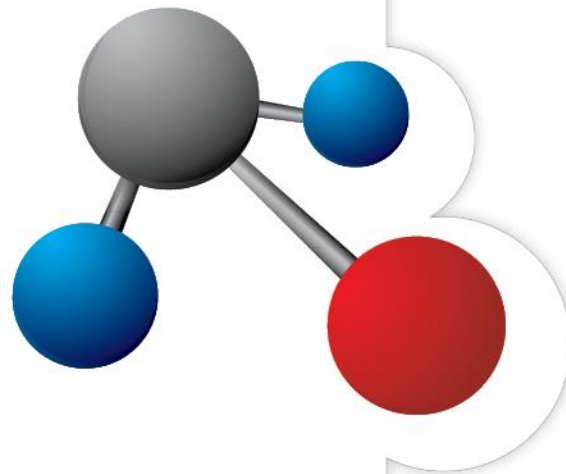


New Town 2025 Street and Utility Improvements



PREPARED FOR:

City of New Town,
North Dakota

AE2S Project No. P00534-2023-018

January 2025

PROJECT MANUAL



Advanced Engineering and Environmental Services, LLC
601 18th Avenue SE, Suite 102, Minot, ND 58701
Ph: 701-852-4048 Fax: 701-852-4054 Web: www.AE2S.com

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PLANS AND SPECIFICATIONS
FOR
NEW TOWN 2025 STREET & UTILITY IMPROVEMENTS
CITY OF NEW TOWN, NORTH DAKOTA

JANUARY 2025

CIVIL ENGINEER

I hereby certify that these Plans and Specifications were prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the State of North Dakota.



Jason Strand, PE, Advanced Engineering and Environmental Services, LLC.

DATE: 1/8/25 REG NO. PE-6258

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BIDDING DOCUMENTS

ADVERTISEMENT FOR BIDS
City of New Town
New Town, North Dakota
New Town 2025 Street & Utility Improvements

General Notice

The City of New Town (Owner) is requesting Bids for the construction of the following Project:

New Town 2025 Street & Utility Improvements

Bids for the construction of the Project will be received at City Hall located at 103 Soo Place, New Town, ND 58763, until Friday, January 31, 2025 at 11:00 AM local time. At that time the Bids received will be publicly opened and read.

Bids being mailed or delivered prior to January 31, 2025, can be sent to:

City of New Town
c/o Eileen Zaun, City Auditor
P.O. Box 309
103 Soo Place
New Town, ND 58763

The Project includes the following Work:

Contract No. 1 – BASE BID General Construction: Work generally consist of approximately 26,085 square yards of bituminous pavement removal and replacement along with sub grade and sub base improvements; 26,085 square yards of cement stabilization; 8,848 linear feet of concrete curb and gutter; 2,845 square feet of concrete valley gutter; 4,076 square feet of concrete driveway; 150 square yards of asphalt driveway; 8,278 square feet of concrete sidewalk; 1 detectable warning panel; 1,749 linear feet of open-cut 8-inch PVC sanitary sewer pipe, service connections, sanitary sewer manholes and appurtenances; 6,595 linear feet of open-cut 6-12-inch PVC water main, water service connections, fittings, hydrants, and appurtenances; 505 linear feet of open-cut 15-24 inch RCP storm sewer, storm sewer manholes, storm sewer inlets, and appurtenances; 4,605 square yards of landscaping and seeding; erosion and traffic control; temporary water service; and sewer bypass pumping.

Contract No. 1 – ALTERNATE #1 General Construction: Work generally consists of the work described under BASE BID, plus the following work: approximately 3,610 square yards of bituminous pavement removal and replacement along with sub grade and sub base improvements; 3,610 square yards of cement stabilization; 1,413 linear feet of concrete curb and gutter; 672 linear feet of open-cut 8-inch PVC water main, water service connections, fittings, hydrants, and appurtenances; 630 square yards of landscaping and seeding; erosion and traffic control; and temporary water service.

Contract No. 1 – ALTERNATE #2 General Construction: Work generally consists of the work described under BASE BID, plus the following work: approximately 4,055 square yards of bituminous pavement removal and replacement along with sub grade and sub base improvements; 4,055 square yards of cement stabilization; 2,279 linear feet of concrete curb and gutter; 1,578 square feet of concrete driveway; 6,261 square feet of concrete sidewalk; 171 linear feet of open-cut 6-8-inch PVC water main, water service connections, fittings, hydrants, and

appurtenances; 1,086 linear feet of 6-8-inch water main pipebursting; 1,910 square yards of landscaping and seeding; erosion and traffic control; and temporary water service.

The Project has an expected duration of 8 months.

Obtaining the Bidding Documents

Information and Bidding Documents for the Project can be found at the following designated website:

www.questcdn.com

Bidding Documents may be downloaded from the designated website. You may download the digital plan documents for \$22.00 by inputting Quest project #9401991 on the website's Project Search page. Please contact QuestCDN.com at 952-233-1632 or info@questcdn.com for assistance in free membership registration, downloading, and working with this digital project information.

Prospective Bidders are urged to register with the designated website as a plan holder, even if Bidding Documents are obtained from a plan room or source other than the designated website in either electronic or paper format. The designated website will be updated periodically with addenda, lists of registered plan holders, reports, and other information relevant to submitting a Bid for the Project. All official notifications, addenda, and other Bidding Documents will be offered only through the designated website. Neither Owner nor Engineer will be responsible for Bidding Documents, including addenda, if any, obtained from sources other than the designated website.

The Issuing Office for the Bidding Documents is:

**AE2S
1815 Schafer Street, Suite 301
Bismarck, ND 58501**

Prospective Bidders may obtain or examine the Bidding Documents at the Issuing Office on Monday through Friday between the hours of 8:00 AM and 4:30 PM and may obtain copies of the Bidding Documents from the Issuing Office as described below. Partial sets of Bidding Documents will not be available from the Issuing Office. Neither Owner nor Engineer will be responsible for full or partial sets of Bidding Documents, including addenda, if any, obtained from sources other than the Issuing Office.

Bidding Documents may be purchased from the Issuing Office during the hours indicated above. Cost does not include shipping charges. Upon Issuing Office's receipt of payment, printed Bidding Documents or electronic documents on compact disk will be sent via the prospective Bidder's delivery service. The shipping charge amount will depend on the shipping method chosen. Bidding Documents are available for purchase in the following formats:

Format	Cost
Bidding Documents (including Full-Size Drawings)	N/A
Bidding Documents (including Half-Size Drawings)	\$200.00
Compact Disc containing Bidding Documents in portable document format (PDF)	\$60.00
Electronic download of Bidding Documents from questcdn.com	\$22.00

Pre-bid Conference

No pre-bid conference will be held for this project

Instructions to Bidders

Bidders on this work will be required to comply with American Iron and Steel requirements of the Consolidated Appropriations Act, 2014. The requirements for bidders and contractors under this regulation are explained in the specifications.

Bidders are required to comply with Davis-Bacon prevailing wage requirements.

Any lead service line replacements conducted under this project must replace the entire lead service line, not just the portion, unless a portion has already been replaced or is concurrently being replaced with another funding source.

Bidders on this work will be required to comply with Title 40 CFR Part 33 – Participation by Disadvantaged Business Enterprises in the United States Environmental Protection Agency Programs. The requirements for bidders and contractors under this regulation concern utilization of Minority Business Enterprises (MBE), Women’s Business Enterprises (WBE), and Small Business Enterprises (SBE) and are explained in the specifications.

The goal for MBE is 2% of the total dollar value of the project. The goal for WBE is 3% of the total dollar value of the project. To demonstrate a good faith effort to comply, bidders must include the MBE/WBE subcontractor solicitation form in the bid package.

Bidders on this work will be required to comply with the President’s Executive Order No. 11246, as amended. The requirements for bidders and contractors under this order are explained in the specifications.

Bidders are required to comply with Build America, Buy America Act Requirements.

For all further requirements regarding bid submittal, qualifications, procedures, and contract award, refer to the Instructions to Bidders that are included in the Bidding Documents.

This Advertisement is issued by:

Owner: City of New Town

By: Jay Standish

Title: Mayor

Date: December 18, 2024

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INSTRUCTIONS TO BIDDERS FOR CONSTRUCTION CONTRACT

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ARTICLE 1—DEFINED TERMS

- 1.01 Terms used in these Instructions to Bidders have the meanings indicated in the General Conditions and Supplementary Conditions. Additional terms used in these Instructions to Bidders have the meanings indicated below:
- A. *Issuing Office*—The office from which the Bidding Documents are to be issued, and which registers plan holders.
 - B. *Domestic Preference* – The Build America, Buy America Act (BABAA) requirements under Title IX of the Infrastructure Investment and Jobs Act (IIJA), Pub. L. 117-58, §§ 70901-70953.

ARTICLE 2—BIDDING DOCUMENTS

- 2.01 Bidder shall obtain a complete set of Bidding Requirements and proposed Contract Documents (together, the Bidding Documents). See the Agreement for a list of the Contract Documents. It is Bidder's responsibility to determine that it is using a complete set of documents in the preparation of a Bid. Bidder assumes sole responsibility for errors or misinterpretations resulting from the use of incomplete documents, by Bidder itself or by its prospective Subcontractors and Suppliers.
- 2.02 Bidding Documents are made available for the sole purpose of obtaining Bids for completion of the Project and permission to download or distribution of the Bidding Documents does not confer a license or grant permission or authorization for any other use. Authorization to download documents, or other distribution, includes the right for plan holders to print documents solely for their use, and the use of their prospective Subcontractors and Suppliers, provided the plan holder pays all costs associated with printing or reproduction. Printed documents may not be re-sold under any circumstances.
- 2.03 Owner has established a Bidding Documents Website as indicated in the Advertisement or invitation to bid. Owner recommends that Bidder register as a plan holder with the Issuing Office at such website, and obtain a complete set of the Bidding Documents from such website. Bidders may rely that sets of Bidding Documents obtained from the Bidding Documents Website are complete, unless an omission is blatant. Registered plan holders will receive Addenda issued by Owner.
- 2.04 Bidder may register as a plan holder and obtain complete sets of Bidding Documents, in the number and format stated in the Advertisement or invitation to bid, from the Issuing Office. Bidders may rely that sets of Bidding Documents obtained from the Issuing Office are complete, unless an omission is blatant. Registered plan holders will receive Addenda issued by Owner.
- 2.05 Plan rooms (including construction information subscription services, and electronic and virtual plan rooms) may distribute the Bidding Documents, or make them available for examination. Those prospective bidders that obtain an electronic (digital) copy of the Bidding Documents from a plan room are encouraged to register as plan holders from the Bidding Documents Website or Issuing Office. Owner is not responsible for omissions in Bidding Documents or other documents obtained from plan rooms, or for a Bidder's failure to obtain Addenda from a plan room.
- 2.06 *Electronic Documents*
- A. When the Bidding Requirements indicate that electronic (digital) copies of the Bidding Documents are available, such documents will be made available to the Bidders as Electronic Documents in the manner specified.

1. Bidding Documents will be provided in Adobe PDF (Portable Document Format) (.pdf) that is readable by Adobe Acrobat Reader. It is the intent of the Engineer and Owner that such Electronic Documents are to be exactly representative of the paper copies of the documents. However, because the Owner and Engineer cannot totally control the transmission and receipt of Electronic Documents nor the Contractor's means of reproduction of such documents, the Owner and Engineer cannot and do not guarantee that Electronic Documents and reproductions prepared from those versions are identical in every manner to the paper copies.
- B. Unless otherwise stated in the Bidding Documents, the Bidder may use and rely upon complete sets of Electronic Documents of the Bidding Documents, described in Paragraph 2.06.A above. However, Bidder assumes all risks associated with differences arising from transmission/receipt of Electronic Documents versions of Bidding Documents and reproductions prepared from those versions and, further, assumes all risks, costs, and responsibility associated with use of the Electronic Documents versions to derive information that is not explicitly contained in printed paper versions of the documents, and for Bidder's reliance upon such derived information.

ARTICLE 3—QUALIFICATIONS OF BIDDERS

- 3.01 Deleted.
- 3.02 Deleted.
- 3.03 Bidder is to submit the following information with its Bid to demonstrate Bidder's qualifications to perform the Work:
 - A. Written evidence establishing its qualifications such as financial data, previous experience, and present commitments.
 - B. A written statement that Bidder is authorized to do business in the state where the Project is located, or a written certification that Bidder will obtain such authority prior to the Effective Date of the Contract.
 - C. Bidder's state or other contractor license number, if applicable.
 - D. Subcontractor and Supplier qualification information.
 - E. Other required information regarding qualifications.

- 3.04 A Bidder's failure to submit required qualification information within the times indicated may disqualify Bidder from receiving an award of the Contract.
- 3.05 No requirement in this Article 3 to submit information will prejudice the right of Owner to seek additional pertinent information regarding Bidder's qualifications.

ARTICLE 4—PRE-BID CONFERENCE

- 4.01 A pre-bid conference will not be conducted for this Project.

ARTICLE 5—SITE AND OTHER AREAS; EXISTING SITE CONDITIONS; EXAMINATION OF SITE; OWNER'S SAFETY PROGRAM; OTHER WORK AT THE SITE

5.01 *Site and Other Areas*

- A. The Site is identified in the Bidding Documents. By definition, the Site includes rights-of-way, easements, and other lands furnished by Owner for the use of the Contractor. Any additional lands required for temporary construction facilities, construction equipment, or storage of materials and equipment, and any access needed for such additional lands, are to be obtained and paid for by Contractor.

5.02 *Existing Site Conditions*

A. *Subsurface and Physical Conditions; Hazardous Environmental Conditions*

1. The Supplementary Conditions identify the following regarding existing conditions at or adjacent to the Site:
 - a. Those reports of explorations and tests of subsurface conditions at or adjacent to the Site that contain Technical Data.
 - b. Those drawings known to Owner 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.
 - c. Reports and drawings known to Owner relating to Hazardous Environmental Conditions that have been identified at or adjacent to the Site.
 - d. Technical Data contained in such reports and drawings.
2. Owner will make copies of reports and drawings referenced above available to any Bidder on request. These reports and drawings are not part of the Contract Documents, but the Technical Data contained therein upon whose accuracy Bidder is entitled to rely, as provided in the General Conditions, has been identified and established in the Supplementary Conditions. Bidder is responsible for any interpretation or conclusion Bidder draws from any Technical Data or any other data, interpretations, opinions, or information contained in such reports or shown or indicated in such drawings.
3. If the Supplementary Conditions do not identify Technical Data, the default definition of Technical Data set forth in Article 1 of the General Conditions will apply.
4. *Geotechnical Baseline Report/Geotechnical Data Report*: The Bidding Documents contain a ~~Geotechnical Baseline Report (GBR) and~~ Geotechnical Data Report (GDR).

- a. As set forth in the Supplementary Conditions, the GBR describes certain select subsurface conditions that are anticipated to be encountered by Contractor during construction in specified locations (“Baseline Conditions”). The GBR is a Contract Document.
 - b. The Baseline Conditions in the GBR are intended to reduce uncertainty and the degree of contingency in submitted Bids. However, Bidders cannot rely solely on the Baseline Conditions. Bids should be based on a comprehensive approach that includes an independent review and analysis of the GBR, all other Contract Documents, Technical Data, other available information, and observable surface conditions. Not all potential subsurface conditions are baselined.
 - c. Nothing in the GBR is intended to relieve Bidders of the responsibility to make their own determinations regarding construction costs, bidding strategies, and Bid prices, nor of the responsibility to select and be responsible for the means, methods, techniques, sequences, and procedures of construction, and for safety precautions and programs incident thereto.
 - d. As set forth in the Supplementary Conditions, the GDR is a Contract Document containing data prepared by or for the Owner in support of the GBR.
- B. *Underground Facilities:* Underground Facilities are shown or indicated on the Drawings, pursuant to Paragraph 5.05 of the General Conditions, and not in the drawings referred to in Paragraph 5.02.A of these Instructions to Bidders. Information and data regarding the presence or location of Underground Facilities are not intended to be categorized, identified, or defined as Technical Data.

5.03 *Other Site-related Documents*

- A. No other Site-related documents are available.

5.04 *Site Visit and Testing by Bidders*

- A. Bidder is required to visit the Site and conduct a thorough visual examination of the Site and adjacent areas. During the visit the Bidder must not disturb any ongoing operations at the Site.
- B. Bidders visiting the Site are required to arrange their own transportation to the Site.
- C. All access to the Site other than during a regularly scheduled Site visit must be coordinated through the Owner or Engineer. Bidder must conduct the required Site visit during normal working hours.
- D. Bidder is not required to conduct any subsurface testing, or exhaustive investigations of Site conditions.
- E. On request, and to the extent Owner has control over the Site, and schedule permitting, the Owner will provide Bidder general access to the Site to conduct such additional examinations, investigations, explorations, tests, and studies as Bidder deems necessary for preparing and submitting a successful Bid. Owner will not have any obligation to grant such access if doing so is not practical because of existing operations, security or safety concerns, or restraints on Owner’s authority regarding the Site. Bidder is responsible for establishing access needed to reach specific selected test sites.

- F. Bidder must comply with all applicable Laws and Regulations regarding excavation and location of utilities, obtain all permits, and comply with all terms and conditions established by Owner or by property owners or other entities controlling the Site with respect to schedule, access, existing operations, security, liability insurance, and applicable safety programs.
- G. Bidder must fill all holes and clean up and restore the Site to its former condition upon completion of such explorations, investigations, tests, and studies.

5.05 *Owner's Safety Program*

- A. Site visits and work at the Site may be governed by an Owner safety program. If an Owner safety program exists, it will be noted in the Supplementary Conditions.

5.06 *Other Work at the Site*

- A. Reference is made to Article 8 of the Supplementary Conditions for the identification of the general nature of other work of which Owner is aware (if any) that is to be performed at the Site by Owner or others (such as utilities and other prime contractors) and relates to the Work contemplated by these Bidding Documents. If Owner is party to a written contract for such other work, then on request, Owner will provide to each Bidder access to examine such contracts (other than portions thereof related to price and other confidential matters), if any.

ARTICLE 6—BIDDER'S REPRESENTATIONS AND CERTIFICATIONS

6.01 *Express Representations and Certifications in Bid Form, Agreement*

- A. The Bid Form that each Bidder will submit contains express representations regarding the Bidder's examination of Project documentation, Site visit, and preparation of the Bid, and certifications regarding lack of collusion or fraud in connection with the Bid. Bidder should review these representations and certifications, and assure that Bidder can make the representations and certifications in good faith, before executing and submitting its Bid.
- B. If Bidder is awarded the Contract, Bidder (as Contractor) will make similar express representations and certifications when it executes the Agreement.

ARTICLE 7—INTERPRETATIONS AND ADDENDA

7.01 Owner on its own initiative may issue Addenda to clarify, correct, supplement, or change the Bidding Documents.

7.02 Bidder shall submit all questions about the meaning or intent of the Bidding Documents to Engineer in writing. Contact information and submittal procedures for such questions are as follows:

- A. E-mail Jason Strand (Jason.Strand@ae2s.com)

7.03 Interpretations or clarifications considered necessary by Engineer in response to such questions will be issued by Addenda delivered to all registered plan holders. Questions received less than seven days prior to the date for opening of Bids may not be answered.

7.04 Only responses set forth in an Addendum will be binding. Oral and other interpretations or clarifications will be without legal effect. Responses to questions are not part of the Contract

Documents unless set forth in an Addendum that expressly modifies or supplements the Contract Documents.

ARTICLE 8—BID SECURITY

- 8.01 A Bid must be accompanied by Bid security made payable to Owner in an amount of 5 percent of Bidder's maximum Bid price (determined by adding the base bid and all alternates) and in the form of a Bid bond issued by a surety meeting the requirements of Paragraph 6.01 of the General Conditions. Such Bid bond will be issued in the form included in the Bidding Documents. Bid security must be at least 5% of the Bidder's maximum Bid price.
- 8.02 The Bid security of the apparent Successful Bidder will be retained until Owner awards the contract to such Bidder, and such Bidder has executed the Contract, furnished the required Contract security, and met the other conditions of the Notice of Award, whereupon the Bid security will be released. If the Successful Bidder fails to execute and deliver the Contract and furnish the required Contract security within 15 days after the Notice of Award, Owner may consider Bidder to be in default, annul the Notice of Award, and the Bid security of that Bidder will be forfeited, in whole in the case of a penal sum bid bond, and to the extent of Owner's damages in the case of a damages-form bond. Such forfeiture will be Owner's exclusive remedy if Bidder defaults.
- 8.03 The Bid security of other Bidders that Owner believes to have a reasonable chance of receiving the award may be retained by Owner until the earlier of 7 days after the Effective Date of the Contract or 61 days after the Bid opening, whereupon Bid security furnished by such Bidders will be released.
- 8.04 Bid security of other Bidders that Owner believes do not have a reasonable chance of receiving the award will be released within 7 days after the Bid opening.

ARTICLE 9—CONTRACT TIMES

- 9.01 The number of days within which, or the dates by which, the Work is to be (a) substantially completed and (b) ready for final payment, and (c) Milestones (if any) are to be achieved, are set forth in the Agreement.
- 9.02 **Deleted.**
- 9.03 Provisions for liquidated damages, if any, for failure to timely attain a Milestone, Substantial Completion, or completion of the Work in readiness for final payment, are set forth in the Agreement.

