other fittings where shown. Size shall be appropriate for soil conditions and thrust forces acting on the specific fitting.

3.03 TRENCH BOTTOM

- A. Should the trench bottom contain unsuitable material, as indicated in Section 02217, Article 3.2-b, the Contractor shall over-excavate and replace with bedding material as required and authorized by the Engineer. The quantity of unsuitable material will be measured from the bottom outside of the pipe.
- B. Should ledge be encountered, it shall be removed to a depth of 6-inch below the bottom of the pipe, and replaced with bedding material.

3.04 CUTTING PIPE

- A. All ductile iron pipe and PVC shall be cut using abrasive wheel cutter, rotary wheel hand cutter (with carbide cutter) or a guillotine pipe saw. All cuts shall be square and even with no ragged rough ends.
- B. Field cut pipe lengths shall be beveled and filed to avoid damage to the gasket and facilitate making the joint.
- C. When the cut end of pipe is to be used as a joint, the outside of the cut end shall be tapered back about 1/8-inch at an angle of about 30 degrees with the center line of the pipe. This shall be done with a coarse file or a portable grinder.

3.05 TEMPORARY PLUGS

- A. When pipelaying is not in progress, the openings of pipes shall be closed by mechanical joint cap or approved equal as reviewed by the Owner.

3.06 RETAINER GLANDS

- A. Install retainer glands on all mechanical joints of fittings, valves and hydrants.

3.07 POLYETHYLENE ENCASEMENT

- A. Tube type polyethylene encasement shall be installed on all ductile iron pipe and fittings in accordance with AWWA Standard C105 - latest revision, Method A. Circumferential wraps of tape or plastic tie straps shall be placed at 2-ft. intervals along the barrel of the pipe.
- B. The polyethylene encasement shall prevent contact between the pipe and the surrounding backfill and bedding material but is not intended to be a completely airtight or watertight enclosure. All lumps of clay, mud, cinders, and so forth, on the pipe surface shall be removed prior to installation of the polyethylene encasement. During installation, care shall be exercised to prevent soil or embankment material from becoming trapped between the pipe and the polyethylene.
- C. The polyethylene film shall be fitted to the contour of the pipe to affect a snug, but not tight, encasement with minimum space between the polyethylene and the pipe. Sufficient slack shall be provided in contouring to prevent stretching the polyethylene where it bridges irregular surfaces, such as bell-spigot interfaces, bolted joints, or fittings, and to prevent damage to the polyethylene

due to backfilling operations. Overlaps and ends shall be secured with adhesive tape, string, plastic tie straps, or any other material capable of holding the polyethylene encasement in place until backfilling operations are complete.

3.08 FIELD TEST OF INSTALLED HYDRANT

- A. Hydrant flow shall completely stop with no more than 200 ft. lb. of torque applied to the operating nut.
- B. Failure to shut completely at no more than 200 ft. lb. of torque will be cause for rejection of that hydrant.

3.09 VALVE BOX INSTALLATION

- A. Valve boxes shall be installed centered on the valve.
- B. Valve boxes shall be installed level such that the valve may be operated when the trench is back-fill and when pavement is installed.
- C. Valve box top and bottom sections shall have a minimum of six (6) inches of overlap between the two sections when installed.
- D. Contractor shall determine the length of valve box top and bottom sections based on field conditions (e.g., if the valve is installed deeper than the plan due to a utility conflict, a taller top or bottom section may be required).
 - 1. Multiple valve box bottom sections may not be stacked to provide sufficient height.

3.010 TAPPING SADDLE INSTALLATION

A. DUCTILE IRON & CAST IRON MAIN REQUIREMENTS

- 1. Service saddles shall be used for all new 1.5-inch and 2-inch services on ductile iron water mains.
- 2. Service saddles shall be used for all 2-inch non-service connections to existing ductile iron or cast iron water mains (e.g., temporary main connections).

B. PVC MAIN REQUIREMENTS

1. 2-INCH MAINS

- a. Service saddles shall be required for all new 3/4-inch and 1-inch services tapped on PVC mains.

2. 4-INCH AND GREATER MAINS

- a. Service saddles shall be required for all new 1-inch services tapped against a pressurized PVC main.
- b. Service saddles shall not be required for new 1-inch service taps against non-pressurized PVC mains.

- c. Service saddles shall be required for all new 1.5-inch and 2-inch services on PVC mains.
- d. Service saddles shall be required for all 2-inch non-service connections to existing PVC mains (e.g., temporary main connections).

C. HDPE MAIN REQUIREMENTS

- 1. Service saddles shall be used for all new 1-inch, 1.5-inch, and 2-inch services on HDPE water mains.
- 2. Service saddles shall be used for all 2-inch non-service connections to existing HDPE mains (e.g., temporary main connections).

3.011 TRACER WIRE & MARKING TAPE INSTALLATION

A. Warning Tape

- 1. Install warning tape continuously along the PVC/HDPE water main. At ends of rolls and repairs, splice tape with 3-foot overlap connected with duct tape. Tape should be installed at a depth of two (2) feet above the water main.

B. Tracer Wire

- 1. Install tracer wire continuously between each end of the PVC/HDPE water mains. It shall be installed in the same trench as the pipe and secured to the pipe as required to ensure the wire remains adjacent to the pipe.
- 2. Tracer wire shall be grounded at all ends of the wire by connecting the wire to an approved waterproof connection to a grounding anode, buried at the same depth as the tracer wire.
- 3. Tracer wire shall be installed up through a valve box at each end of the PVC/HDPE water main. The wire shall be accessible by hand from the surface, and shall be installed with enough slack to allow for adjustments to the elevation of the valve box for paving.
 - a. At the point of connection between existing conductive pipes where there is not a valve box installed, the tracer wire shall not be connected to the iron pipe.

3.012 TRACER WIRE TESTING

- A. After trench backfill is completed, perform continuity and trace tests on all tracer wire in the presence of the Owner. If the tracer wire is found to be not continuous after testing, the Contractor shall repair or replace the failed segment of wire. The Contractor shall be responsible for all costs to confirm, locate, and repair any breaks in the tracer wire identified during testing.

3.013 SERVICE BOXES INSTALLED IN SIDEWALKS OR DRIVEWAYS

- A. All service boxes installed in a sidewalk, driveway, or otherwise drivable surface regardless of material, shall be installed in a valve box top section.

3.014 LARGE DIAMETER SERVICE/HYDRANT PIPING RESTRAINT

- A. When installing larger diameter (4-inches and greater) ductile iron service and hydrant branch piping, all slip joints shall be installed with restrained joint gaskets.

3.015 MAINS INSTALLED WITHIN CASING PIPES

- A. All mains installed within a large diameter casing pipe shall be installed with end seals and spacers within the casing. Spacing of the spacers shall be as outlined in the drawings.

-- END OF SECTION --