ARTICLE 10—SUBSTITUTE AND "OR EQUAL" ITEMS

- 10.01 **Deleted**
- 10.02 The Contract for the Work, as awarded, will be on the basis of materials and equipment specified or described in the Bidding Documents, and those "or-equal" or substitute or materials and equipment subsequently approved by Engineer prior to the submittal of Bids and identified by Addendum. No item of material or equipment will be considered by Engineer as an "or-equal" or substitute unless written request for approval has been submitted by Bidder and has been received by Engineer within 10 days of the issuance of the Advertisement for Bids or invitation to Bidders. Each such request must comply with the requirements of Paragraphs 7.05 and 7.06 of

the General Conditions, and the review of the request will be governed by the principles in those paragraphs. Each such request shall include the Manufacturer's Certification for Compliance with AIS. Refer to the Manufacturer's Certification form provided in these construction Contract Documents. The burden of proof of the merit of the proposed item is upon Bidder. Engineer's decision of approval or disapproval of a proposed item will be final. If Engineer approves any such proposed item, such approval will be set forth in an Addendum issued to all registered Bidders. Bidders cannot rely upon approvals made in any other manner. Substitutes and "or-equal" materials and equipment may be proposed by Contractor in accordance with Paragraphs 7.05 and 7.06 of the General Conditions after the Effective Date of the Contract. Each such request shall include Manufacturer's Certification letter to document compliance with Domestic Preference requirements. Refer to Manufacturer's Certification Letter provided in these Contract Documents.

- 10.03 All prices that Bidder sets forth in its Bid will be based on the presumption that the Contractor will furnish the materials and equipment specified or described in the Bidding Documents, as supplemented by Addenda. Any assumptions regarding the possibility of post-Bid approvals of "or-equal" or substitution requests are made at Bidder's sole risk.
- 10.04 Any request for substitute or "or equal" shall include the Manufacturer's Certification of compliance with the Build America, Buy America Act (BABAA) requirements mandated by Title IX of the Infrastructure Investment and Jobs Act ("IIJA"), Pub. L. 177-58.

ARTICLE 11—SUBCONTRACTORS, SUPPLIERS, AND OTHERS

11.01 **Deleted**

- 11.02 The apparent Successful Bidder, and any other Bidder so requested, must submit to Owner a list of the Subcontractors or Suppliers proposed for the following portions of the Work within five days after Bid opening.

A. ~~[List key categories of the Work. Depending on the Project this might include electrical, fire protection, major equipment items].~~

- 11.03 If requested by Owner, such list must be accompanied by an experience statement with pertinent information regarding similar projects and other evidence of qualification for each such Subcontractor or Supplier. If Owner or Engineer, after due investigation, has reasonable objection to any proposed Subcontractor or Supplier, Owner may, before the Notice of Award is given, request apparent Successful Bidder to submit an acceptable substitute, in which case apparent Successful Bidder will submit a substitute, Bidder's Bid price will be increased (or decreased) by the difference in cost occasioned by such substitution, and Owner may consider such price adjustment in evaluating Bids and making the Contract award.
- 11.04 If apparent Successful Bidder declines to make any such substitution, Owner may award the Contract to the next lowest Bidder that proposes to use acceptable Subcontractors and Suppliers. Declining to make requested substitutions will constitute grounds for forfeiture of the Bid security of any Bidder. Any Subcontractor or Supplier, so listed and against which Owner or Engineer makes no written objection prior to the giving of the Notice of Award will be deemed acceptable to Owner and Engineer subject to subsequent revocation of such acceptance as provided in Paragraph 7.07 of the General Conditions.

11.05 – The Contractor shall not award work to Subcontractor(s) in excess of the limits stated in SC 7.07A.

ARTICLE 12—PREPARATION OF BID

- 12.01 The Bid Form is included with the Bidding Documents.
- A. All blanks on the Bid Form must be completed in ink and the Bid Form signed in ink. Erasures or alterations must be initialed in ink by the person signing the Bid Form. A Bid price must be indicated for each section, Bid item, alternate, adjustment unit price item, and unit price item listed therein.
 - B. If the Bid Form expressly indicates that submitting pricing on a specific alternate item is optional, and Bidder elects to not furnish pricing for such optional alternate item, then Bidder may enter the words “No Bid” or “Not Applicable.”
- 12.02 If Bidder has obtained the Bidding Documents as Electronic Documents, then Bidder shall prepare its Bid on a paper copy of the Bid Form printed from the Electronic Documents version of the Bidding Documents. The printed copy of the Bid Form must be clearly legible, printed on 8½ inch by 11-inch paper and as closely identical in appearance to the Electronic Document version of the Bid Form as may be practical. The Owner reserves the right to accept Bid Forms which nominally vary in appearance from the original paper version of the Bid Form, providing that all required information and submittals are included with the Bid.
- 12.03 A Bid by a corporation must be executed in the corporate name by a corporate officer (whose title must appear under the signature), accompanied by evidence of authority to sign. The corporate address and state of incorporation must be shown. The corporate seal must be affixed and attested by the corporate secretary or an assistant corporate secretary.
- 12.04 A Bid by a partnership must be executed in the partnership name and signed by a partner (whose title must appear under the signature), accompanied by evidence of authority to sign. The official address of the partnership must be shown.
- 12.05 A Bid by a limited liability company must be executed in the name of the firm by a member or other authorized person and accompanied by evidence of authority to sign. The state of formation of the firm and the official address of the firm must be shown.
- 12.06 A Bid by an individual must show the Bidder’s name and official address.
- 12.07 A Bid by a joint venture must be executed by an authorized representative of each joint venturer in the manner indicated on the Bid Form. The joint venture must have been formally established prior to submittal of a Bid, and the official address of the joint venture must be shown.
- 12.08 All names must be printed in ink below the signatures.
- 12.09 The Bid must contain an acknowledgment of receipt of all Addenda, the numbers of which must be filled in on the Bid Form.
- 12.10 Postal and e-mail addresses and telephone number for communications regarding the Bid must be shown.
- 12.11 The Bid must contain evidence of Bidder’s authority to do business in the state where the Project is located, or Bidder must certify in writing that it will obtain such authority within the time for acceptance of Bids and attach such certification to the Bid.
- 12.12 If Bidder is required to be licensed to submit a Bid or perform the Work in the state where the Project is located, the Bid must contain evidence of Bidder’s licensure, or Bidder must certify in writing that it will obtain such licensure within the time for acceptance of Bids and attach such

certification to the Bid. Bidder's state contractor license number, if any, must also be shown on the Bid Form.

ARTICLE 13—BASIS OF BID

13.01 **Deleted**

13.02 **Deleted**

13.03 **Deleted**

13.04 **Deleted**

13.05 *Unit Price*

- A. Bidders must submit a Bid on a unit price basis for each item of Work listed in the unit price section of the Bid Form.
- B. The "Bid Price" (sometimes referred to as the extended price) for each unit price Bid item will be the product of the "Estimated Quantity", which Owner or its representative has set forth in the Bid Form, for the item and the corresponding "Bid Unit Price" offered by the Bidder. The total of all unit price Bid items will be the sum of these "Bid Prices"; such total will be used by Owner for Bid comparison purposes. The final quantities and Contract Price will be determined in accordance with Paragraph 13.03 of the General Conditions.
- C. Discrepancies between the multiplication of units of Work and unit prices will be resolved in favor of the unit prices. Discrepancies between the indicated sum of any column of figures and the correct sum thereof will be resolved in favor of the correct sum.

13.06 **Deleted**

13.07 **Deleted**

ARTICLE 14—SUBMITTAL OF BID

14.01 The Bidding Documents include one separate unbound copy of the Bid Form, and, if required, the Bid Bond Form. The unbound copy of the Bid Form is to be completed and submitted with the Bid security and the other documents required to be submitted under the terms of Article 2 of the Bid Form.

14.02 A Bid must be received no later than the date and time prescribed and at the place indicated in the Advertisement or invitation to bid and must be enclosed in a plainly marked package with the Project title, and, if applicable, the designated portion of the Project for which the Bid is submitted, the name and address of Bidder, and must be accompanied by the Bid security and other required documents. If a Bid is sent by mail or other delivery system, the sealed envelope containing the Bid must be enclosed in a separate package plainly marked on the outside with the notation "BID ENCLOSED." A mailed Bid must be addressed to the location designated in the Advertisement.

14.03 Bids received after the date and time prescribed for the opening of bids, or not submitted at the correct location or in the designated manner, will not be accepted and will be returned to the Bidder unopened.

14.04 **Bidder shall prepare his Bid as follows:**

A. Enclose in an opaque sealed envelope:

1. **Completed Bid Form. (00410)**
2. **Bidder Qualifications Statement. (EJCDC C-451, 2018)**
3. **MBE/WBE Solicitation Information (Section 00900 – p. 31)**
4. **SRF Certification Regarding Debarment, Suspension, and Other Responsibility Matters (Section 00900 – p.32-33)**

B. Mark on outside of opaque sealed envelope:

1. **“BID ENCLOSED”**

City of New Town, ND
Attn: Eileen Zaun, City Auditor
P.O. Box 309
103 Soo Place
New Town, North Dakota 58763

2. **BID FOR: New Town 2025 Street & Utility Improvements**
3. **BID FROM: (Name and address of the Bidder)**

Acknowledgement of Receipt of Addenda _____ through _____.
(Fill in appropriate Addendum numbers.)

NOTE: Any Bidder who fails to acknowledge receipt of all Addenda on the outside of the Bid envelope may be considered non-responsive and that Bid may not be opened.

C. Attach to outside of sealed opaque envelope containing bid a separate sealed envelope containing the following:

1. **Bid Bond. (EJCDC C-430, 2018)**
2. **Contractor's License or Certificate of Renewal.**

Note: Any Bidder who fails to include both forms indicated above within the Bid Bond envelope shall be considered non-responsive and that Bid will not be opened.

D. Bids arriving after the established time will be returned unopened. Bids or Bid Bonds sent by facsimile or email will not be considered, nor will modifications sent by facsimile or email be considered.

E. If a Bid is sent by mail or other delivery system, the sealed envelope containing the Bid and the associated attached Bid Security envelope shall be enclosed in a separate envelope, plainly marked on the outside with the notation "BID ENCLOSED."

F. A mailed Bid shall be addressed to:

City of New Town
Attn: Eileen Zaun, City Auditor
P.O. Box 309
103 Soo Place
New Town, ND 58763

14.05 *The lowest, responsible Contractor(s) shall submit the following forms to the Engineer within 10 days after the bid opening or before award of contract, whichever comes first:*

- A. List of Proposed Subcontractors
- B. List of Proposed Suppliers

ARTICLE 15—MODIFICATION AND WITHDRAWAL OF BID

- 15.01 An unopened Bid may be withdrawn by an appropriate document duly executed in the same manner that a Bid must be executed and delivered to the place where Bids are to be submitted prior to the date and time for the opening of Bids. Upon receipt of such notice, the unopened Bid will be returned to the Bidder.
- 15.02 If a Bidder wishes to modify its Bid prior to Bid opening, Bidder must withdraw its initial Bid in the manner specified in Paragraph 15.01 and submit a new Bid prior to the date and time for the opening of Bids.
- 15.03 If within 24 hours after Bids are opened any Bidder files a duly signed written notice with Owner and promptly thereafter demonstrates to the reasonable satisfaction of Owner that there was a material and substantial mistake in the preparation of its Bid, the Bidder may withdraw its Bid, and the Bid security will be returned. Thereafter, if the Work is rebid, the Bidder will be disqualified from further bidding on the Work.

ARTICLE 16—OPENING OF BIDS

- 16.01 Bids will be opened at the time and place indicated in the advertisement or invitation to bid and, unless obviously non-responsive, read aloud publicly. An abstract of the amounts of the base Bids and major alternates, if any, will be made available to Bidders after the opening of Bids.

ARTICLE 17—BIDS TO REMAIN SUBJECT TO ACCEPTANCE

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

ARTICLE 18—EVALUATION OF BIDS AND AWARD OF CONTRACT

- 18.01 Owner will reject the Bid of any Bidder that Owner finds, after reasonable inquiry and evaluation, to not be responsible.
- 18.02 If Bidder purports to add terms or conditions to its Bid, takes exception to any provision of the Bidding Documents, or attempts to alter the contents of the Contract Documents for purposes of

the Bid, whether in the Bid itself or in a separate communication to Owner or Engineer, then Owner will reject the Bid as nonresponsive.

18.03 If Owner awards the contract for the Work, such award will be to the responsible Bidder submitting the lowest responsive Bid.

18.04 *Evaluation of Bids*

A. In evaluating Bids, Owner will consider whether the Bids comply with the prescribed requirements, and such alternates, unit prices, and other data, as may be requested in the Bid Form or prior to the Notice of Award.

B. In the comparison of Bids, alternates will be applied in the same order of priority as listed in the Bid Form. To determine the Bid prices for purposes of comparison, Owner will announce to all bidders a “Base Bid plus alternates” budget after receiving all Bids, but prior to opening them. For comparison purposes alternates will be accepted, following the order of priority established in the Bid Form, until doing so would cause the budget to be exceeded. After determination of the Successful Bidder based on this comparative process and on the responsiveness, responsibility, and other factors set forth in these Instructions, the award may be made to said Successful Bidder on its base Bid and any combination of its additive alternate Bids for which Owner determines funds will be available at the time of award.

C. For determination of the apparent low Bidder(s) when sectional bids are submitted, Bids will be compared on the basis of the aggregate of the Bids for separate sections and the Bids for combined sections that result in the lowest total amount for all of the Work.

D. For the determination of the apparent low Bidder when unit price bids are submitted, Bids will be compared on the basis of the total of the products of the estimated quantity of each item and unit price Bid for that item, together with any lump sum items.

E. Deleted

F. Deleted

18.05 In evaluating whether a Bidder is responsible, Owner will consider the qualifications of the Bidder and may consider the qualifications and experience of Subcontractors and Suppliers proposed for those portions of the Work for which the identity of Subcontractors and Suppliers must be submitted as provided in the Bidding Documents.

18.06 Owner may conduct such investigations as Owner deems necessary to establish the responsibility, qualifications, and financial ability of Bidders and any proposed Subcontractors or Suppliers.

ARTICLE 19—BONDS AND INSURANCE

19.01 Article 6 of the General Conditions, as may be modified by the Supplementary Conditions, sets forth Owner’s requirements as to performance and payment bonds, other required bonds (if any),

and insurance. When the Successful Bidder delivers the executed Agreement to Owner, it must be accompanied by required bonds and insurance documentation.

- 19.02 Article 8, Bid Security, of these Instructions, addresses any requirements for providing bid bonds as part of the bidding process.

ARTICLE 20—SIGNING OF AGREEMENT

- 20.01 When Owner issues a Notice of Award to the Successful Bidder, it will be accompanied by the unexecuted counterparts of the Agreement along with the other Contract Documents as identified in the Agreement. Within 15 days thereafter, Successful Bidder must execute and deliver the required number of counterparts of the Agreement and any bonds and insurance documentation required to be delivered by the Contract Documents to Owner. Within 10 days thereafter, Owner will deliver one fully executed counterpart of the Agreement to Successful Bidder, together with printed and electronic copies of the Contract Documents as stated in Paragraph 2.02 of the General Conditions.

ARTICLE 21—SALES AND USE TAXES

- 21.01 OWNER is not exempt from State of North Dakota state sales and use taxes on materials and equipment to be incorporated in the Work. Said taxes shall be included in the Bid. Contracts to be assigned.

ARTICLE 22—CONTRACTS TO BE ASSIGNED NOT USED

BID FORM FOR CONSTRUCTION CONTRACT

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

ARTICLE 1—OWNER AND BIDDER

1.01 This Bid is submitted to:

City of New Town
P.O. Box 309
103 Soo Place
New Town, ND 58763

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

ARTICLE 2—ATTACHMENTS TO THIS BID

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

- A. Required Bid security;
- B. Contractor's license number as evidence of Bidder's State Contractor's License or a covenant by Bidder to obtain said license within the time for acceptance of Bids;
- C. Required Bidder Qualification Statement with supporting data;
- D. MBE/WBE Solicitation Information;
- E. SRF Certification Regarding Debarment, Suspension, and Other Responsibility Matters.

ARTICLE 3—BASIS OF BID—LUMP SUM BID AND UNIT PRICES

3.01 *Unit Price Bids*

- A. Bidder will perform the following Work at the indicated unit prices:

UNIT PRICE BID

CONTRACT NO. 1 – BASE BID GENERAL CONSTRUCTION

Ref.	ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE
A.	Bonding and Insurance	1	l.s.		
B.	Mobilization	1	l.s.		
C.	Erosion Control / SWPPP	1	l.s.		
D.	Traffic Control	1	l.s.		
E.	Removal Quantities				
1	Removal and Salvage Bituminous Pavement	26,250	s.y.		
2	Removal of Concrete Sidewalk	8,137	s.f.		
3	Removal of Concrete Driveway	4,350	s.f.		
4	Removal of Concrete Curb & Gutter	8,815	l.f.		
5	Removal of Concrete Valley Gutter	3,267	s.f.		
6	Removal and Salvage Topsoil – 4” Thickness	4,090	s.y.		
7	Removal of Tree	1	ea..		
F.	Site Restoration				
1	Hot-Mix Asphalt (4”) FAA 43 w/ PG 58s-28 Oil	26,085	s.y.		
2	Street Base – 4” Class 5 Aggregate	26,085	s.y.		
3	12” Concrete Stabilization	26,085	s.y.		
4	Temporary Gravel	26,085	s.y.		
5	Concrete Sidewalk (4”)	8,257	s.f.		
6	Concrete Sidewalk with Step (4”)	21	s.f.		
7	Concrete Driveway (6”)	4,076	s.f.		
8	Asphalt Driveway (4”)	150	s.y.		
9	Class 13 Aggregate Driveway (6”)	200	s.y.		
10	Concrete Curb and Gutter	8,848	l.f.		
11	Concrete Valley Gutter (6”)	3,190	s.f.		
12	Detectable Warning Panels	4	ea.		
13	Hydroseeding and Maintenance	4,605	s.y.		
14	Topsoil Restoration – 4” Thickness	4,605	s.y.		

Ref.	ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE
G.	Furnish and Install Piping				
1	6" PVC Water Main (C-900 DR-18)	527	l.f.		
2	8" PVC Water Main (C-900 DR-18)	6,019	l.f.		
3	12" PVC Water Main (C-900 DR-18)	49	l.f.		
4	8" PVC Sanitary Sewer Main (SDR-35)	1,749	l.f.		
5	15" RCP Storm Sewer (Class III)	92	l.f.		
6	18" RCP Storm Sewer (Class III)	115	l.f.		
7	24" RCP Storm Sewer (Class III)	298	l.f.		
8	4" Thick Insulation	1,142	l.f.		
H.	Furnish and Install Services				
1	1" Water Service with Curb Stop	81	ea.		
2	2" Water Service with Curb Stop	11	ea.		
3	1" Meter Pit	2	ea.		
4	2" Meter Pit	2	ea.		
5	Sanitary Sewer Lateral Connection	34	ea.		
I.	Precast Concrete Manholes and Castings				
1	48" Sanitary Sewer Manhole	8	ea.		
2	60" Storm Drain Manhole	2	ea.		
3	24"x36" Storm Drain Catch Basin	5	ea.		
J.	Furnish and Install Valves and Hydrants				
1	6" MJ Gate Valve and Box	6	ea.		
2	8" MJ Gate Valve and Box	39	ea.		
3	12" MJ Gate Valve and Box	1	ea.		
4	Fire Hydrant	15	ea.		
K.	Furnish and Install Fittings				
1	6" D.I. Tee	3	ea.		
2	8"x6" D.I. Tee	15	ea.		
3	8" D.I. Tee	6	ea.		
4	12"x8" D.I. Tee	2	ea.		
5	8"x6" D.I. Reducer	3	ea.		

Ref.	ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE
6	12"x8" D.I. Cross	1	ea.		
7	6" D.I. 90° Bend	3	ea.		
8	8" D.I. 11.25° Bend	2	ea.		
9	8" D.I. 22.5° Bend	5	ea.		
10	8" D.I. 45° Bend	2	ea.		
11	8" D.I. 90° Bend	2	ea.		
L.	Connect to Existing				
1	Connect to Existing Watermain	12	ea.		
2	Connect to Existing Sanitary Sewer	3	ea.		
3	Connect to Existing Storm Sewer	1	ea.		

TOTAL UNIT PRICE BID FOR CONTRACT 1 – BASE BID GENERAL CONSTRUCTION

(use words)

(\$ _____)
(use figures)

UNIT PRICE BID

CONTRACT NO. 1 – ALTERNATE #1 GENERAL CONSTRUCTION

Ref.	ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE
A.	Bonding and Insurance	1	l.s.		
B.	Mobilization	1	l.s.		
C.	Erosion Control / SWPPP	1	l.s.		
D.	Traffic Control	1	l.s.		
E.	Removal Quantities				
1	Removal and Salvage Bituminous Pavement	3,610	s.y.		
2	Removal of Concrete Curb & Gutter	1,413	l.f.		
3	Removal and Salvage Topsoil – 4” Thickness	720	s.y.		
F.	Site Restoration				
1	Hot-Mix Asphalt (4”) FAA 43 w/ PG 58s-28 Oil	3,610	s.y.		
2	Street Base – 4” Class 5 Aggregate	3,610	s.y.		
3	12” Concrete Stabilization	3,610	s.y.		
4	Temporary Gravel	3,610	s.y.		
5	Concrete Curb and Gutter	1,413	l.f.		
6	Hydroseeding and Maintenance	630	s.y.		
7	Topsoil Restoration – 4” Thickness	630	s.y.		
G.	Furnish and Install Piping				
1	8” PVC Water Main (C-900 DR-18)	672	l.f.		
H.	Connect to Existing				
1	Connect to Existing Watermain	1	ea.		

TOTAL UNIT PRICE BID FOR CONTRACT 1 – ALTERNATE #1 GENERAL CONSTRUCTION

(use words)

(\$ _____)

(use figures)

UNIT PRICE BID

CONTRACT NO. 1 – ALTERNATE #2 GENERAL CONSTRUCTION

Ref.	ITEM DESCRIPTION	QUANTITY	UNIT	UNIT PRICE	TOTAL PRICE
A.	Bonding and Insurance	1	l.s.		
B.	Mobilization	1	l.s.		
C.	Erosion Control / SWPPP	1	l.s.		
D.	Traffic Control	1	l.s.		
E.	Furnish and Install Piping				
1	6" PVC Water Main (C-900 DR-18)	-46	l.f.		
2	6" PVC Water Main Pipebursting (C-900 DR-18)	39	l.f.		
3	8" PVC Water Main (C-900 DR-18)	-1,048	l.f.		
4	8" PVC Water Main Pipebursting (C-900 DR-18)	1,047	l.f.		

TOTAL UNIT PRICE BID FOR CONTRACT 1 – ALTERNATE #2 GENERAL CONSTRUCTION

(use words)

(\$ _____)
(use figures)

- B. Bidder acknowledges that:
 1. each Bid Unit Price includes an amount considered by Bidder to be adequate to cover Contractor's overhead and profit for each separately identified item, and
 2. estimated quantities are not guaranteed, and are solely for the purpose of comparison of Bids, and final payment for all Unit Price Work will be based on actual quantities, determined as provided in the Contract Documents.

ARTICLE 4—DELETED

ARTICLE 5—DELETED

ARTICLE 6—TIME OF COMPLETION

- 6.01 Bidder agrees that the Work will be substantially complete and will be completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions on or before the dates or within the number of calendar days indicated in the Agreement.
- 6.02 **Deleted**
- 6.03 **Deleted**
- 6.04 Bidder accepts the provisions of the Agreement as to liquidated damages.

ARTICLE 7—BIDDER'S ACKNOWLEDGEMENTS: ACCEPTANCE PERIOD, INSTRUCTIONS, AND RECEIPT OF ADDENDA

- 7.01 *Bid Acceptance Period*
 - A. This Bid will remain subject to acceptance for 60 days after the Bid opening, or for such longer period of time that Bidder may agree to in writing upon request of Owner.
- 7.02 *Instructions to Bidders*
 - A. Bidder accepts all of the terms and conditions of the Instructions to Bidders, including without limitation those dealing with the disposition of Bid security.
- 7.03 *Receipt of Addenda*
 - A. Bidder hereby acknowledges receipt of the following Addenda:

Addendum Number	Addendum Date

ARTICLE 8—BIDDER'S REPRESENTATIONS AND CERTIFICATIONS

- 8.01 *Bidder's Representations*
 - A. In submitting this Bid, Bidder represents the following:
 1. Bidder has examined and carefully studied the Bidding Documents, including Addenda.

2. Bidder 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. Bidder is familiar with all Laws and Regulations that may affect cost, progress, and performance of the Work, including all Domestic Preference requirements.
4. Bidder 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. Bidder 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. Bidder has considered the information known to Bidder itself; information commonly known to contractors doing business in the locality of the Site; information and observations obtained from visits to the Site; the Bidding Documents; and the 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 Bidder, if selected as Contractor; and (c) Bidder's (Contractor's) safety precautions and programs.
7. Based on the information and observations referred to in the preceding paragraph, Bidder 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. Bidder 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 Bidding Documents.
9. Bidder has given Engineer written notice of all conflicts, errors, ambiguities, or discrepancies that Bidder has discovered in the Bidding Documents, and of discrepancies between Site conditions and the Contract Documents, and the written resolution thereof by Engineer is acceptable to Contractor.
10. The Bidding Documents are generally sufficient to indicate and convey understanding of all terms and conditions for performance and furnishing of the Work.
11. The submission of this Bid constitutes an incontrovertible representation by Bidder that without exception the Bid and all prices in the Bid are premised upon performing and furnishing the Work required by the Bidding Documents.
12. Bidder is familiar with all laws and regulations that may affect cost, progress, and performance of the work, including BABAA requirements.

8.02 *Bidder's Certifications*

- A. The Bidder certifies the following:

1. This Bid is genuine and not made in the interest of or on behalf of any undisclosed individual or entity and is not submitted in conformity with any collusive agreement or rules of any group, association, organization, or corporation.
2. Bidder has not directly or indirectly induced or solicited any other Bidder to submit a false or sham Bid.
3. Bidder has not solicited or induced any individual or entity to refrain from bidding.
4. Bidder has not engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the Contract. For the purposes of this Paragraph 8.02.A:
 - a. 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.
 - b. Fraudulent practice means an intentional misrepresentation of facts made (a) to influence the bidding process to the detriment of Owner, (b) to establish bid prices at artificial non-competitive levels, or (c) to deprive Owner of the benefits of free and open competition.
 - c. 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.
 - d. 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.

BIDDER hereby submits this Bid as set forth above:

Bidder:

(typed or printed name of organization)

By: _____
(individual's signature)

Name: _____
(typed or printed)

Title: _____
(typed or printed)

Date: _____
(typed or printed)

If Bidder is a corporation, a partnership, or a joint venture, attach evidence of authority to sign.

Attest: _____
(individual's signature)

Name: _____
(typed or printed)

Title: _____
(typed or printed)

Date: _____
(typed or printed)

Address for giving notices:

Bidder's Contact:

Name: _____
(typed or printed)

Title: _____
(typed or printed)

Phone: _____

Email: _____

Address: _____

Bidder's Contractor License No.: (if applicable) _____

BID BOND FORM
00430

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BID BOND (PENAL SUM FORM)

Bidder Name: [Full formal name of Bidder] Address <i>(principal place of business)</i> : [Address of Bidder's principal place of business]	Surety Name: [Full formal name of Surety] Address <i>(principal place of business)</i> : [Address of Surety's principal place of business]
Owner Name: [Full formal name of Owner] Address <i>(principal place of business)</i> : [Address of Owner's principal place of business]	Bid Project <i>(name and location)</i> : [Owner project/contract name, and location of the project] Bid Due Date: [Enter date bid is due]
Bond Penal Sum: [Amount] Date of Bond: [Date]	
Surety and Bidder, intending to be legally bound hereby, subject to the terms set forth in this Bid Bond, do each cause this Bid Bond to be duly executed by an authorized officer, agent, or representative.	
Bidder	Surety
_____ <i>(Full formal name of Bidder)</i>	_____ <i>(Full formal name of Surety) (corporate seal)</i>
By: _____ <i>(Signature)</i>	By: _____ <i>(Signature) (Attach Power of Attorney)</i>
Name: _____ <i>(Printed or typed)</i>	Name: _____ <i>(Printed or typed)</i>
Title: _____	Title: _____
Attest: _____ <i>(Signature)</i>	Attest: _____ <i>(Signature)</i>
Name: _____ <i>(Printed or typed)</i>	Name: _____ <i>(Printed or typed)</i>
Title: _____	Title: _____
<i>Notes: (1) Note: Addresses are to be used for giving any required notice. (2) Provide execution by any additional parties, such as joint venturers, if necessary.</i>	

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

This document has important legal consequences; consultation with an attorney is encouraged with respect to its use or modification. This document should be adapted to the particular circumstances of the contemplated Project and the controlling Laws and Regulations.

QUALIFICATIONS STATEMENT

Prepared By



Endorsed By



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1420 King Street, Alexandria, VA 22314-2794
(703) 684-2882
www.nspe.org

American Council of Engineering Companies
1015 15th Street N.W., Washington, DC 20005
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American Society of Civil Engineers
1801 Alexander Bell Drive, Reston, VA 20191-4400
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www.asce.org

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GUIDELINES FOR USE OF EJCDC® C-451, QUALIFICATIONS STATEMENT

1.0 PURPOSE AND INTENDED USE OF THE DOCUMENT

The purpose of EJCDC® C-451, Qualifications Statement (2018), is to assist the project owner in determining whether prospective contractors are qualified to perform the Work called for in the construction contract. Using the document, a prospective contractor (referred to in C-451 as “Business”) provides requested information regarding its experience, qualifications, and commitments on other projects.

C-451 may be used by owners to prequalify bidders, establish a shortlist of the most qualified prospective contractors, or to determine whether a low bidder meets the “responsible bidder” requirement of the competitive bidding process.

If a Business (prospective contractor) is a joint venture, C-451 requires that each joint venturer submit a Qualifications Statement. (See Paragraph 1.02)

Before sending the Qualifications Statement to prospective contractors, the project owner should review the standard provisions to determine whether any additional information should be sought in order to establish qualifications for the specific project. In some cases, the owner may choose to delete some of the standard requested information. In that regard, note that several provisions require the Business to furnish documentation—for example, the Business is required in Paragraph 3.01 to submit evidence of certification under any diverse business category in which Business has indicated it is certified; if submittal of such evidence is not required, revise the document accordingly.

EJCDC assumes that on most projects the owner will send C-451 to prospective contractors in Word format. This will allow the Business to key the requested information directly into the document.

For additional information regarding C-451, see EJCDC® C-001, Commentary on the 2018 EJCDC Construction Documents (2018).

2.0 ORGANIZATION OF INFORMATION

All parties involved in a construction project benefit significantly from a standardized approach in the location of subject matter throughout the documents. Experience confirms the danger of addressing the same subject matter in more than one location; doing so frequently leads to confusion and unanticipated legal consequences. Careful attention should be given to the guidance provided in EJCDC® N-122/AIA® A521, Uniform Location of Subject Matter (2012 Edition) when preparing documents. EJCDC® N-122/AIA® A521 is available at no charge from the EJCDC website, www.ejcdc.org, and from the websites of EJCDC’s sponsoring organizations.

If CSI MasterFormat™ is used for organizing the Project Manual, consult CSI MasterFormat™ for the appropriate document number (e.g., under 00 11 00, Advertisements and Invitations), and accordingly number the document and its pages.

3.0 EDITING THIS DOCUMENT

3.1 It is intended that this document be edited for each Contract. Guidelines for editing include:

- A. Remove the cover pages which consist of the title pages, and these Guidelines for Use.

4.0 LICENSE AGREEMENT

This document is subject to the terms and conditions of the **License Agreement, 2018 EJDC® Construction Series Documents**. A copy of the License Agreement was furnished at the time of purchase of this document, and is available for review at www.ejcdc.org and the websites of EJDC's sponsoring organizations.

ARTICLE 1—GENERAL INFORMATION

1.01 Provide contact information for the Business:

Legal Name of Business:			
Corporate Office			
Name:		Phone number:	
Title:		Email address:	
Business address of corporate office:			
Local Office			
Name:		Phone number:	
Title:		Email address:	
Business address of local office:			

1.02 Provide information on the Business’s organizational structure:

Form of Business:	<input type="checkbox"/> Sole Proprietorship <input type="checkbox"/> Partnership <input type="checkbox"/> Corporation		
	<input type="checkbox"/> Limited Liability Company <input type="checkbox"/> Joint Venture comprised of the following companies:		
	1.		
	2.		
	3.		
Provide a separate Qualification Statement for each Joint Venturer.			
Date Business was formed:		State in which Business was formed:	
Is this Business authorized to operate in the Project location?		<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Pending	

1.03 Identify all businesses that own Business in whole or in part (25% or greater), or that are wholly or partly (25% or greater) owned by Business:

Name of business:		Affiliation:	
Address:			
Name of business:		Affiliation:	
Address:			
Name of business:		Affiliation:	
Address:			

1.04 Provide information regarding the Business’s officers, partners, and limits of authority.

Name:		Title:	
Authorized to sign contracts:	<input type="checkbox"/> Yes <input type="checkbox"/> No	Limit of Authority:	\$
Name:		Title:	
Authorized to sign contracts:	<input type="checkbox"/> Yes <input type="checkbox"/> No	Limit of Authority:	\$
Name:		Title:	
Authorized to sign contracts:	<input type="checkbox"/> Yes <input type="checkbox"/> No	Limit of Authority:	\$
Name:		Title:	

ARTICLE 2—LICENSING

2.01 Provide information regarding licensure for Business:

Name of License:			
Licensing Agency:			
License No:		Expiration Date:	
Name of License:			
Licensing Agency:			
License No:		Expiration Date:	

ARTICLE 3—DIVERSE BUSINESS CERTIFICATIONS

3.01 Provide information regarding Business’s Diverse Business Certification, if any. Provide evidence of current certification.

Certification	Certifying Agency	Certification Date
<input type="checkbox"/> Disadvantaged Business Enterprise		
<input type="checkbox"/> Minority Business Enterprise		
<input type="checkbox"/> Woman-Owned Business Enterprise		
<input type="checkbox"/> Small Business Enterprise		
<input type="checkbox"/> Disabled Business Enterprise		
<input type="checkbox"/> Veteran-Owned Business Enterprise		
<input type="checkbox"/> Service-Disabled Veteran-Owned Business		
<input type="checkbox"/> HUBZone Business (Historically Underutilized) Business		
<input type="checkbox"/> Other		
<input type="checkbox"/> None		

ARTICLE 4—SAFETY

4.01 Provide information regarding Business’s safety organization and safety performance.

Name of Business’s Safety Officer:		
Safety Certifications		
Certification Name	Issuing Agency	Expiration

4.02 Provide Worker’s Compensation Insurance Experience Modification Rate (EMR), Total Recordable Frequency Rate (TRFR) for incidents, and Total Number of Recorded Manhours (MH) for the last 3 years and the EMR, TRFR, and MH history for the last 3 years of any proposed Subcontractor(s) that will provide Work valued at 10% or more of the Contract Price. Provide documentation of the EMR history for Business and Subcontractor(s).

Year									
Company	EMR	TRFR	MH	EMR	TRFR	MH	EMR	TRFR	MH

ARTICLE 5—FINANCIAL

5.01 Provide information regarding the Business’s financial stability. Provide the most recent audited financial statement, and if such audited financial statement is not current, also provide the most current financial statement.

Financial Institution:		
Business address:		
Date of Business’s most recent financial statement:		<input type="checkbox"/> Attached
Date of Business’s most recent audited financial statement:		<input type="checkbox"/> Attached
Financial indicators from the most recent financial statement		
Contractor’s Current Ratio (Current Assets ÷ Current Liabilities)		
Contractor’s Quick Ratio ((Cash and Cash Equivalents + Accounts Receivable + Short Term Investments) ÷ Current Liabilities)		

ARTICLE 6—SURETY INFORMATION

6.01 Provide information regarding the surety company that will issue required bonds on behalf of the Business, including but not limited to performance and payment bonds.

Surety Name:			
Surety is a corporation organized and existing under the laws of the state of:			
Is surety authorized to provide surety bonds in the Project location?	<input type="checkbox"/> Yes <input type="checkbox"/> No		
Is surety listed in “Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies” published in Department Circular 570 (as amended) by the Bureau of the Fiscal Service, U.S. Department of the Treasury? <input type="checkbox"/> Yes <input type="checkbox"/> No			
Mailing Address (principal place of business):			
Physical Address (principal place of business):			
Phone (main):		Phone (claims):	

ARTICLE 7—INSURANCE

7.01 Provide information regarding Business’s insurance company(s), including but not limited to its Commercial General Liability carrier. Provide information for each provider.

Name of insurance provider, and type of policy (CLE, auto, etc.):			
Insurance Provider		Type of Policy (Coverage Provided)	
Are providers licensed or authorized to issue policies in the Project location?			<input type="checkbox"/> Yes <input type="checkbox"/> No
Does provider have an A.M. Best Rating of A-VII or better?			<input type="checkbox"/> Yes <input type="checkbox"/> No
Mailing Address (principal place of business):			
Physical Address (principal place of business):			
Phone (main):		Phone (claims):	

ARTICLE 8—CONSTRUCTION EXPERIENCE

8.01 Provide information that will identify the overall size and capacity of the Business.

Average number of current full-time employees:	
Estimate of revenue for the current year:	
Estimate of revenue for the previous year:	

8.02 Provide information regarding the Business’s previous contracting experience.

Years of experience with projects like the proposed project:		
As a general contractor:		As a joint venturer:
Has Business, or a predecessor in interest, or an affiliate identified in Paragraph 1.03:		
Been disqualified as a bidder by any local, state, or federal agency within the last 5 years? <input type="checkbox"/> Yes <input type="checkbox"/> No		
Been barred from contracting by any local, state, or federal agency within the last 5 years? <input type="checkbox"/> Yes <input type="checkbox"/> No		
Been released from a bid in the past 5 years? <input type="checkbox"/> Yes <input type="checkbox"/> No		
Defaulted on a project or failed to complete any contract awarded to it? <input type="checkbox"/> Yes <input type="checkbox"/> No		
Refused to construct or refused to provide materials defined in the contract documents or in a change order? <input type="checkbox"/> Yes <input type="checkbox"/> No		
Been a party to any currently pending litigation or arbitration? <input type="checkbox"/> Yes <input type="checkbox"/> No		
Provide full details in a separate attachment if the response to any of these questions is Yes.		

8.03 List all projects currently under contract in Schedule A and provide indicated information.

8.04 List a minimum of three and a maximum of six projects completed in the last 5 years in Schedule B and provide indicated information to demonstrate the Business’s experience with projects similar in type and cost of construction.

8.05 In Schedule C, provide information on key individuals whom Business intends to assign to the Project. Provide resumes for those individuals included in Schedule C. Key individuals include the Project Manager, Project Superintendent, Quality Manager, and Safety Manager. Resumes may be provided for Business’s key leaders as well.

ARTICLE 9—REQUIRED ATTACHMENTS

9.01 Provide the following information with the Statement of Qualifications:

- A. If Business is a Joint Venture, separate Qualifications Statements for each Joint Venturer, as required in Paragraph 1.02.
- B. Diverse Business Certifications if required by Paragraph 3.01.
- C. Certification of Business’s safety performance if required by Paragraph 4.02.
- D. Financial statements as required by Paragraph 5.01.

- E. Attachments providing additional information as required by Paragraph 8.02.
- F. Schedule A (Current Projects) as required by Paragraph 8.03.
- G. Schedule B (Previous Experience with Similar Projects) as required by Paragraph 8.04.
- H. Schedule C (Key Individuals) and resumes for the key individuals listed, as required by Paragraph 8.05.
- I. Additional items as pertinent.

This Statement of Qualifications is offered by:

Business: _____
(typed or printed name of organization)

By: _____
(individual's signature)

Name: _____
(typed or printed)

Title: _____
(typed or printed)

Date: _____
(date signed)

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

Attest: _____
(individual's signature)

Name: _____
(typed or printed)

Title: _____
(typed or printed)

Address for giving notices:

Designated Representative:

Name: _____
(typed or printed)

Title: _____
(typed or printed)

Address: _____

Phone: _____

Email: _____

Schedule A—Current Projects

Name of Organization					
Project Owner			Project Name		
General Description of Project					
Project Cost			Date Project		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager	
Name					
Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)					
	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					

Project Owner			Project Name		
General Description of Project					
Project Cost			Date Project		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager	
Name					
Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)					
	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					

Project Owner			Project Name		
General Description of Project					
Project Cost			Date Project		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager	
Name					
Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)					
	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					

Schedule B—Previous Experience with Similar Projects

Name of Organization					
Project Owner			Project Name		
General Description of Project					
Project Cost			Date Project		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager	
Name					
Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)					
	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					

Project Owner			Project Name		
General Description of Project					
Project Cost			Date Project		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager	
Name					
Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)					
	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					

Project Owner			Project Name		
General Description of Project					
Project Cost			Date Project		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager	
Name					
Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)					
	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					

Schedule B—Previous Experience with Similar Projects

Name of Organization					
Project Owner			Project Name		
General Description of Project					
Project Cost			Date Project		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager	
Name					
Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)					
	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					

Project Owner			Project Name		
General Description of Project					
Project Cost			Date Project		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager	
Name					
Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)					
	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					

Project Owner			Project Name		
General Description of Project					
Project Cost			Date Project		
Key Project Personnel	Project Manager	Project Superintendent	Safety Manager	Quality Control Manager	
Name					
Reference Contact Information (listing names indicates approval to contacting the names individuals as a reference)					
	Name	Title/Position	Organization	Telephone	Email
Owner					
Designer					
Construction Manager					

Schedule C—Key Individuals

Project Manager			
Name of individual			
Years of experience as project manager			
Years of experience with this organization			
Number of similar projects as project manager			
Number of similar projects in other positions			
Current Project Assignments			
Name of assignment		Percent of time used for this project	Estimated project completion date
Reference Contact Information (listing names indicates approval to contact named individuals as a reference)			
Name		Name	
Title/Position		Title/Position	
Organization		Organization	
Telephone		Telephone	
Email		Email	
Project		Project	
Candidate's role on project		Candidate's role on project	
Project Superintendent			
Name of individual			
Years of experience as project superintendent			
Years of experience with this organization			
Number of similar projects as project superintendent			
Number of similar projects in other positions			
Current Project Assignments			
Name of assignment		Percent of time used for this project	Estimated project completion date
Reference Contact Information (listing names indicates approval to contact named individuals as a reference)			
Name		Name	
Title/Position		Title/Position	
Organization		Organization	
Telephone		Telephone	
Email		Email	
Project		Project	
Candidate's role on project		Candidate's role on project	

Safety Manager			
Name of individual			
Years of experience as project manager			
Years of experience with this organization			
Number of similar projects as project manager			
Number of similar projects in other positions			
Current Project Assignments			
Name of assignment		Percent of time used for this project	Estimated project completion date
Reference Contact Information (listing names indicates approval to contact named individuals as a reference)			
Name		Name	
Title/Position		Title/Position	
Organization		Organization	
Telephone		Telephone	
Email		Email	
Project		Project	
Candidate's role on project		Candidate's role on project	
Quality Control Manager			
Name of individual			
Years of experience as project superintendent			
Years of experience with this organization			
Number of similar projects as project superintendent			
Number of similar projects in other positions			
Current Project Assignments			
Name of assignment		Percent of time used for this project	Estimated project completion date
Reference Contact Information (listing names indicates approval to contact named individuals as a reference)			
Name		Name	
Title/Position		Title/Position	
Organization		Organization	
Telephone		Telephone	
Email		Email	
Project		Project	
Candidate's role on project		Candidate's role on project	

CONTRACT FORMS

NOTICE OF AWARD

Date of Issuance:

Owner: City of New Town

Owner's Project No.:

Engineer: AE2S

Engineer's Project No.: P00534-2023-018

Project: New Town 2025 Street & Utility Improvements

Contract Name:

Bidder:

Bidder's Address:

You are notified that Owner has accepted your Bid dated _____ for the above Contract, and that you are the Successful Bidder and are awarded a Contract for:

[Describe Work, alternates, or sections of Work awarded]

The Contract Price of the awarded Contract is \$**[Contract Price]**. Contract Price is subject to adjustment based on the provisions of the Contract, including but not limited to those governing changes, Unit Price Work, and Work performed on a cost-plus-fee basis, as applicable.

Five (5) unexecuted counterparts of the Agreement accompany this Notice of Award, and one copy of the Contract Documents accompanies this Notice of Award, or has been transmitted or made available to Bidder electronically.

Drawings will be delivered separately from the other Contract Documents.

You must comply with the following conditions precedent within 15 days of the date of receipt of this Notice of Award:

1. Deliver to ~~Owner~~ Engineer **five (5)** counterparts of the Agreement, signed by Bidder (as Contractor).
2. Deliver with the signed Agreement(s) the Contract security (such as required performance and payment bonds) and insurance documentation, as specified in the Instructions to Bidders and in the General Conditions, Articles 2 and 6.
3. Other conditions precedent (if any):
 - a. **Deliver with each of the executed Contract Documents Current Workmen's Compensation Certificate of Premium Paid and Contractors Certificate of North Dakota Income and Sales Tax Clearance.**

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

Within 10 days after you comply with the above conditions, Owner will return to you one fully signed counterpart of the Agreement, together with any additional copies of the Contract Documents as indicated in Paragraph 2.02 of the General Conditions.

Owner: **City of New Town, ND**

By *(signature)*: _____

Name *(printed)*: Jay Standish _____

Title: Mayor of New Town _____

Copy: Engineer

AGREEMENT BETWEEN OWNER AND CONTRACTOR FOR CONSTRUCTION CONTRACT (STIPULATED PRICE)

This Agreement is by and between the City of New Town (“Owner”) and [name of contracting entity] (“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:

Watermain and services replacement, sanitary sewer main and services replacement installation, storm sewer replacement. The project shall include valve and hydrant replacement, manhole and inlet replacement, curb and gutter removal and replacement, sidewalk and driveway removal and replacement, bituminous pavement removal and replacement, and landscaping and seeding.

ARTICLE 2—THE PROJECT

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

New Town 2025 Street & Utility Improvements
New Town, North Dakota

ARTICLE 3—ENGINEER

3.01 The Owner has retained AE2S (“Engineer”) to act as Owner’s representative, assume all duties and responsibilities of Engineer, and have the rights and authority assigned to Engineer in the Contract.

3.02 The part of the Project that pertains to the Work has been designed by Engineer.

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. The Work will be substantially complete on or before October 15, 2025, and completed and ready for final payment in accordance with Paragraph 15.06 of the General Conditions on or before October 31, 2025.

4.05 *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 \$2,000 for each calendar 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 \$2,500 for each calendar day that expires after such time until the Work is completed and ready for final payment.
 3. Liquidated damages for failing to timely attain Milestones, Substantial Completion, and final completion are not additive, and will not be imposed concurrently.
- 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.
- C. Deleted

4.06 *Special Damages*

- A. Contractor shall reimburse Owner (1) for any fines or penalties imposed on Owner as a direct result of the Contractor's failure to attain Substantial Completion according to the Contract Times, and (2) for the actual costs reasonably incurred by Owner for engineering, construction observation, inspection, and administrative services needed after the time specified in Paragraph 4.02 for Substantial Completion (as duly adjusted pursuant to the Contract), until the Work is substantially complete.
- B. After Contractor achieves Substantial Completion, if Contractor shall neglect, refuse, or fail to complete the remaining Work within the Contract Times, Contractor shall reimburse Owner for the actual costs reasonably incurred by Owner for engineering, construction observation, inspection, and administrative services needed after the time specified in Paragraph 4.02 for Work to be completed and ready for final payment (as duly adjusted pursuant to the Contract), until the Work is completed and ready for final payment.
- C. The special damages imposed in this paragraph are supplemental to any liquidated damages for delayed completion established in this Agreement.

ARTICLE 5—CONTRACT PRICE

- A. For all Unit Price Work, an amount equal to the sum of the extended prices (established for each separately identified item of Unit Price Work by multiplying the unit price times the actual quantity of that item).

Unit Price Work					
Item No.	Description	Unit	Estimated Quantity	Unit Price	Extended Price
				\$	\$
				\$	\$
				\$	\$
				\$	\$
				\$	\$
Total of all Extended Prices for Unit Price Work (subject to final adjustment based on actual quantities)					\$

The extended prices for Unit Price Work set forth as of the Effective Date of the Contract are based on estimated quantities. As provided in Paragraph 13.03 of the General Conditions, estimated quantities are not guaranteed, and determinations of actual quantities and classifications are to be made by Engineer.

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 10th 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 Owner may withhold, including but not limited to liquidated damages, in accordance with the Contract.
 - a. 95 percent of the value of the Work completed (with the balance being retainage).
 - 1) Deleted
 - b. 95 percent of cost of materials and equipment not incorporated in the Work (with the balance being retainage).

- B. Upon Substantial Completion of the entire construction to be provided under the construction Contract Documents, Owner shall pay an amount sufficient to increase total payments to Contractor to 100 percent of the Work completed, less such amounts set off by Owner pursuant to Paragraph 15.01.E of the General Conditions, and less 200 percent of Engineer's estimate of the value of Work to be completed or corrected as shown on the punch list of items to be completed or corrected prior to final payment.

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. All amounts not paid when due will bear interest at the rate of 5 percent per annum.

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 45 sheets with each sheet bearing the following general title: **New Town 2025 Street & Utility Improvements**
 8. Addenda (numbers **[number]** to **[number]**, inclusive).
 9. Exhibits to this Agreement (enumerated as follows):
 - a. **Geotechnical Engineering Report – Dated April 10, 2024.**
 10. 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: _____

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NOTICE TO PROCEED

Owner: City of New Town Owner's Project No.: _____
Engineer: AE2S Engineer's Project No.: P00534-2023-018
Contractor: _____ Contractor's Project No.: _____
Project: New Town 2025 Street & Utility Improvements
Contract Name: _____
Effective Date of Contract: _____

Owner hereby notifies Contractor that the Contract Times under the above Contract will commence to run on **[date Contract Times are to start]** pursuant to Paragraph 4.01 of the General Conditions.

On that date, Contractor shall start performing its obligations under the Contract Documents. No Work will be done at the Site prior to such date.

In accordance with the Agreement: **[Select one of the following two alternatives, insert dates or number of days, and delete the other alternative.]**

The date by which Substantial Completion must be achieved is **[date for Substantial Completion, from Agreement]**, and the date by which readiness for final payment must be achieved is **[date for readiness, from Agreement]**.

[or]

The number of days to achieve Substantial Completion is **[number of days, from Agreement]** from the date stated above for the commencement of the Contract Times, resulting in a date for Substantial Completion of **[date, calculated from commencement date above]**; and the number of days to achieve readiness for final payment is **[number of days, from Agreement]** from the commencement date of the Contract Times, resulting in a date for readiness for final payment of **[date, calculated from commencement date above]**.

Before starting any Work at the Site, Contractor must comply with the following:

[Note any access limitations, security procedures, or other restrictions]

Owner: City of New Town
By (signature): _____
Name (printed): Jay Standish
Title: Mayor
Date Issued: _____
Copy: Engineer

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PERFORMANCE BOND

<p>Contractor</p> <p>Name: [Full formal name of Contractor]</p> <p>Address <i>(principal place of business)</i>: [Address of Contractor's principal place of business]</p>	<p>Surety</p> <p>Name: [Full formal name of Surety]</p> <p>Address <i>(principal place of business)</i>: [Address of Surety's principal place of business]</p>
<p>Owner</p> <p>Name: [Full formal name of Owner]</p> <p>Mailing address <i>(principal place of business)</i>: [Address of Owner's principal place of business]</p>	<p>Contract</p> <p>Description <i>(name and location)</i>: [Owner's project/contract name, and location of the project]</p> <p>Contract Price: [Amount from Contract]</p> <p>Effective Date of Contract: [Date from Contract]</p>
<p>Bond</p> <p>Bond Amount: [Amount]</p> <p>Date of Bond: [Date]</p> <p><i>(Date of Bond cannot be earlier than Effective Date of Contract)</i></p> <p>Modifications to this Bond form: <input type="checkbox"/> None <input type="checkbox"/> See Paragraph 16</p>	
<p>Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth in this Performance Bond, do each cause this Performance Bond to be duly executed by an authorized officer, agent, or representative.</p>	
Contractor as Principal	Surety
<p>_____</p> <p><i>(Full formal name of Contractor)</i></p>	<p>_____</p> <p><i>(Full formal name of Surety) (corporate seal)</i></p>
<p>By: _____</p> <p style="text-align: center;"><i>(Signature)</i></p>	<p>By: _____</p> <p style="text-align: center;"><i>(Signature)(Attach Power of Attorney)</i></p>
<p>Name: _____</p> <p style="text-align: center;"><i>(Printed or typed)</i></p>	<p>Name: _____</p> <p style="text-align: center;"><i>(Printed or typed)</i></p>
<p>Title: _____</p>	<p>Title: _____</p>
<p>Attest: _____</p> <p style="text-align: center;"><i>(Signature)</i></p>	<p>Attest: _____</p> <p style="text-align: center;"><i>(Signature)</i></p>
<p>Name: _____</p> <p style="text-align: center;"><i>(Printed or typed)</i></p>	<p>Name: _____</p> <p style="text-align: center;"><i>(Printed or typed)</i></p>
<p>Title: _____</p>	<p>Title: _____</p>
<p><i>Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party is considered plural where applicable.</i></p>	

1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner for the performance of the Construction Contract, which is incorporated herein by reference.
2. If the Contractor performs the Construction Contract, the Surety and the Contractor shall have no obligation under this Bond, except when applicable to participate in a conference as provided in Paragraph 3.
3. If there is no Owner Default under the Construction Contract, the Surety's obligation under this Bond will arise after:
 - 3.1. The Owner first provides notice to the Contractor and the Surety that the Owner is considering declaring a Contractor Default. Such notice may indicate whether the Owner is requesting a conference among the Owner, Contractor, and Surety to discuss the Contractor's performance. If the Owner does not request a conference, the Surety may, within five (5) business days after receipt of the Owner's notice, request such a conference. If the Surety timely requests a conference, the Owner shall attend. Unless the Owner agrees otherwise, any conference requested under this Paragraph 3.1 will be held within ten (10) business days of the Surety's receipt of the Owner's notice. If the Owner, the Contractor, and the Surety agree, the Contractor shall be allowed a reasonable time to perform the Construction Contract, but such an agreement does not waive the Owner's right, if any, subsequently to declare a Contractor Default;
 - 3.2. The Owner declares a Contractor Default, terminates the Construction Contract and notifies the Surety; and
 - 3.3. The Owner has agreed to pay the Balance of the Contract Price in accordance with the terms of the Construction Contract to the Surety or to a contractor selected to perform the Construction Contract.
4. Failure on the part of the Owner to comply with the notice requirement in Paragraph 3.1 does not constitute a failure to comply with a condition precedent to the Surety's obligations, or release the Surety from its obligations, except to the extent the Surety demonstrates actual prejudice.
5. When the Owner has satisfied the conditions of Paragraph 3, the Surety shall promptly and at the Surety's expense take one of the following actions:
 - 5.1. Arrange for the Contractor, with the consent of the Owner, to perform and complete the Construction Contract;
 - 5.2. Undertake to perform and complete the Construction Contract itself, through its agents or independent contractors;
 - 5.3. Obtain bids or negotiated proposals from qualified contractors acceptable to the Owner for a contract for performance and completion of the Construction Contract, arrange for a contract to be prepared for execution by the Owner and a contractor selected with the Owners concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Construction Contract, and pay to the Owner the amount of damages as described in Paragraph 7 in excess of the Balance of the Contract Price incurred by the Owner as a result of the Contractor Default; or
 - 5.4. Waive its right to perform and complete, arrange for completion, or obtain a new contractor, and with reasonable promptness under the circumstances:

- 5.4.1 After investigation, determine the amount for which it may be liable to the Owner and, as soon as practicable after the amount is determined, make payment to the Owner; or
 - 5.4.2 Deny liability in whole or in part and notify the Owner, citing the reasons for denial.
6. If the Surety does not proceed as provided in Paragraph 5 with reasonable promptness, the Surety shall be deemed to be in default on this Bond seven days after receipt of an additional written notice from the Owner to the Surety demanding that the Surety perform its obligations under this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner. If the Surety proceeds as provided in Paragraph 5.4, and the Owner refuses the payment, or the Surety has denied liability, in whole or in part, without further notice, the Owner shall be entitled to enforce any remedy available to the Owner.
7. If the Surety elects to act under Paragraph 5.1, 5.2, or 5.3, then the responsibilities of the Surety to the Owner will not be greater than those of the Contractor under the Construction Contract, and the responsibilities of the Owner to the Surety will not be greater than those of the Owner under the Construction Contract. Subject to the commitment by the Owner to pay the Balance of the Contract Price, the Surety is obligated, without duplication for:
 - 7.1. the responsibilities of the Contractor for correction of defective work and completion of the Construction Contract;
 - 7.2. additional legal, design professional, and delay costs resulting from the Contractor's Default, and resulting from the actions or failure to act of the Surety under Paragraph 5; and
 - 7.3. liquidated damages, or if no liquidated damages are specified in the Construction Contract, actual damages caused by delayed performance or non-performance of the Contractor.
8. If the Surety elects to act under Paragraph 5.1, 5.3, or 5.4, the Surety's liability is limited to the amount of this Bond.
9. The Surety shall not be liable to the Owner or others for obligations of the Contractor that are unrelated to the Construction Contract, and the Balance of the Contract Price will not be reduced or set off on account of any such unrelated obligations. No right of action will accrue on this Bond to any person or entity other than the Owner or its heirs, executors, administrators, successors, and assigns.
10. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.
11. Any proceeding, legal or equitable, under this Bond must be instituted in any court of competent jurisdiction in the location in which the work or part of the work is located and must be instituted within two years after a declaration of Contractor Default or within two years after the Contractor ceased working or within two years after the Surety refuses or fails to perform its obligations under this Bond, whichever occurs first. If the provisions of this paragraph are void or prohibited by law, the minimum periods of limitations available to sureties as a defense in the jurisdiction of the suit will be applicable.
12. Notice to the Surety, the Owner, or the Contractor must be mailed or delivered to the address shown on the page on which their signature appears.
13. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement will be deemed deleted therefrom and provisions conforming to such

statutory or other legal requirement will be deemed incorporated herein. When so furnished, the intent is that this Bond will be construed as a statutory bond and not as a common law bond.

14. Definitions

- 14.1. *Balance of the Contract Price*—The total amount payable by the Owner to the Contractor under the Construction Contract after all proper adjustments have been made including allowance for the Contractor for any amounts received or to be received by the Owner in settlement of insurance or other claims for damages to which the Contractor is entitled, reduced by all valid and proper payments made to or on behalf of the Contractor under the Construction Contract.
 - 14.2. *Construction Contract*—The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and changes made to the agreement and the Contract Documents.
 - 14.3. *Contractor Default*—Failure of the Contractor, which has not been remedied or waived, to perform or otherwise to comply with a material term of the Construction Contract.
 - 14.4. *Owner Default*—Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.
 - 14.5. *Contract Documents*—All the documents that comprise the agreement between the Owner and Contractor.
15. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond will be deemed to be Subcontractor and the term Owner will be deemed to be Contractor.
16. Modifications to this Bond are as follows: **[Describe modification or enter “None”]**

PAYMENT BOND

<p>Contractor</p> <p>Name: [Full formal name of Contractor]</p> <p>Address (<i>principal place of business</i>): [Address of Contractor's principal place of business]</p>	<p>Surety</p> <p>Name: [Full formal name of Surety]</p> <p>Address (<i>principal place of business</i>): [Address of Surety's principal place of business]</p>
<p>Owner</p> <p>Name: [Full formal name of Owner]</p> <p>Mailing address (<i>principal place of business</i>): [Address of Owner's principal place of business]</p>	<p>Contract</p> <p>Description (<i>name and location</i>): [Owner's project/contract name, and location of the project]</p> <p>Contract Price: [Amount, from Contract]</p> <p>Effective Date of Contract: [Date, from Contract]</p>
<p>Bond</p> <p>Bond Amount: [Amount]</p> <p>Date of Bond: [Date]</p> <p><i>(Date of Bond cannot be earlier than Effective Date of Contract)</i></p> <p>Modifications to this Bond form: <input type="checkbox"/> None <input type="checkbox"/> See Paragraph 18</p>	
<p>Surety and Contractor, intending to be legally bound hereby, subject to the terms set forth in this Payment Bond, do each cause this Payment Bond to be duly executed by an authorized officer, agent, or representative.</p>	
Contractor as Principal	Surety
<i>(Full formal name of Contractor)</i>	<i>(Full formal name of Surety) (corporate seal)</i>
By: _____ <i>(Signature)</i>	By: _____ <i>(Signature)(Attach Power of Attorney)</i>
Name: _____ <i>(Printed or typed)</i>	Name: _____ <i>(Printed or typed)</i>
Title: _____	Title: _____
Attest: _____ <i>(Signature)</i>	Attest: _____ <i>(Signature)</i>
Name: _____ <i>(Printed or typed)</i>	Name: _____ <i>(Printed or typed)</i>
Title: _____	Title: _____
<p><i>Notes: (1) Provide supplemental execution by any additional parties, such as joint venturers. (2) Any singular reference to Contractor, Surety, Owner, or other party is considered plural where applicable.</i></p>	

1. The Contractor and Surety, jointly and severally, bind themselves, their heirs, executors, administrators, successors, and assigns to the Owner to pay for labor, materials, and equipment furnished for use in the performance of the Construction Contract, which is incorporated herein by reference, subject to the following terms.
2. If the Contractor promptly makes payment of all sums due to Claimants, and defends, indemnifies, and holds harmless the Owner from claims, demands, liens, or suits by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, then the Surety and the Contractor shall have no obligation under this Bond.
3. If there is no Owner Default under the Construction Contract, the Surety's obligation to the Owner under this Bond will arise after the Owner has promptly notified the Contractor and the Surety (at the address described in Paragraph 13) of claims, demands, liens, or suits against the Owner or the Owner's property by any person or entity seeking payment for labor, materials, or equipment furnished for use in the performance of the Construction Contract, and tendered defense of such claims, demands, liens, or suits to the Contractor and the Surety.
4. When the Owner has satisfied the conditions in Paragraph 3, the Surety shall promptly and at the Surety's expense defend, indemnify, and hold harmless the Owner against a duly tendered claim, demand, lien, or suit.
5. The Surety's obligations to a Claimant under this Bond will arise after the following:
 - 5.1. Claimants who do not have a direct contract with the Contractor
 - 5.1.1. have furnished a written notice of non-payment to the Contractor, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were, or equipment was, furnished or supplied or for whom the labor was done or performed, within ninety (90) days after having last performed labor or last furnished materials or equipment included in the Claim; and
 - 5.1.2. have sent a Claim to the Surety (at the address described in Paragraph 13).
 - 5.2. Claimants who are employed by or have a direct contract with the Contractor have sent a Claim to the Surety (at the address described in Paragraph 13).
6. If a notice of non-payment required by Paragraph 5.1.1 is given by the Owner to the Contractor, that is sufficient to satisfy a Claimant's obligation to furnish a written notice of non-payment under Paragraph 5.1.1.
7. When a Claimant has satisfied the conditions of Paragraph 5.1 or 5.2, whichever is applicable, the Surety shall promptly and at the Surety's expense take the following actions:
 - 7.1. Send an answer to the Claimant, with a copy to the Owner, within sixty (60) days after receipt of the Claim, stating the amounts that are undisputed and the basis for challenging any amounts that are disputed; and
 - 7.2. Pay or arrange for payment of any undisputed amounts.
 - 7.3. The Surety's failure to discharge its obligations under Paragraph 7.1 or 7.2 will not be deemed to constitute a waiver of defenses the Surety or Contractor may have or acquire as to a Claim, except as to undisputed amounts for which the Surety and Claimant have reached agreement. If, however, the Surety fails to discharge its obligations under Paragraph 7.1 or 7.2, the Surety shall indemnify the Claimant for the reasonable attorney's fees the Claimant incurs thereafter to recover any sums found to be due and owing to the Claimant.

8. The Surety's total obligation will not exceed the amount of this Bond, plus the amount of reasonable attorney's fees provided under Paragraph 7.3, and the amount of this Bond will be credited for any payments made in good faith by the Surety.
9. Amounts owed by the Owner to the Contractor under the Construction Contract will be used for the performance of the Construction Contract and to satisfy claims, if any, under any construction performance bond. By the Contractor furnishing and the Owner accepting this Bond, they agree that all funds earned by the Contractor in the performance of the Construction Contract are dedicated to satisfying obligations of the Contractor and Surety under this Bond, subject to the Owner's priority to use the funds for the completion of the work.
10. The Surety shall not be liable to the Owner, Claimants, or others for obligations of the Contractor that are unrelated to the Construction Contract. The Owner shall not be liable for the payment of any costs or expenses of any Claimant under this Bond, and shall have under this Bond no obligation to make payments to or give notice on behalf of Claimants, or otherwise have any obligations to Claimants under this Bond.
11. The Surety hereby waives notice of any change, including changes of time, to the Construction Contract or to related subcontracts, purchase orders, and other obligations.
12. No suit or action will be commenced by a Claimant under this Bond other than in a court of competent jurisdiction in the state in which the project that is the subject of the Construction Contract is located or after the expiration of one year from the date (1) on which the Claimant sent a Claim to the Surety pursuant to Paragraph 5.1.2 or 5.2, or (2) on which the last labor or service was performed by anyone or the last materials or equipment were furnished by anyone under the Construction Contract, whichever of (1) or (2) first occurs. If the provisions of this paragraph are void or prohibited by law, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit will be applicable.
13. Notice and Claims to the Surety, the Owner, or the Contractor must be mailed or delivered to the address shown on the page on which their signature appears. Actual receipt of notice or Claims, however accomplished, will be sufficient compliance as of the date received.
14. When this Bond has been furnished to comply with a statutory or other legal requirement in the location where the construction was to be performed, any provision in this Bond conflicting with said statutory or legal requirement will be deemed deleted here from and provisions conforming to such statutory or other legal requirement will be deemed incorporated herein. When so furnished, the intent is that this Bond will be construed as a statutory bond and not as a common law bond.
15. Upon requests by any person or entity appearing to be a potential beneficiary of this Bond, the Contractor and Owner shall promptly furnish a copy of this Bond or shall permit a copy to be made.
16. Definitions
 - 16.1. *Claim*—A written statement by the Claimant including at a minimum:
 - 16.1.1. The name of the Claimant;
 - 16.1.2. The name of the person for whom the labor was done, or materials or equipment furnished;
 - 16.1.3. A copy of the agreement or purchase order pursuant to which labor, materials, or equipment was furnished for use in the performance of the Construction Contract;
 - 16.1.4. A brief description of the labor, materials, or equipment furnished;

- 16.1.5. The date on which the Claimant last performed labor or last furnished materials or equipment for use in the performance of the Construction Contract;
 - 16.1.6. The total amount earned by the Claimant for labor, materials, or equipment furnished as of the date of the Claim;
 - 16.1.7. The total amount of previous payments received by the Claimant; and
 - 16.1.8. The total amount due and unpaid to the Claimant for labor, materials, or equipment furnished as of the date of the Claim.
- 16.2. *Claimant*—An individual or entity having a direct contract with the Contractor or with a subcontractor of the Contractor to furnish labor, materials, or equipment for use in the performance of the Construction Contract. The term Claimant also includes any individual or entity that has rightfully asserted a claim under an applicable mechanic’s lien or similar statute against the real property upon which the Project is located. The intent of this Bond is to include without limitation in the terms of “labor, materials, or equipment” that part of the water, gas, power, light, heat, oil, gasoline, telephone service, or rental equipment used in the Construction Contract, architectural and engineering services required for performance of the work of the Contractor and the Contractor’s subcontractors, and all other items for which a mechanic’s lien may be asserted in the jurisdiction where the labor, materials, or equipment were furnished.
- 16.3. *Construction Contract*—The agreement between the Owner and Contractor identified on the cover page, including all Contract Documents and all changes made to the agreement and the Contract Documents.
- 16.4. *Owner Default*—Failure of the Owner, which has not been remedied or waived, to pay the Contractor as required under the Construction Contract or to perform and complete or comply with the other material terms of the Construction Contract.
- 16.5. *Contract Documents*—All the documents that comprise the agreement between the Owner and Contractor.
17. If this Bond is issued for an agreement between a contractor and subcontractor, the term Contractor in this Bond will be deemed to be Subcontractor and the term Owner will be deemed to be Contractor.
18. Modifications to this Bond are as follows: **[Describe modification or enter “None”]**

CERTIFICATE OF SUBSTANTIAL COMPLETION

Owner: _____ Owner's Project No.: _____
Engineer: _____ Engineer's Project No.: _____
Contractor: _____ Contractor's Project No.: _____
Project: _____
Contract Name: _____

This Preliminary Final Certificate of Substantial Completion applies to:

All Work The following specified portions of the Work:

[Describe the portion of the work for which Certificate of Substantial Completion is issued]

Date of Substantial Completion: **[Enter date, as determined by Engineer]**

The Work to which this Certificate applies has been inspected by authorized representatives of Owner, Contractor, and Engineer, and found to be substantially complete. The Date of Substantial Completion of the Work or portion thereof designated above is hereby established, subject to the provisions of the Contract pertaining to Substantial Completion. The date of Substantial Completion in the final Certificate of Substantial Completion marks the commencement of the contractual correction period and applicable warranties required by the Contract.

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

Amendments of contractual responsibilities recorded in this Certificate should be the product of mutual agreement of Owner and Contractor; see Paragraph 15.03.D of the General Conditions.

The responsibilities between Owner and Contractor for security, operation, safety, maintenance, heat, utilities, insurance, and warranties upon Owner's use or occupancy of the Work must be as provided in the Contract, except as amended as follows:

Amendments to Owner's Responsibilities: None As follows:

[List amendments to Owner's Responsibilities]

Amendments to Contractor's Responsibilities: None As follows:

[List amendments to Contractor's Responsibilities]

The following documents are attached to and made a part of this Certificate:

[List attachments such as punch list; other documents]

This Certificate does not constitute an acceptance of Work not in accordance with the Contract Documents, nor is it a release of Contractor's obligation to complete the Work in accordance with the Contract Documents.

Engineer

By *(signature)*: _____

Name *(printed)*: _____

Title: _____

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NOTICE OF ACCEPTABILITY OF WORK

Owner: _____ Owner’s Project No.: _____
Engineer: _____ Engineer’s Project No.: _____
Contractor: _____ Contractor’s Project No.: _____
Project: _____
Contract Name: _____
Notice Date: _____ Effective Date of the Construction Contract: _____

The Engineer hereby gives notice to the Owner and Contractor that Engineer recommends final payment to Contractor, and that the Work furnished and performed by Contractor under the Construction Contract is acceptable, expressly subject to the provisions of the Construction Contract’s Contract Documents (“Contract Documents”) and of the Agreement between Owner and Engineer for Professional Services dated **[date of professional services agreement]** (“Owner-Engineer Agreement”). This Notice of Acceptability of Work (Notice) is made expressly subject to the following terms and conditions to which all who receive and rely on said Notice agree:

1. This Notice has been prepared with the skill and care ordinarily used by members of the engineering profession practicing under similar conditions at the same time and in the same locality.
2. This Notice reflects and is an expression of the Engineer’s professional opinion.
3. This Notice has been prepared to the best of Engineer’s knowledge, information, and belief as of the Notice Date.
4. This Notice is based entirely on and expressly limited by the scope of services Engineer has been employed by Owner to perform or furnish during construction of the Project (including observation of the Contractor’s Work) under the Owner-Engineer Agreement, and applies only to facts that are within Engineer’s knowledge or could reasonably have been ascertained by Engineer as a result of carrying out the responsibilities specifically assigned to Engineer under such Owner-Engineer Agreement.
5. This Notice is not a guarantee or warranty of Contractor’s performance under the Construction Contract, an acceptance of Work that is not in accordance with the Contract Documents, including but not limited to defective Work discovered after final inspection, nor an assumption of responsibility for any failure of Contractor to furnish and perform the Work thereunder in accordance with the Contract Documents, or to otherwise comply with the Contract Documents or the terms of any special guarantees specified therein.
6. This Notice does not relieve Contractor of any surviving obligations under the Construction Contract, and is subject to Owner’s reservations of rights with respect to completion and final payment.

Engineer

By *(signature)*: _____
Name *(printed)*: _____
Title: _____

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CONDITIONS OF THE CONTRACT

STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

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STANDARD GENERAL CONDITIONS OF THE CONSTRUCTION CONTRACT

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 builder's risk or 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 builder's risk or other 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 make an inspection of the Work to determine the status of completion. If Engineer does not consider the Work substantially complete, Engineer will notify Contractor in writing giving the reasons therefor.
- C. If Engineer considers the Work substantially complete, Engineer will deliver to 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, review the builder's risk insurance policy with respect to the end of the builder's risk coverage, and confirm the transition to coverage of the Work under a permanent property insurance policy held by 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 builder's risk or other property insurance.

15.05 *Final Inspection*

- A. Upon written notice from Contractor that the entire Work or an agreed portion thereof is complete, Engineer will promptly make a final inspection with 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.

SUPPLEMENTARY CONDITIONS OF THE CONSTRUCTION CONTRACT

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SUPPLEMENTARY CONDITIONS OF THE CONSTRUCTION CONTRACT

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

No suggested Supplementary Conditions in this Article.

ARTICLE 2—PRELIMINARY MATTERS

2.01 *Delivery of Bonds and Evidence of Insurance*

SC-2.01 Delete Paragraphs 2.01.B. and C. in their entirety and insert the following in their place:

- B. *Evidence of Contractor's Insurance:* When Contractor delivers the signed counterparts of the Agreement to Owner, Contractor shall also deliver to Owner copies of the policies (including all endorsements, and identification of applicable self-insured retentions and deductibles) of insurance required to be provided by Contractor in this Contract. Contractor may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.
- C. *Evidence of Owner's Insurance:* After receipt from Contractor of the signed counterparts of the Agreement and all required bonds and insurance documentation, Owner shall promptly deliver to Contractor copies of the policies of insurance to be provided by Owner in this Contract (if any). Owner may block out (redact) any confidential premium or pricing information contained in any policy or endorsement furnished under this provision.

2.02 *Copies of Documents*

SC-2.02 Amend the first sentence of Paragraph 2.02.A. to read as follows:

Owner shall furnish to Contractor **up to three** printed copies of the Contract Documents (including one fully signed counterpart of the Agreement), and **one copy** in electronic portable document format (PDF).

SC-2.02 Delete Paragraph 2.02.A in its entirety and insert the following new paragraph in its place:

- A. Owner shall furnish to Contractor **up to three** printed copies of conformed Contract Documents incorporating and integrating all Addenda and any amendments negotiated prior to the Effective Date of the Contract (including one fully signed counterpart of the Agreement), and one copy in electronic portable document format (PDF). Additional printed copies of the conformed Contract Documents will be furnished upon request at the cost of reproduction.

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 **20 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.
- 3. Software and data formats for exchange of Electronic Documents will conform to the requirements set forth in Exhibit A to this EDP, including software versions, if listed.

SC-2.06 Supplement Paragraph 2.06 of the General Conditions by adding the following paragraph:

D. *Requests by Contractor for Electronic Documents in Other Formats*

- 1. Release of any Electronic Document versions of the Project documents in formats other than those identified in the Electronic Documents Protocol (if any) or elsewhere in the Contract will be at the sole discretion of the Owner.

2. To extent determined by Owner, in its sole discretion, to be prudent and necessary, release of Electronic Documents versions of Project documents and other Project information requested by Contractor (“Request”) in formats other than those identified in the Electronic Documents Protocol (if any) or elsewhere in the Contract will be subject to the provisions of the Owner’s response to the Request, and to the following conditions to which Contractor agrees:
 - a. The content included in the Electronic Documents created by Engineer and covered by the Request was prepared by Engineer as an internal working document for Engineer’s purposes solely, and is being provided to Contractor on an “AS IS” basis without any warranties of any kind, including, but not limited to any implied warranties of fitness for any purpose. As such, Contractor is advised and acknowledges that the content may not be suitable for Contractor’s application, or may require substantial modification and independent verification by Contractor. The content may include limited resolution of models, not-to-scale schematic representations and symbols, use of notes to convey design concepts in lieu of accurate graphics, approximations, graphical simplifications, undocumented intermediate revisions, and other devices that may affect subsequent reuse.
 - b. Electronic Documents containing text, graphics, metadata, or other types of data that are provided by Engineer to Contractor under the request are only for convenience of Contractor. Any conclusion or information obtained or derived from such data will be at the Contractor’s sole risk and the Contractor waives any claims against Engineer or Owner arising from use of data in Electronic Documents covered by the Request.
 - c. Contractor shall indemnify and hold harmless Owner and Engineer and their subconsultants from all claims, damages, losses, and expenses, including attorneys’ fees and defense costs arising out of or resulting from Contractor’s use, adaptation, or distribution of any Electronic Documents provided under the Request.
 - d. Contractor agrees not to sell, copy, transfer, forward, give away or otherwise distribute this information (in source or modified file format) to any third party without the direct written authorization of Engineer, unless such distribution is specifically identified in the Request and is limited to Contractor’s subcontractors. Contractor warrants that subsequent use by Contractor’s subcontractors complies with all terms of the Contract Documents and Owner’s response to Request.
3. In the event that Owner elects to provide or directs the Engineer to provide to Contractor any Contractor-requested Electronic Document versions of Project information that is not explicitly identified in the Contract Documents as being available to Contractor, the Owner shall be reimbursed by Contractor on an hourly basis (at **\$150** per hour) for any engineering costs necessary to create or otherwise prepare the data in a manner deemed appropriate by Engineer.

ARTICLE 3—CONTRACT DOCUMENTS: INTENT, REQUIREMENTS, REUSE

3.01 *Intent*

SC-3.01 Delete Paragraph 3.01.C in its entirety.

ARTICLE 4—COMMENCEMENT AND PROGRESS OF THE WORK

SC-4.01.A – Delete the last sentence of paragraph.

4.05 *Delays in Contractor’s Progress*

SC-4.05.C.5 – Paragraph is mandatory for WWD projects.

SC-4.05.C.5.a – Add the following at the end of this paragraph:

Extreme or unusual weather that is typical for a given region, elevation, or season should not be considered abnormal weather conditions. Requests for time extensions due to abnormal weather conditions will be submitted to the Engineer within five days of the end of the abnormal weather condition event. It is the responsibility of the Contractor to provide the information listed in SC-4.05.C.5.b.

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

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
Geotechnical Exploration Report	Nov 21, 2022	Report of Geotechnical Exploration

- 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		[Identify Technical Data]

- 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 **1815 Schafer Street, Suite 301, Bismarck, ND 58503** 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		[Identify Technical Data]

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		[Identify Technical Data]

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).

6.02 *Insurance—General Provisions*

SC-6.02 Add the following paragraph immediately after Paragraph 6.02.B:

1. Contractor may obtain worker’s compensation insurance from an insurance company that has not been rated by A.M. Best, provided that such company (a) is domiciled in the state in which the Project is located, (b) is certified or authorized as a worker’s compensation insurance provider by the appropriate state agency, and (c) has been accepted to provide worker’s compensation insurance for similar projects by the state within the last 12 months.

6.03 *Contractor’s Insurance*

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

- D. *Other Additional Insureds:* As a supplement to the provisions of Paragraph 6.03.C of the General Conditions, the commercial general liability, automobile liability, umbrella or excess, pollution liability, and unmanned aerial vehicle liability policies must include as additional insureds (in addition to Owner and Engineer) the following: **N/A**
- E. *Workers’ Compensation and Employer’s Liability:* 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, stop-gap employer's liability coverage for monopolistic states, and foreign voluntary workers' compensation (from available sources, notwithstanding the jurisdictional requirement of Paragraph 6.02.B of the General Conditions).

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
Employer's Liability	
Each accident	\$1,000,000
Each employee	\$1,000,000
Policy limit	\$2,000,000
Stop-gap Liability Coverage	
For work performed in monopolistic states, stop-gap liability coverage must be endorsed to either the worker's compensation or commercial general liability policy with a minimum limit of:	\$

- 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:
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.
 - 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 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	\$2,000,000
Products—Completed Operations Aggregate	\$1,000,000
Personal and Advertising Injury	\$1,000,000
Bodily Injury and Property Damage—Each Occurrence	\$1,000,000

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

Automobile Liability	Policy limits of not less than:
Combined Single Limit	
Combined Single Limit (Bodily Injury and Property Damage)	\$2,000,000

- K. *Umbrella or Excess Liability:* Contractor shall purchase and maintain umbrella or excess liability insurance written over the underlying employer’s liability, commercial general liability, and automobile liability insurance described in the Paragraphs above. The coverage afforded must be at least as broad as that of each and every one of the underlying policies.

Excess or Umbrella Liability	Policy limits of not less than:
Each Occurrence	\$2,000,000
General Aggregate	\$2,000,000

- L. *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 policy’s policy limits 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. If such umbrella or excess liability policy was required under this Contract, at a specified minimum policy limit, such umbrella or excess policy must retain a minimum limit of \$[specify amount] after accounting for partial attribution of its limits to underlying policies, as allowed above.
- M. *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 operations 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	\$100,000
General Aggregate	\$500,000

- N. *Contractor’s Professional Liability Insurance:* If Contractor will provide or furnish professional services under this Contract, through a delegation of professional design services or otherwise, then Contractor shall be responsible for purchasing and maintaining applicable professional liability insurance. This insurance 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 two years after Substantial Completion. The retroactive date on the policy must pre-date the commencement of furnishing services on the Project.

Contractor’s Professional Liability	Policy limits of not less than:
Each Claim	\$2,000,000
Annual Aggregate	\$2,000,000

- O. *Railroad Protective Liability Insurance:* Prior to commencing any Work within 50 feet of railroad-owned and controlled property, Contractor shall (1) endorse its commercial general liability policy with ISO CG 24 17, removing the contractual liability exclusion for work within

50 feet of a railroad, (2) purchase and maintain railroad protective liability insurance meeting the following requirements, (3) furnish a copy of the endorsement to Owner, and (4) submit a copy of the railroad protective policy and other railroad-required documentation to the railroad, and notify Owner of such submittal.

[Insert additional specific requirements, commonly set by the railroad, here.]

Railroad Protective Liability Insurance	Policy limits of not less than:
Each Claim	\$N/A
Aggregate	\$N/A

- P. *Unmanned Aerial Vehicle Liability Insurance:* If Contractor uses unmanned aerial vehicles (UAV—commonly referred to as drones) at the Site or in support of any aspect of the Work, 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	\$N/A
General Aggregate	\$N/A

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

- G. *Coverage for Completion Delays:* The builder’s risk policy will include, for the benefit of Owner, loss of revenue and soft cost coverage for losses arising from delays in completion that result from covered physical losses or damage. Such coverage will include, without limitation, fixed expenses and debt service for a minimum of 12 months with a maximum deductible of 30 days, compensation for loss of net revenues, rental costs, and attorneys’ fees and engineering or other consultants’ fees, if not otherwise covered.

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 will be **7am – 7pm**.

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

- D. **Owner** 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.

SC-7.04.D – Add the following new paragraph immediately after Paragraph 7.04.C:

D. All products must meet Domestic Preference requirements.

SC-7.04.E – Add the following new paragraph immediately after Paragraph 7.04.D:

E. For projects utilizing a *De Minimis* waiver, Contractor shall maintain an itemized list of non-domestically produced components and ensure that the cost is less than 5% of the total project cost for project up to a maximum of \$1,000,000.

SC-7.05.A – Amend the third sentence of paragraph by striking out the following words:

Unless the specification or description contains or is followed by words reading that no like, equivalent, or “or-equal” item is permitted,

SC-7.05.A.1.a.3 – Amend the last sentence of Paragraph a.3 by striking out “and;” and adding a period at the end of Paragraph a.3.

SC-7.05.A.1.a.4 – Delete paragraph in its entirety and insert “Deleted.”

SC-7.05.B – Add the following at the end of paragraph:

Contractor shall include a Manufacturer’s Certification letter for compliance with Domestic Preference requirements and supporting data, as applicable. Refer to Sample Language for Manufacturer’s Certification provided in these Contract Documents.

SC-7.06.A.3.a.2 – Remove “and” from the end of paragraph.

SC-7.06.A.3.a.3 – Add “; and” to the end of paragraph.

SC-7.06.A.3.a.4 – Add the following new paragraph immediately after Paragraph 7.06.A.3.a.3:

4. Comply with Domestic Preference requirements by providing Manufacturer’s Certification or waiver, as applicable. Refer to Sample Language for Manufacturers’ Certification provided in these Contract Documents.

SC-7.07.A – Amend by adding the following to the end of the paragraph:

The total amount of work subcontracted by the Contractor shall not exceed fifty percent of the Contract price without prior approval from the Owner, Engineer and Agency.

SC-7.07.B – Delete paragraph in its entirety and insert "Deleted".

SC-7.07.E – Delete the second sentence of paragraph and insert the following in its place:

Owner may not require that Contractor use a specific replacement.

SC-7.12.A Amend paragraph by adding the following after "written interpretations and clarifications,":

Manufacturers' Certifications,

SC-7.16.A.1.c – Amend paragraph by deleting the last period and adding:

, including Manufacturer's Certification letter for any item in the submittal subject to Domestic Preference requirements. Refer to the Sample Language for Manufacturer's Certification provided in these Contract Documents.

SC-7.16.C.9 – Add new paragraph immediately after Paragraph 7.16.C.8:

9. Engineer's review and approval of a Shop Drawing or Sample shall include review of Manufacturers' Certifications and any waivers in order to document compliance with Domestic Preference requirements, as applicable.

SC-7.17.F – Add new paragraph immediately after Paragraph 7.17.E:

F. Contractor shall certify upon Substantial Completion that all Work and Materials have complied with Domestic Preference requirements. Contractor shall provide Certification to Owner and Engineer. Refer to the Sample Language for Contractor's Certification provided in these Contract Documents.

All products must meet BABAA requirements

Contractor shall include Manufacturer's Certification for BABAA requirements with all applicable submittals. If a specific manufacturer is used in the bidding, a statement that Manufacturer will comply with BABAA must be included with the bid submission. Contractor shall comply with BABAA requirements, including coordination with manufacturers, distributors, and suppliers to correct deficiencies in any BABAA documentation.

Engineer/Architect approval of shop drawings or samples shall include review of BABAA documentation.

Contractor shall certify upon completion that all work and materials have complied with BABAA requirements.

For any change orders, Contractor shall provide BABAA documentation for any new products or materials required by the change.

Installation of materials or products that are not compliant with BABAA requirements shall be considered defective work. Contractor should ensure that Engineer/Architect has an approved Manufacturer's Certification or waiver prior to items being delivered to the project site.

By submitting an application for payment, based in whole or in part on furnishing equipment or materials, Contractor certifies that such equipment and materials, to contractor's knowledge, are compliant with BABAA requirements.

ARTICLE 8—OTHER WORK AT THE SITE

N/A

ARTICLE 9—OWNER'S RESPONSIBILITIES

9.13 *Owner's Site Representative – N/A*

ARTICLE 10—ENGINEER'S STATUS DURING CONSTRUCTION

10.03 *Resident Project Representative*

SC-10.03 Add the following new paragraphs 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 suggested Supplementary Conditions in this Article.

SC-11.02.C – Add new paragraph immediately after Paragraph 11.02.B:

C. The Engineer or Owner shall contact the Agency for concurrence on each Change Order prior to issuance. All Contract Change Orders must be concurred on (signed) by Agency before they are effective.

ARTICLE 12—CLAIMS

No suggested Supplementary Conditions in this Article.

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

13.01 *Cost of the Work*

SC-13.01 Supplement Paragraph 13.01.B.5.c.(2) by adding the following sentence:

The equipment rental rate book that governs the included costs for the rental of machinery and equipment owned by Contractor (or a related entity) under the Cost of the Work provisions of this Contract is the most current edition of the Rental Rate Blue Book for Construction Equipment or the AED Green Book: Rental Rates & Specifications for Construction Equipment.

SC-13.01 Supplement Paragraph 13.01.C.2 by adding the following definition of small tools and hand tools:

- a. For purposes of this paragraph, “small tools and hand tools” means any tool or equipment whose current price if it were purchased new at retail would be less than \$500.

SC-13.02.C – Delete paragraph in its entirety and insert “Deleted”.

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; 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

~~No suggested Supplementary Conditions in this Article.~~

SC-14.03.G – Add new paragraph immediately after Paragraph 14.03.F:

G. Installation of materials that are non-compliant with Domestic Preference requirements shall be considered defective work. Contractor should ensure that Engineer has an approved Manufacturer's Certification, or waiver, prior to any domestic preference compliant item being delivered to the project site.

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

15.01 *Progress Payments*

SC-15.01.B.4 – Add the following language at the end of paragraph:

No payments will be made that would deplete the retainage, place in escrow any funds that are required for retainage or invest the retainage for the benefit of the Contractor.

SC-15.01.B.6 – Add new paragraph immediately after Paragraph 15.01.B.5:

6. By submitting an Application for Payment based in whole or in part on furnishing equipment or materials, Contractor certifies that such equipment and materials are compliant with Domestic Preference requirements. Manufacturer's Certification for material(s) satisfy these requirements. Refer to the Sample Language for Manufacturer's Certification provided in these Contract Documents.

SC-15.01.C.2.d – Add the following new paragraph immediately after Paragraph 15.01.C.2.c:

d. The materials presented for payment in an Application for Payment comply with Domestic Preference requirements.

SC-15.01 Add the following new Paragraph 15.01.F:

- F. For contracts in which the Contract Price is based on the Cost of Work, if Owner determines that progress payments made to date substantially exceed the actual progress of the Work (as measured by reference to the Schedule of Values), or present a potential conflict with the

Guaranteed Maximum Price, then Owner may require that Contractor prepare and submit a plan for the remaining anticipated Applications for Payment that will bring payments and progress into closer alignment and take into account the Guaranteed Maximum Price (if any), through reductions in billings, increases in retainage, or other equitable measures. Owner will review the plan, discuss any necessary modifications, and implement the plan as modified for all remaining Applications for Payment.

SC-15.02.A – Amend paragraph by striking out the following text: “7 days after”.

15.03 *Substantial Completion*

SC-15.03.A – Modify by adding the following after the last sentence:

Contractor shall also submit the General (Prime) Contractor’s Certification of Compliance certifying that to the best of the Contractor’s knowledge and belief all Iron and Steel products, Manufactured Products, and Construction Materials proposed in the Shop Drawings, Change Orders, and Partial Payment Estimates, and those installed for the Project, comply with Domestic Preference requirements.

SC-15.03 Add the following new subparagraph to Paragraph 15.03.B:

1. If some or all of the Work has been determined not to be at a point of Substantial Completion and will require re-inspection or re-testing by Engineer, the cost of such re-inspection or re-testing, including the cost of time, travel and living expenses, will be paid by Contractor to Owner. If Contractor does not pay, or the parties are unable to agree as to the amount owed, then Owner may impose a reasonable set-off against payments due under this Article 15.

ARTICLE 16—SUSPENSION OF WORK AND TERMINATION

No suggested Supplementary Conditions in this Article.

ARTICLE 17—FINAL RESOLUTIONS OF DISPUTES

17.02 *Arbitration*

SC-17.02 Add the following new paragraph immediately after Paragraph 17.01.

17.02 *Arbitration*

- A. All matters subject to final resolution under this Article will be settled by arbitration administered by the American Arbitration Association in accordance with its Construction Industry Arbitration Rules (subject to the conditions and limitations of this Paragraph SC-17.02). Any controversy or claim in the amount of \$100,000 or less will be settled in accordance with the American Arbitration Association’s supplemental rules for Fixed Time and Cost Construction Arbitration. This agreement to arbitrate will be specifically enforceable under the prevailing law of any court having jurisdiction.
- B. The demand for arbitration will be filed in writing with the other party to the Contract and with the selected arbitration administrator, and a copy will be sent to Engineer for

information. The demand for arbitration will be made within the specific time required in Article 17, or if no specified time is applicable within a reasonable time after the matter in question has arisen, and in no event will any such demand be made after the date when institution of legal or equitable proceedings based on such matter in question would be barred by the applicable statute of limitations.

- C. The arbitrator(s) must be licensed engineers, contractors, attorneys, or construction managers. Hearings will take place pursuant to the standard procedures of the Construction Arbitration Rules that contemplate in-person hearings. The arbitrators will have no authority to award punitive or other damages not measured by the prevailing party's actual damages, except as may be required by statute or the Contract. Any award in an arbitration initiated under this clause will be limited to monetary damages and include no injunction or direction to any party other than the direction to pay a monetary amount.
- D. The Arbitrators will have the authority to allocate the costs of the arbitration process among the parties, but will only have the authority to allocate attorneys' fees if a specific Law or Regulation or this Contract permits them to do so.
- E. The award of the arbitrators must be accompanied by a reasoned written opinion and a concise breakdown of the award. The written opinion will cite the Contract provisions deemed applicable and relied on in making the award.
- F. The parties agree that failure or refusal of a party to pay its required share of the deposits for arbitrator compensation or administrative charges will constitute a waiver by that party to present evidence or cross-examine witness. In such event, the other party shall be required to present evidence and legal argument as the arbitrator(s) may require for the making of an award. Such waiver will not allow for a default judgment against the non-paying party in the absence of evidence presented as provided for above.
- G. No arbitration arising out of or relating to the Contract will include by consolidation, joinder, or in any other manner any other individual or entity (including Engineer, and Engineer's consultants and the officers, directors, partners, agents, employees or consultants of any of them) who is not a party to this Contract unless:
 - 1. the inclusion of such other individual or entity will allow complete relief to be afforded among those who are already parties to the arbitration;
 - 2. such other individual or entity is substantially involved in a question of law or fact which is common to those who are already parties to the arbitration, and which will arise in such proceedings;
 - 3. such other individual or entity is subject to arbitration under a contract with either Owner or Contractor, or consents to being joined in the arbitration; and
 - 4. the consolidation or joinder is in compliance with the arbitration administrator's procedural rules.
- H. The award will be final. Judgment may be entered upon it in any court having jurisdiction thereof, and it will not be subject to modification or appeal, subject to provisions of the Laws and Regulations relating to vacating or modifying an arbitral award.
- I. Except as may be required by Laws or Regulations, neither party nor an arbitrator may disclose the existence, content, or results of any arbitration hereunder without the prior written consent of both parties, with the exception of any disclosure required by Laws and

Regulations or the Contract. To the extent any disclosure is allowed pursuant to the exception, the disclosure must be strictly and narrowly limited to maintain confidentiality to the extent possible.

ARTICLE 18—MISCELLANEOUS

SC-18.11 – Add new paragraph immediately after Paragraph 18.10:

18.11 Tribal Sovereignty

A. No provision of this Agreement will be construed by any of the signatories as abridging or debilitating any sovereign powers of the [insert name of Tribe] Tribe; affecting the trust-beneficiary relationship between the Secretary of the Interior, Tribe, and Indian landowner(s); or interfering with the government-to-government relationship between the United States and the Tribe.

EXHIBIT A—SOFTWARE REQUIREMENTS FOR ELECTRONIC DOCUMENT EXCHANGE

Item	Electronic Documents	Transmittal Means	Data Format	Note (1)
a.1	General communications, transmittal covers, meeting notices and responses to general information requests for which there is no specific prescribed form.	Email	Email	
a.2	Meeting agendas, meeting minutes, RFI's and responses to RFI's, and Contract forms.	Email w/ Attachment	PDF	(2)
a.3	Contactors Submittals (Shop Drawings, "or equal" requests, substitution requests, documentation accompanying Sample submittals and other submittals) to Owner and Engineer, and Owner's and Engineer's responses to Contractor's Submittals, Shop Drawings, correspondence, and Applications for Payment.	Email w/ Attachment	PDF	
a.4	Correspondence; milestone and final version Submittals of reports, layouts, Drawings, maps, calculations and spreadsheets, Specifications, Drawings and other Submittals from Contractor to Owner or Engineer and for responses from Engineer and Owner to Contractor regarding Submittals.	Email w/ Attachment or LFE	PDF	
a.5	Layouts and drawings to be submitted to Owner for future use and modification.	Email w/ Attachment or LFE	DWG	
a.6	Correspondence, reports and Specifications to be submitted to Owner for future word processing use and modification.	Email w/ Attachment or LFE	DOC	
a.7	Spreadsheets and data to be submitted to Owner for future data processing use and modification.	Email w/ Attachment or LFE	EXC	
a.8	Database files and data to be submitted to Owner for future data processing use and modification.	Email w/ Attachment or LFE	DB	
Notes				
(1)	All exchanges and uses of transmitted data are subject to the appropriate provisions of Contract Documents.			
(2)	Transmittal of written notices is governed by Paragraph 18.01 of the General Conditions.			
Key				
Email	Standard Email formats (.htm, .rtf, or .txt). Do not use stationery formatting or other features that impair legibility of content on screen or in printed copies			
LFE	Agreed upon Large File Exchange method (FTP, CD, DVD, hard drive)			
PDF	Portable Document Format readable by Adobe® Acrobat Reader latest version			
DWG	Autodesk® AutoCAD .dwg format latest version			
DOC	Microsoft® Word .docx format latest version			
EXC	Microsoft® Excel .xls or .xml format latest version			
DB	Microsoft® Access .mdb format latest version			

CONTRACTOR'S NAME, ADDRESS & TELEPHONE NUMBER

Return to:

U.S. Department of Labor for OFCCP
 Southwest and Rocky Mountain
 Region Federal Building, Room 840
 525 South Griffin St.
 Dallas, TX 75202

EMPLOYER ID NUMBER OF CONTRACTOR: _____

CONTRACT INFORMATION

PROJECT AND LOCATION:				
Dollar Amount of Contract	Estimated Start Date	Estimated Completion Date	Contract No.	Geographical Area

**NOTIFICATION OF SUBCONTRACTS AWARDED
(>\$10,000)**

Subcontractor's Name, Address, & Phone Number	Employer ID Number of Subcontractor	Estimated \$ Amount of Subcontract	Estimated Start Date	Estimated Completion Date

DISCOVERY OF ARCHAEOLOGICAL AND OTHER HISTORICAL ITEMS

In the event of an archaeological find during any phase of construction, the following procedure will be followed:

- (1) Construction shall be halted, with as little disruption to the archaeological site as possible.
- (2) The Contractor shall notify the Owner who shall contact the State Historical Preservation Officer.
- (3) The State Historical Preservation Officer may decide to have an archaeologist inspect the site and make recommendations about the steps needed to protect the site, before construction is resumed.
- (4) The entire event should be handled as expediently as possible in order to hold the loss in construction time to a minimum while still protecting archaeological finds.

A similar procedure should be followed with regard to more recent historical resources. Should any artifacts, housing sites, etc., be uncovered, the same procedure should be followed as for an archaeological find.

In the event archaeological/historical data are evaluated to meet National Register criteria, the Advisory Council on Historic Preservation may be notified and asked to comment.

BONDING REQUIREMENTS

Bonding requirements must meet the minimums established in 2 CFR 200:

- (1) A bid guarantee from each bidder equivalent to five percent of the bid price. The “bid guarantee” must consist of a firm commitment such as a bid bond, certified check, or other negotiable instrument accompanying a bid as assurance that the bidder will, upon acceptance of the bid, execute such contractual documents as may be required within the time specified.
- (2) A performance bond on the part of the contractor for 100 percent of the contract price. A “performance bond” is one executed in connection with a contract to secure fulfillment of all the contractor’s requirements under such contract.
- (3) A payment bond on the part of the contractor for 100 percent of the contract price. A “payment bond” is one executed in connection with a contract to assure payment as required by law of all persons supplying labor and materials in the execution of the work provided for in the contract.

WILLIAMS-STEIGER OCCUPATIONAL SAFETY AND HEALTH ACT OF 1970

A. AUTHORITY

(1) The contractor is subject to the provisions of the Williams-Steiger Occupational Safety and Health Act of 1970.

(2) These construction documents and the joint and several phases of construction hereby contemplated are to be governed, at all times, by applicable provisions of the Federal law(s) , including but not limited to the latest amendment of the following:

a. Williams-Steiger Occupational Safety and Health Act of 1970, Public Law 94-596;

b. Part 1910 - Occupational Safety and Health Standards, Chapter XVII of Title 29, Code of Federal Regulations;

c. Part 1926 - Safety and Health Regulations for Construction, Chapter XVII of Title 29, Code of Federal Regulations.

B. SAFETY AND HEALTH PROGRAM REQUIREMENTS

(1) This project, its prime contractor and its subcontractors, shall at all times be governed by Chapter XVII of Title 29, Code of Federal Regulations, Part 1926 - Safety and Health Regulations for Construction (29 CFR 22801), as amended to date.

(2) To implement the program and to provide safe and healthful working conditions for all persons, general project safety meetings will be conducted at the site at least once each month during the course of construction, by the construction superintendent or his/her designated safety officer. Notice of such meeting shall be issued not less than three (3) days prior, stating the exact time, location, and agenda to be included. Attendance by the owner, architect, general foreman, shop steward(s), and trades, or their designated representatives, witnessed in writing as such, shall be mandatory.

(3) To further implement the program, each trade shall conduct a short gang meeting, not less than once a week, to review project safety requirements mandatory for all persons during the coming week. The gang foreman shall report the agenda and specific items covered to the project superintendent, who shall incorporate these items in his/her daily log or report.

(4) The prime contractor and all subcontractors shall immediately report all accidents, injuries, or health hazards to the owner and architect, or their designated representatives, in writing. This shall not obviate any mandatory reporting under the provisions of the Occupational Safety and Health Act of 1970.

(5) This program shall become a part of the contract documents and the contract between the owner and prime contractor, prime contractor and all subcontractors, as though fully written therein.

WAGE RATE REQUIREMENTS

Wage Rate Requirements under Clean Water State Revolving Fund (CWSRF) and Drinking Water State Revolving Fund (DWSRF) Loans for Subrecipients that are Governmental Entities.

Preamble

All laborers and mechanics employed by contractors and subcontractors on projects funded directly by or assisted in whole or in part by and through the Federal Government shall be paid wages at rates not less than those prevailing on projects of a character similar in the locality as determined by the Secretary of Labor in accordance with subchapter IV of chapter 31 of title 40, United States Code.

Pursuant to Reorganization Plan No. 14 and the Copeland Act, 40 U.S.C. 3145, the Department of Labor has issued regulations at 29 CFR Parts 1, 3, and 5 to implement the Davis-Bacon and related Acts. Regulations in 29 CFR 5.5 instruct agencies concerning application of the standard Davis-Bacon contract clauses set forth in that section. Federal agencies providing grants, cooperative agreements, and loans shall ensure that the standard Davis-Bacon contract clauses found in 29 CFR 5.5(a) are incorporated in any resultant covered contracts that are in excess of \$2,000 for construction, alteration or repair (including painting and decorating).

For additional guidance on the wage rate requirements, contact your awarding agency. Recipients of grants, cooperative agreements and loans should direct their initial inquiries concerning the application of Davis-Bacon requirements to a particular federally assisted project to the Federal agency funding the project. The Secretary of Labor retains final coverage authority under Reorganization Plan Number 14.

Wage Rate Requirements under CWSRF and DWSRF Loans.

1. Applicability of the Davis- Bacon (DB) prevailing wage requirements.

Davis-Bacon prevailing wage requirements apply to the construction, alteration, and repair of treatment works carried out in whole or in part with assistance made available by a state water pollution control revolving fund and to any construction project carried out in whole or in part by assistance made available by a drinking water treatment revolving loan fund. If a subrecipient encounters a unique situation at a site that presents uncertainties regarding DB applicability, the subrecipient must discuss the situation with the recipient State before authorizing work on that site.

2. Obtaining Wage Determinations.

(a) Subrecipients shall obtain the wage determination for the locality in which a covered activity subject to DB will take place prior to issuing requests for bids, proposals, quotes or other methods for soliciting contracts (solicitation) for activities subject to DB. These wage determinations shall be incorporated into solicitations and any subsequent contracts. Prime contracts must contain a provision requiring that subcontractors follow the wage determination incorporated into the prime contract.

(i) While the solicitation remains open, the subrecipient shall monitor www.wdol.gov weekly to ensure that the wage determination contained in the solicitation remains current. The subrecipients shall amend the solicitation if DOL issues a modification more than 10 days prior to the closing date (i.e. bid opening) for the solicitation. If DOL modifies or supersedes the applicable wage determination less than 10 days prior to the closing date, the subrecipients may request a finding from the State recipient that there is not a reasonable time to notify interested contractors of the modification of the wage determination. The State recipient will provide a report of its findings to the subrecipient.

(ii) If the subrecipient does not award the contract within 90 days of the closure of the solicitation, any modifications or supersedes DOL makes to the wage determination contained in the solicitation shall be effective unless the State recipient, at the request of the subrecipient, obtains an extension of the 90 day period from DOL pursuant to 29 CFR 1.6(c)(3)(iv). The subrecipient shall monitor www.wdol.gov on a weekly basis if it does not award the contract within 90 days of closure of the solicitation to ensure that wage determinations contained in the solicitation remain current.

(b) If the subrecipient carries out activity subject to DB by issuing a task order, work assignment or similar instrument to an existing contractor (ordering instrument) rather than by publishing a solicitation, the subrecipient shall insert the appropriate DOL wage determination from www.wdol.gov into the ordering instrument.

(c) Subrecipients shall review all subcontracts subject to DB entered into by prime contractors to verify that the prime contractor has required its subcontractors to include the applicable wage determinations.

(d) As provided in 29 CFR 1.6(f), DOL may issue a revised wage determination applicable to a subrecipient's contract after the award of a contract or the issuance of an ordering instrument if DOL determines that the subrecipient has failed to incorporate a wage determination or has used a wage determination that clearly does not apply to the contract or ordering instrument. If this occurs, the subrecipient shall either terminate the contract

or ordering instrument and issue a revised solicitation or ordering instrument or incorporate DOL's wage determination retroactive to the beginning of the contract or ordering instrument by change order. The subrecipient's contractor must be compensated for any increases in wages resulting from the use of DOL's revised wage determination.

3. Contract and Subcontract Provisions

(a) The Recipient and/or subrecipient(s) shall insert in full in any contract in excess of \$2,000 which is entered into for the actual construction, alteration and/or repair, including painting and decorating, of a public building or public work, or building or work financed in whole or part from Federal funds in accordance with guarantees of a Federal agency or financed from funds obtained by pledge of any contract of a Federal agency to make a loan, grant or annual contribution (except where a different meaning is expressly indicated), and which is subject to the labor standards provisions of any of the acts listed in § 5.1, the following clauses:

(1) Minimum wages.

(i) All laborers and mechanics employed or working upon the site of the work (or under the United States Housing Act 1937 or under Housing Act of 1949 in the construction or development of the project), will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate of any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under Copeland Act (29 CFR part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalent thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis –Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph (a)(1)(iv) of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in §5.5(a)(4). Laborers or

mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided, That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rate conformed under paragraph (a)(1)(ii) of this section) and the subcontractors at the site of work in a prominent and accessible place where it can be easily seen by the workers.

Recipients may obtain wage determinations from the U.S. Department of Labor's web site: www.wdol.gov.

(ii)(A) The recipient, on behalf of EPA, shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under contract shall be classified in conformance with the wage determination. The EPA award official shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

- (1) The work to be performed by classification requested is not performed by a classification in the wage determination; and
- (2) The classification is utilized in the area by the construction industry; and
- (3) The proposed wage rate, including any bona fide fringe benefits, bears reasonable relationship to the wage rates contained in the wage determination.

(B) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the recipient agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the recipient to the EPA award official. The award official will transmit the report, to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the award official or will notify the award official within the 30-day period that additional time is necessary.

(C) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the recipient do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the award official shall refer the questions, including the views of all interested parties and the recommendation of the award official, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(D) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs (a)(1)(ii)(B) or (C) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

(iii) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.

(iv) If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

(2) Withholding. The (recipient) shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld from the contractor under this contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work (or under the United States Housing Act of

1937 or under the Housing Act of 1949 in the construction or development of the project), all or part of the wages required by the contract, the (Agency) may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased

(3) Payrolls and basic records.

(i) Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work (or under the United States Housing Act of 1937, or under the Housing Act of 1949, in the construction or development of the project). Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

(ii)(A) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the EPA if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit the payrolls to the applicant, sponsor, or owner, as the case may be, for transmission to the recipient who will maintain the records on behalf of EPA. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an

individually identifying number for each employee (e.g., the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose from the Wage and Hour Division Web site at:

<http://www.dol.gov/whd/programs/dbra/wh347.htm> or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the EPA if the agency is a party to the contract, but if the agency is not such a party, the contractor will submit them to the recipient for transmission to the EPA, if requested by EPA, the contractor, or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the recipient.

(B) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:

(1) That the payroll for the payroll period contains the information required to be provided under § 5.5 (a)(3)(ii) of Regulations, 29 CFR part 5, the appropriate information is being maintained under § 5.5 (a)(3)(i) of Regulations, 29 CFR part 5, and that such information is correct and complete;

(2) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR part 3;

(3) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.

(C) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph (a)(3)(ii)(B) of this section.

(D) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.

(iii) The contractor or subcontractor shall make the records required under paragraph (a)(3)(i) of this section available for inspection, copying, or transcription by authorized representatives of the EPA or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the Federal agency may, after written notice to the contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

(4) Apprentices and trainees—

(i) Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the

applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(ii) Trainees. Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(iii) Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as

amended, and 29 CFR part 30.

(5) Compliance with Copeland Act requirements. The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract.

(6) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses contained in 29 CFR 5.5(a)(1) through (10) and such other clauses as the (write in the name of the Federal agency) may by appropriate instructions require, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.

(7) Contract termination: debarment. A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

(8) Compliance with Davis-Bacon and Related Act requirements. All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract.

(9) Disputes concerning labor standards. Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and EPA, the U.S. Department of Labor, or the employees or their representatives.

(10) Certification of eligibility.

(i) By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis- Bacon Act or 29 CFR 5.12(a)(1).

(ii) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).

(iii) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

4. Contract Provision for Contracts in Excess of \$100,000.

(a) Contract Work Hours and Safety Standards Act. The subrecipient shall insert the following clauses set forth in paragraphs (a)(1), (2), (3), and (4) of this section in full in any contract in an amount in excess of \$100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by Item 3, above or 29 CFR 4.6. As used in this paragraph, the terms laborers and mechanics include watchmen and guards.

(1) Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.

(2) Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph (a)(1) of this section the contractor and any subcontractor responsible therefore shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (a)(1) of this section, in the sum of \$10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (a)(1) of this section. Withholding for unpaid wages and liquidated damages. The subrecipient, upon written request of the EPA Award Official or an authorized representative of the Department of Labor, shall withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (b)(2) of this section.

(3) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (a)(1) through (4) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (a)(1) through (4) of this section.

(b) In addition to the clauses contained in Item 3, above, in any contract subject only to the Contract Work Hours and Safety Standards Act and not to any of the other statutes cited in 29 CFR 5.1, the Subrecipient shall insert a clause requiring that the contractor or subcontractor shall maintain payrolls and basic payroll records during the course of the work and shall preserve them for a period of three years from the completion of the contract for all laborers and mechanics, including guards and watchmen, working on the contract. Such records shall contain the name and address of each such employee, social security number, correct classifications, hourly rates of wages paid, daily and weekly number of hours worked, deductions made, and actual wages paid. Further, the Subrecipient shall insert in any such contract a clause providing that the records to be maintained under this paragraph shall be made available by the contractor or subcontractor for inspection, copying, or transcription by authorized representatives of the (write the name of agency) and the Department of Labor, and the contractor or subcontractor will permit such representatives to interview employees during working hours on the job.

5. Compliance Verification

(a) The subrecipient shall periodically interview a sufficient number of employees entitled to DB prevailing wages (covered employees) to verify that contractors or subcontractors are paying the appropriate wage rates. As provided in 29 CFR 5.6(a) (6), all interviews must be conducted in confidence. The subrecipient must use Standard Form 1445 (SF 1445) or equivalent documentation to memorialize the interviews. Copies of the SF 1445 are available from EPA on request.

(b) The subrecipient shall establish and follow an interview schedule based on its assessment of the risks of noncompliance with DB posed by contractors or subcontractors and the duration of the contract or subcontract. At a minimum, the subrecipient should conduct interviews with a representative group of covered employees within two weeks of each contractor or subcontractor's submission of its initial weekly payroll data and two weeks prior to the estimated completion date for the contract or subcontract. Subrecipients must conduct more frequent interviews if the initial interviews or other information indicates that there is a risk that the contractor or subcontractor is not complying with DB . Subrecipients shall

immediately conduct necessary interviews in response to an alleged violation of the prevailing wage requirements. All interviews shall be conducted in confidence.

(c) The subrecipient shall periodically conduct spot checks of a representative sample of weekly payroll data to verify that contractors or subcontractors are paying the appropriate wage rates. The subrecipient shall establish and follow a spot check schedule based on its assessment of the risks of noncompliance with DB posed by contractors or subcontractors and the duration of the contract or subcontract. At a minimum, if practicable, the subrecipient should spot check payroll data within two weeks of each contractor or subcontractor's submission of its initial payroll data and two weeks prior to the completion date the contract or subcontract. Subrecipients must conduct more frequent spot checks if the initial spot check or other information indicates that there is a risk that the contractor or subcontractor is not complying with DB. In addition, during the examinations the subrecipient shall verify evidence of fringe benefit plans and payments thereunder by contractors and subcontractors who claim credit for fringe benefit contributions.

(d) The subrecipient shall periodically review contractors and subcontractors use of apprentices and trainees to verify registration and certification with respect to apprenticeship and training programs approved by either the U.S Department of Labor or a state, as appropriate, and that contractors and subcontractors are not using disproportionate numbers of, laborers, trainees and apprentices. These reviews shall be conducted in accordance with the schedules for spot checks and interviews described in Item 5(b) and (c) above.

(e) Subrecipients must immediately report potential violations of the DB prevailing wage requirements to the EPA DB contact listed above and to the appropriate DOL Wage and Hour District Office listed at <http://www.dol.gov/whd/america2.htm>.

(INSERT APPLICABLE WAGE DECISION HERE)

"General Decision Number: ND20250041 01/03/2025

Superseded General Decision Number: ND20240041

State: North Dakota

Construction Type: Heavy
HEAVY CONSTRUCTION PROJECTS

County: Mountrail County in North Dakota.

HEAVY CONSTRUCTION PROJECTS

Note: Contracts subject to the Davis-Bacon Act are generally required to pay at least the applicable minimum wage rate required under Executive Order 14026 or Executive Order 13658. Please note that these Executive Orders apply to covered contracts entered into by the federal government that are subject to the Davis-Bacon Act itself, but do not apply to contracts subject only to the Davis-Bacon Related Acts, including those set forth at 29 CFR 5.1(a)(1).

<p>If the contract is entered into on or after January 30, 2022, or the contract is renewed or extended (e.g., an option is exercised) on or after January 30, 2022:</p>	<ul style="list-style-type: none"> . Executive Order 14026 generally applies to the contract. . The contractor must pay all covered workers at least \$17.75 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on the contract in 2025.
<p>If the contract was awarded on or between January 1, 2015 and January 29, 2022, and the contract is not renewed or extended on or after January 30, 2022:</p>	<ul style="list-style-type: none"> . Executive Order 13658 generally applies to the contract. . The contractor must pay all covered workers at least \$13.30 per hour (or the applicable wage rate listed on this wage determination, if it is higher) for all hours spent performing on that contract in 2025.

The applicable Executive Order minimum wage rate will be adjusted annually. If this contract is covered by one of the Executive Orders and a classification considered necessary for performance of work on the contract does not appear on this wage determination, the contractor must still submit a conformance request.

Additional information on contractor requirements and worker protections under the Executive Orders is available at

<http://www.dol.gov/whd/govcontracts>.

Modification Number Publication Date
 0 01/03/2025

CARP1091-005 05/01/2024

	Rates	Fringes
CARPENTER.....	\$ 35.87	25.10

ELEC0714-017 07/01/2024

	Rates	Fringes
ELECTRICIAN.....	\$ 38.94	13.21+11.5%

ENGI0049-035 05/01/2022

	Rates	Fringes
POWER EQUIPMENT OPERATOR		
Bobcat/Skid Steer/Skid		
Loader.....	\$ 35.05	21.60
Bulldozer.....	\$ 35.05	21.60
Roller.....	\$ 35.05	21.60

ENGI0049-040 10/01/2023

	Rates	Fringes
POWER EQUIPMENT OPERATOR		
Crane.....	\$ 32.65	20.65
Forklift.....	\$ 32.25	20.65

LAB00563-010 05/01/2024

	Rates	Fringes
LABORERS		
Common or General.....	\$ 28.83	21.15
Pipelayer.....	\$ 30.80	20.45

SUND2017-004 07/31/2020

	Rates	Fringes
CEMENT MASON/CONCRETE FINISHER...	\$ 24.33	0.00
IRONWORKER, REINFORCING.....	\$ 25.28	0.00
OPERATOR:		
Backhoe/Excavator/Trackhoe.....	\$ 29.92	15.43
OPERATOR: Grader/Blade.....	\$ 28.00	0.00

OPERATOR: Loader.....	\$ 31.06	15.71
TRUCK DRIVER: Dump Truck.....	\$ 31.95	18.80

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

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Note: Executive Order (EO) 13706, Establishing Paid Sick Leave for Federal Contractors applies to all contracts subject to the Davis-Bacon Act for which the contract is awarded (and any solicitation was issued) on or after January 1, 2017. If this contract is covered by the EO, the contractor must provide employees with 1 hour of paid sick leave for every 30 hours they work, up to 56 hours of paid sick leave each year. Employees must be permitted to use paid sick leave for their own illness, injury or other health-related needs, including preventive care; to assist a family member (or person who is like family to the employee) who is ill, injured, or has other health-related needs, including preventive care; or for reasons resulting from, or to assist a family member (or person who is like family to the employee) who is a victim of, domestic violence, sexual assault, or stalking. Additional information on contractor requirements and worker protections under the EO is available at <https://www.dol.gov/agencies/whd/government-contracts>.

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

The body of each wage determination lists the classifications and wage rates that have been found to be prevailing for the type(s) of construction and geographic area covered by the wage determination. The classifications are listed in alphabetical order under rate identifiers indicating whether the particular rate is a union rate (current union negotiated rate), a survey rate, a weighted union average rate, a state adopted rate, or a supplemental classification rate.

Union Rate Identifiers

A four-letter identifier beginning with characters other than ""SU"", ""UAVG"", ?SA?, or ?SC? denotes that a union rate was prevailing for that classification in the survey. Example: PLUM0198-005 07/01/2024. PLUM is an identifier of the union whose collectively bargained rate prevailed in the survey for this classification, which in this example would be Plumbers. 0198 indicates the local union number or district council number where applicable, i.e., Plumbers Local 0198. The next number, 005 in the example, is an internal number used in

processing the wage determination. The date, 07/01/2024 in the example, is the effective date of the most current negotiated rate.

Union prevailing wage rates are updated to reflect all changes over time that are reported to WHD in the rates in the collective bargaining agreement (CBA) governing the classification.

Union Average Rate Identifiers

The UAVG identifier indicates that no single rate prevailed for those classifications, but that 100% of the data reported for the classifications reflected union rates. EXAMPLE:

UAVG-OH-0010 01/01/2024. UAVG indicates that the rate is a weighted union average rate. OH indicates the State of Ohio. The next number, 0010 in the example, is an internal number used in producing the wage determination. The date, 01/01/2024 in the example, indicates the date the wage determination was updated to reflect the most current union average rate.

A UAVG rate will be updated once a year, usually in January, to reflect a weighted average of the current rates in the collective bargaining agreements on which the rate is based.

Survey Rate Identifiers

The ""SU"" identifier indicates that either a single non-union rate prevailed (as defined in 29 CFR 1.2) for this classification in the survey or that the rate was derived by computing a weighted average rate based on all the rates reported in the survey for that classification. As a weighted average rate includes all rates reported in the survey, it may include both union and non-union rates. Example: SUFL2022-007 6/27/2024. SU indicates the rate is a single non-union prevailing rate or a weighted average of survey data for that classification. FL indicates the State of Florida. 2022 is the year of the survey on which these classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination. The date, 6/27/2024 in the example, indicates the survey completion date for the classifications and rates under that identifier.

?SU? wage rates typically remain in effect until a new survey is conducted. However, the Wage and Hour Division (WHD) has the discretion to update such rates under 29 CFR 1.6(c)(1).

State Adopted Rate Identifiers

The ""SA"" identifier indicates that the classifications and prevailing wage rates set by a state (or local) government were adopted under 29 C.F.R 1.3(g)-(h). Example: SAME2023-007 01/03/2024. SA reflects that the rates are state adopted. ME refers to the State of Maine. 2023 is the year during which the state completed the survey on which the listed classifications and rates are based. The next number, 007 in the example, is an internal number used in producing the wage determination.

The date, 01/03/2024 in the example, reflects the date on which the classifications and rates under the ?SA? identifier took effect under state law in the state from which the rates were adopted.

WAGE DETERMINATION APPEALS PROCESS

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

- a) a survey underlying a wage determination
- b) an existing published wage determination
- c) an initial WHD letter setting forth a position on a wage determination matter
- d) an initial conformance (additional classification and rate) determination

On survey related matters, initial contact, including requests for summaries of surveys, should be directed to the WHD Branch of Wage Surveys. Requests can be submitted via email to davisbaconinfo@dol.gov or by mail to:

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

Regarding any other wage determination matter such as conformance decisions, requests for initial decisions should be directed to the WHD Branch of Construction Wage Determinations. Requests can be submitted via email to BCWD-Office@dol.gov or by mail to:

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

2) If an initial decision has been issued, then any interested party (those affected by the action) that disagrees with the decision can request review and reconsideration from the Wage and Hour Administrator (See 29 CFR Part 1.8 and 29 CFR Part 7). Requests for review and reconsideration can be submitted via email to dba.reconsideration@dol.gov or by mail to:

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

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

the requestor considers relevant to the issue.

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

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

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END OF GENERAL DECISION"

AMERICAN IRON AND STEEL (AIS) REQUIREMENTS

The Contractor acknowledges that it understands the goods and services under this Agreement are being funded with monies made available by the Clean Water State Revolving Fund and/or Drinking Water State Revolving Fund that have statutory requirements commonly known as “American Iron and Steel,” that requires all of the iron and steel products used in the project to be produced in the United States (“American Iron and Steel Requirement”) including iron and steel products provided by the Contractor pursuant to this Agreement. The Contractor hereby represents and warrants to and for the benefit of the Purchaser and the State that (a) the Contractor has reviewed and understands the American Iron and Steel Requirement, (b) all of the iron and steel products used in the project will be and/or have been produced in the United States in a manner that complies with the American Iron and Steel Requirement, unless a waiver of the requirement is approved, and (c) the Contractor will provide any further verified information, certification or assurance of compliance with this paragraph, or information necessary to support a waiver of the American Iron and Steel Requirement, as may be requested by the Purchaser or the State. Notwithstanding any other provision of this Agreement, any failure to comply with this paragraph by the Contractor shall permit the Purchaser or State to recover as damages against the Contractor any loss, expense, or cost (including without limitation attorney’s fees) incurred by the Purchaser or State resulting from any such failure (including without limitation any impairment or loss of funding, whether in whole or in part, from the State or any damages owed to the State by the Purchaser). While the Contractor has no direct contractual privity with the State, as a lender to the Purchaser for the funding of its project, the Purchaser and the Contractor agree that the State is a third-party beneficiary and neither this paragraph (nor any other provision of this Agreement necessary to give this paragraph force or effect) shall be amended or waived without the prior written consent of the State.

One of the following certification forms should be used as documentation of compliance with the AIS requirements.

Sample Certification for AIS

The following information is provided as a sample letter of certification for AIS compliance. Documentation must be provided on company letterhead.

Date

Company Name

Company Address

City, State Zip

Subject: American Iron and Steel Certification for Project (XXXXXXXXXX)

I, (company representative), certify that the following products and/or materials shipped/provided to the subject project are in full compliance with the American Iron and Steel requirement as mandated in EPA's State Revolving Fund Programs.

Item, Products and/or Materials:

1. Xxx
2. Xxx
3. Xxx

Such process took place at the following location:

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

Signed by company representative

Sample Step Certification for AIS

The following information is provided as a sample letter of step certification for AIS compliance. Documentation must be provided on company letterhead.

Date

Company Name

Company Address

City, State Zip

Subject: American Iron and Steel Step Certification for Project (XXXXXXXXXX)

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

Item, Products and/or Materials:

1. Xxx
2. Xxx
3. Xxx

Such process took place at the following location:

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

Signed by company representative

FULL LEAD SERVICE LINE REPLACEMENT (DWSRF)

Any lead service line replacements conducted under this project must replace the entire lead service line, not just a portion, unless a portion has already been replaced or is concurrently being replaced with another funding source.

ND Minority Participation Goals

Covered Area*	Goal (percent)*
149 Fargo-Moorhead, ND-MN:	
Non-SMSA Counties -----	0.7
MN Becker; MN Clay; MN Wilkin; ND Barnes; ND Cass; ND Dickey; ND Eddy; ND Foster; ND Griggs; ND La Moure; ND Logan; ND McIntosh; ND Ransom; ND Richland; ND Sargent; ND Steele; ND Stutsman; ND Traill	
150 Grand Forks, ND:	
SMSA Counties:	
2985 Grand Forks, ND-MN -----	1.2
MN Polk; ND Grand Forks	
Non-SMSA Counties -----	2.0
MN Beltrami; MN Clearwater; MN Hubbard; MN Kittson; MN Lake of the Woods; MN Mahnommen; MN Marshall; MN Norman; MN Pennington; MN red Lake; MN Roseau; ND Benson; ND Cavalier; ND Nelson; ND Pembina; ND Ramsey; ND Towner; ND Walsh	
151 Bismarck, ND:	
SMSA Counties:	
1010 Bismarck, ND -----	0.4
ND Burleigh; ND Morton	
Non-SMSA Counties -----	1.3
ND Adams; ND Billings; ND Bowman; ND Dunn; ND Emmons; ND Golden Valley; ND Grant; ND Hettinger; ND Kidder; ND Mercer; ND Oliver; ND Sheridan; ND Sioux; ND Slope; ND Stark; ND Wells	
152 Minot, ND:	
Non-SMSA Counties -----	4.4
MT Daniels; MT Richland; MT Roosevelt; MT Sheridan; ND Bottineau; ND Burke; ND Divide; ND McHenry; ND McKenzie; ND McLean; ND Mountrail; ND Pierce; ND Renville; ND Rolette; ND Ward; ND Williams	

*Insert the project location and the appropriate minority participation goal in the following Executive Order 11246 language. The female participation goal is 6.9% for the entire state.

EQUAL EMPLOYMENT OPPORTUNITY and AFFIRMATIVE ACTION REQUIREMENTS on FEDERALLY ASSISTED CONSTRUCTION CONTRACTS

Notice of Requirement for Affirmative Action to Ensure Equal Employment Opportunity (Executive Order 11246)

1. The Offerer's or Bidder's attention is called to the "Equal Opportunity Clause" and the "Standard Federal Equal Employment Specifications" set forth herein.

2. The goals and timetables for minority and female participation, expressed in percentage terms for the Contractor's aggregate workforce in each trade on all construction work in the covered area, are as follows:

Goals for minority participation in each trade 4.4%
Goals for female participation in each trade - 6.9%

These goals are applicable to all the contractor's construction work (whether or not it is Federal or Federally assisted) performed in the covered area. If the contractor performs construction work in a geographical area located outside of the covered area, it shall apply the goals established for such geographical area where the work is actually performed. With regard to this second area, the contractor also is subject to the goals for both its federally involved and non-federally involved construction.

The Contractor's compliance with the Executive Order and the regulations in 41 CFR Part 60-4 shall be based on its implementation of the Equal Opportunity Clause, specific affirmative action obligations required by the specifications set forth in 41 CFR 60-4.3(a), and its efforts to meet the goals. The hours of minority and female employment and training must be substantially uniform throughout the length of the contract, and in each trade, and the contractor shall make a good faith effort to employ minorities and women evenly on each of its projects. The transfer of minority or female employees or trainees from contractor to contractor or from project to project for the sole purpose of meeting the contractor's goals shall be a violation of the contract, the Executive Order, and the regulations in 41 CFR Part 60-4. Compliance with the goals will be measured against the total work hours performed.

3. The contractor shall provide written notification to the Director of the Office of Federal Contract Compliance Programs within 10 working days of award of any construction subcontract in excess of \$10,000 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the name, address and telephone number for the subcontractor; employer identification number of the subcontractor; estimated dollar amount of the subcontract; estimated starting and completion dates of the subcontract; and the geographical area in which the contract is to be performed.

4. As used in this Notice, and in the contract resulting from this solicitation, the "covered area" is ND Mountrail; .

This notice shall be included in, and shall be a part of, all solicitations for offers and bids on all federal and federally assisted construction contracts or subcontracts.

EQUAL OPPORTUNITY CLAUSES

The Equal Opportunity Clause published at 41 CFR Part 60-1.4(b) is required to be included in, and is part of, all nonexempt federally assisted construction contracts and subcontracts. The Equal Opportunity Clause shall be considered to be a part of every contract and subcontract required by the regulations in this part to include such a clause whether or not it is physically incorporated in such contracts.

In addition to the clauses described above, all federal contracting officers, all applicants, and all non-construction contractors, as applicable, shall include the specifications set forth in this section in all federal and federally assisted construction contracts in excess of \$10,000 to be performed in geographical areas designated by the Director pursuant to §60-4.6 of this part and in construction subcontracts in excess of \$10,000 necessary in whole or in part to the performance of nonconstruction Federal contracts and subcontracts covered under the Executive Order.

STANDARD FEDERAL EQUAL EMPLOYMENT OPPORTUNITY CONSTRUCTION CONTRACT SPECIFICATIONS (EXECUTIVE ORDER 11246)

1. As used in these specifications:

a. "Covered Area" means the geographical area described in the solicitation from which this contract resulted;

b. "Director" means Director, Office of Federal Contract Compliance Programs, United States Department of Labor, or any person to whom the Director delegates authority;

c. "Employer identification number" means the Federal Social Security number used on the employer's quarterly Federal Tax Return, U.S. Treasury Department Form 941.

d. "Minority" includes:

(i) Black (all persons having origins in any of the Black African racial groups not of Hispanic origin);

(ii) Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish Culture or origin, regardless of race);

(iii) Asian and Pacific Islander (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent, or the Pacific Islands);

(iv) American Indian or Alaskan Native (all persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification).

2. Whenever the contractor, or any subcontractor at any tier, subcontracts a portion of the work involving any construction trade, it shall physically include in each subcontract in excess of \$10,000 the provisions of these specifications and the Notice which contains the applicable goals for minority and female participation and which is set forth in the solicitations from which this contract resulted.

3. If the contractor is participating (pursuant to 41 CFR 60-4.5) in a Hometown Plan approved by the U.S. Department of Labor in the covered area either individually or through an association, its affirmative action obligations on all work in the Plan area, (including goals and timetables) shall be in accordance with that Plan for those trades which have unions participating in the Plan. Contractors must be able to demonstrate their participation in and compliance with the provisions of any such Hometown Plan. Each contractor or subcontractor participating in an approved Plan is individually required to comply with its obligations under the EEO clause, and to make a good faith effort to achieve each goal under the Plan in each trade in which it has employees. The overall good faith performance by other contractors or subcontractors toward a goal in an approved Plan does not excuse any covered contractor's or subcontractor's failure to take good faith efforts to achieve the Plan goals and timetables.

4. The contractor shall implement the specific affirmative action standards provided in paragraphs (7)(a) through (p) of these specifications. The goals set forth in the solicitation from which this contract resulted are expressed as percentages of the total hours of employment and training of minority and female utilization the contractor should reasonably be able to achieve in each construction trade in which it has employees in the covered area. Covered Construction contractors performing construction work in geographical areas where they do not have a Federal or federally assisted construction contract shall apply the minority and female goals established for the geographical area where the work is being performed. Goals are published periodically in the FEDERAL REGISTER in notice form, and such notices may be obtained from any Office of Federal Contract Compliance Programs office or from Federal procurement contracting officers. The contractor is expected to make substantially uniform progress toward its goals in each craft during the period specified.

5. Neither the provisions of any collective bargaining agreement, nor the failure by a union with whom the contractor has a collective bargaining agreement, to refer either minorities or women shall

excuse the contractor's obligations under these specifications, Executive Order 11246, or the regulations promulgated pursuant thereto.

6. In order for the non-working training hours of apprentices and trainees to be counted in meeting the goals, such apprentices and trainees must be employed by the contractor during the training period, and the contractor must have made a commitment to employ the apprentices and trainees at the completion of their training, subject to the availability of employment opportunities. Trainees must be trained pursuant to training programs approved by the U.S. Department of Labor.

7. The contractor shall take specific affirmative actions to ensure equal employment opportunity. The evaluation of the contractor's compliance with these specifications shall be based upon its effort to achieve maximum results from its actions. The contractor shall document these efforts fully, and shall implement affirmative action steps at least as extensive as the following:

a. Ensure and maintain a working environment free of harassment, intimidation, and coercion at all sites, and in all facilities at which the contractor's employees are assigned to work. The contractor, where possible, will assign two or more women to each construction project. The contractor shall specifically ensure that all foremen, superintendents, and other on-site supervisory personnel are aware of and carry out the contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at such sites or in such facilities.

b. Establish and maintain a current list of minority and female recruitment sources, provide written notification to minority and female recruitment sources and to community organizations when the contractor or its unions have employment opportunities available, and maintain a record of the organizations' responses.

c. Maintain a current file of the names, addresses, and telephone numbers of each minority and female off-the-street applicant and minority or female referral from a union, a recruitment source or community organization and of what action was taken with respect to each such individual. If such individual was sent to the union hiring hall for referral and was not referred back to the contractor by the union or, if referred, not employed by the contractor, this shall be documented in the file with the reason therefor, along with whatever additional actions the contractor may have taken.

d. Provide immediate written notification to the Director when the union or unions with which the Contractor has a collective bargaining agreement has not referred to the Contractor a minority person or woman sent by the Contractor, or when the Contractor has other information that the union referral process has impeded the Contractor's efforts to meet its obligations.

e. Develop on-the-job training opportunities and/or participate in training programs for the areas which expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the contractor's employment needs, especially those programs funded or approved by the Department of Labor. The contractor shall provide notice of these programs to the sources compiled under (7)(b) above.

f. Disseminate the contractor's EEO policy by providing notice of the policy to unions and training programs and requesting their cooperation in assisting the contractor in meeting its EEO obligations; by including it in any policy manual and collective bargaining agreement; by publicizing it in the company newspaper, annual report, etc.; by specific review of the policy with all management personnel and with all minority and female employees at least once a year; and by posting the company EEO policy on bulletin boards accessible to all employees at each location where construction work is performed.

g. Review, at least annually, the company's EEO policy and affirmative action obligations under these specifications with all employees having any responsibility for hiring, assignment, layoff, termination or other employment decisions including specific review of these items with on-site supervisory personnel such as superintendents, general foremen, etc., prior to the initiation of construction work at any job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.

h. Disseminate the contractor's EEO policy externally by including it in any advertising in the news media, specifically including minority and female news media, and providing written notification to and discussing the contractor's EEO policy with other contractors and subcontractors with whom the contractor does or anticipates doing business.

i. Direct its recruitment efforts, both oral and written, to minority, female and community organizations, to schools with minority and female students and to minority and female recruitment and training organizations serving the contractor's recruitment area and employment needs. Not later than one month prior to the date for the acceptance of applications for apprenticeship or other training by any recruitment source, the contractor shall send written notification to organizations such as the above, describing the openings, screening procedures, and tests to be used in the selection process.

j. Encourage present minority and female employees to recruit other minority persons and women and, where reasonable, provide after school, summer and vacation employment to minority and female youth both on the site and in other areas of a contractor's workforce.

k. Validate all tests and other selection requirements where there is an obligation to do so under 41 CFR Part 60-3.

l. Conduct, at least annually, an inventory and evaluation at least of all minority and female personnel for promotional opportunities and encourage these employees to seek or to prepare for, through appropriate training, etc., such opportunities.

m. Ensure that seniority practices, job classifications, work assignments and other personnel practices, do not have a discriminatory effect by continually monitoring all personnel and employment related activities to ensure that the EEO policy and the contractor's obligations under these specifications are being carried out.

n. Ensure that all facilities and company activities are non segregated except that separate or single-user toilet and necessary changing facilities shall be provided to assure privacy between the sexes.

o. Document and maintain a record of all solicitations of offers for subcontracts from minority and female construction contractors and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations.

p. Conduct a review, at least annually, of all supervisors' adherence to and performance under the contractor's EEO policies and affirmative action obligations.

8. Contractors are encouraged to participate in voluntary associations which assist in fulfilling one or more of their affirmative action obligations (7)(a) through (p). The efforts of a contractor association, joint contractor- union, contractor-community, or other similar group of which the contractor is a member and participant, may be asserted as fulfilling any one or more of its obligations under (7)(a) through (p) of these specifications provided that the contractor actively participates in the group, makes every effort to assure that the group has positive impact on the employment of minorities and women in the industry, ensures that the concrete benefits of the program are reflected in the contractor's minority and female workforce participation, makes a good faith effort to meet its individual goals and timetables, and can provide access to documentation which demonstrates the effectiveness of actions taken on behalf of the contractor. The obligation to comply, however, is the contractor's and failure of such a group to fulfill an obligation shall not be a defense for the contractor's noncompliance.

9. A single goal for minorities and a separate single goal for women have been established. The contractor, however, is required to provide equal employment opportunity and to take affirmative action for all minority groups, both male and female, and all women, both minority and non-minority. Consequently, the contractor may be in violation of the Executive Order if a particular group is employed in a substantially disparate manner (for example, even though the contractor has achieved its goals for women generally, the contractor may be in violation of the Executive order if a specific minority group of women is under-utilized).

10. The contractor shall not use the goals and timetables of affirmative action standards to discriminate against any person because of race, color, religion, sex, or national origin.

11. The contractor shall not enter into any subcontract with any person or firm debarred from government contracts pursuant to Executive Order 11246.

12. The contractor shall carry out such sanctions and penalties for violation of these specifications and of the Equal Opportunity Clause, including suspension, termination and cancellation of existing subcontracts as may be imposed or ordered pursuant to Executive Order 11246, as amended, and its implementing regulations, by the Office of Federal Contract Compliance Programs. Any contractor who fails to carry out such sanctions and penalties shall be in violation of these specifications and Executive Order 11246, as amended.

13. The contractor, in fulfilling its obligations under these specifications, shall implement specific affirmative action steps, at least as extensive as those standards prescribed in paragraph (7) of these specifications, so as to achieve maximum results from its efforts to ensure equal employment opportunity. If the contractor fails to comply with the requirements of the Executive Order, the implementing regulations, or these specifications, the Director shall proceed in accordance with 41 CFR 60-4.8.

14. The contractor shall designate a responsible official to monitor all employment related activity to ensure that the company EEO policy is being carried out, to submit reports relating to the provisions hereof as may be required by the government and to keep records. Records shall at least include for each employee the name, address, telephone numbers, construction trade, union affiliation if any, employee identification number when assigned, social security number, race, sex, status (e.g., mechanic, apprentice, trainee, helper, or laborer), dates of changes in status, hours worked per week in the indicated trade, rate of pay, and locations at which the work was performed. Records shall be maintained in an easily understandable and retrievable form; however, to the degree that existing records satisfy this requirement, contractors shall not be required to maintain separate records.

15. Nothing herein provided shall be construed as a limitation upon the application of other laws which establish different standards of compliance or upon the application of requirements for the hiring of local or other area residents (e.g., those under the Public Works Employment Act of 1977 and the Community Development Block Grant Program).

GUIDANCE FOR UTILIZATION OF SMALL, MINORITY AND WOMEN BUSINESS ENTERPRISES REQUIREMENTS

The North Dakota Drinking Water State Revolving Fund (DWSRF) and Clean Water State Revolving Fund (CWSRF), receive federal funds from the U.S. Environmental Protection Agency (EPA) to provide low interest rate loans to finance water infrastructure projects. As a condition of federal grant awards, EPA regulations require that loan recipients and sub-recipients (i.e., prime contractors and subcontractors) make a good-faith effort to award a fair share of work to DBE's who are minority business enterprises (MBE's) and women's business enterprises (WBE's). DBE requirements can be found in 40 CFR Part 33.

To ensure compliance with EPA's DBE requirements, both **Project Owners (Loan Recipients)** and **Prime Contractors must** undertake the good faith efforts to provide opportunities for DBE companies to participate in procurements. EPA regulations require evidence of the demonstration of the six good faith efforts in trying to achieve the DBE participation goals. DWSRF and CWSRF negotiated DBE participation goals with EPA of **2%** for MBEs and **3%** for WBEs. The DBE goals are not a quota.

Good Faith Efforts – 40 CFR 33.301

The following good faith efforts which apply to the procurement categories involving EPA financial assistance funds can be found in **40 CFR, Subpart C, Part 33** of EPA's Disadvantaged Business Enterprise Program Rule.

1. Ensure DBE's are made aware of contracting opportunities to the fullest extent practicable through outreach and recruitment activities.
2. Search DBE lists for potential subcontracts/suppliers.
 - a. The DBE lists are updated frequently, so search on-line for the most current list.
 - b. Contact at least one DBE for each subcontract/supplier needed.
3. Provide notice to DBE organizations of opportunities to bid.
4. Arrange time frames for contracts and establish delivery schedules in a way that encourages and facilitates participation by DBEs in the competitive process.
5. Divide total requirements into smaller tasks or quantities and using DBE prime contractors and subcontractors when feasible to permit maximum DBE participation.
6. Encourage contracting with a consortium of DBEs when a contract is too large for one of these firms to handle individually.
7. Use the services and assistance of the Small Business Administration (SBA), Department of Transportation (DOT) and Minority Business Development Agency of the U. S. Department of Commerce.
8. If the Prime Contractor awards subcontracts, require the prime contractor to take these same Good Faith Efforts.

TO PROVIDE PROCUREMENT OPPORTUNITIES TO DBE FIRMS, THE PROJECT OWNER SHOULD:

- Conduct pre-bid meetings to inform potential bidders/contractors about DBE requirements and provide guidance in undertaking the required good faith efforts found at 40 CFR 33.301.
- When appropriate invite DBE companies to meetings, conferences, etc., to inform them of procurement opportunities.
- Use listings of certified DBEs from the U.S. Small Business Administration (SBA), North Dakota Department of Transportation (NDDOT), and EPA's Office of Small Business Programs (OSBP) etc, to solicit DBE companies as prime contractors whenever they are potential. The SBA maintains a list that can be found at the following link http://dsbs.sba.gov/dsbs/search/dsp_dsbs.cfm. The NDDOT maintains a list which can be found at the following link <http://www.dot.nd.gov/dotnet2/dbedirectory/Search.aspx>. EPA's OSBP maintains a list located on EPA's OSBP Home Page (<http://www.epa.gov/smallbusiness/>).

Procurement, Recordkeeping and Reporting

1. PROJECT OWNERS ARE REQUIRED TO:

- A. Ensure all prime contractors apply the Good Faith Efforts and submit required forms as listed below.
- B. Project Owners must require its prime contractor to pay its subcontractor for satisfactory performance no more than 30 days from the prime contractor's receipt of payment from the project owner/recipient.
40 CFR 33.302(a)
- C. Maintain copies of all DBE documentation and forms.

2. PRIME CONTRACTORS ARE REQUIRED TO:

- A. Notify the loan recipient in writing prior to any termination of a DBE subcontractor by the prime contractor. 40 CFR 33.302(b)
- B. Follow the six good faith efforts if soliciting a replacement subcontractor after a DBE subcontractor fails to complete work under the subcontract for any reason. 40 CFR 33.302(c)
- C. Follow the six good faith efforts for all subcontract and/or supplier procurements even if the prime contractor has achieved its fair share objectives. 40 CFR 33.302(d)

3. All SRF loan recipients are required to create and maintain a bidders list in accordance with 40 CFR, Subpart E, Part 33 of EPA's Disadvantaged Business Enterprise Program rule, (40 CFR 33.501(b)). The bidder's list must include all companies that bid/quote on prime contracts and/or bid/quote on subcontracts and supplies for SRF funded projects (including DBEs and non-DBEs). The bidder's list must include the following prime and subcontractor information (40 CFR 33.501): entity's name and the name of the person contacted; entity's mailing address, telephone number, and e-mail address; the task or material on which the entity bid/quoted, the amount and date of bid/quote; and the entity's status as an MBE/WBE or non-MBE/WBE.

4. The recipient/contractor shall supply the Department of Environmental Quality with information concerning the award of contracts to MBE/WBE's upon request. This may include copies of subcontracts, purchase orders, and receipts which verify contract amounts and utilization.

5. Bidders/offerors shall demonstrate compliance with good faith efforts in order to be deemed responsible. Demonstration of compliance includes completion of the following MBE/WBE Subcontractor Solicitation Information form and inclusion in the bid envelope. The bidder must solicit quotes from at least three certified MBEs and three certified WBEs and include the required information on the form. The bidder must also include similar information on the form for non MBE/WBE subcontractors from which quotes were received for the same work offered to MBE/WBEs.

MBE/WBE SUBCONTRACTOR SOLICITATION INFORMATION

Name, Address, & Phone Number of Subcontractor Contacted	Date that Quote was Requested	Description of Work Offered	Date of Follow-up & Person Contacted	Amount of Quote or Reason Not Quoting	Quote Accepted? If not, List Reason for Rejection*	Indicate if MBE/WBE or non MBE/WBE

* Use additional sheets if necessary.

The undersigned hereby certifies that the above information is true and correct.

The contractor shall supply copies of subcontracts, purchase orders, and receipts which verify contract amounts and utilization of MBE/WBE subcontractors following contract award.

By:

Contractor

Signature

Title

Date

CERTIFICATION REGARDING DEBARMENT, SUSPENSION, AND OTHER RESPONSIBILITY MATTERS

A. INSTRUCTIONS

Under Executive Order 12549, an individual or organization debarred or excluded from participation in Federal assistance or benefit programs may not receive any assistance award under a Federal program, or a subagreement thereunder for \$25,000 or more. The status of prospective individuals or organizations can be checked at:

<http://www.sam.gov>

Accordingly, each prospective recipient of an EPA grant, loan, or cooperative agreement and any contract or subagreement participant thereunder must complete the attached certification or provide an explanation why they cannot complete the certification. For further details, see 40 CFR 32.510, Participants Responsibilities.

B. WHERE TO SUBMIT

A prospective prime contractor must submit a completed certification or explanation to the project owner for the project. Each prospective subcontractor must submit a completed certification or explanation to the prime contractor for the project.

C. HOW TO OBTAIN FORMS

Additional forms may be obtained from the State and may be reproduced.

United States Environmental Protection Agency
Washington, DC 20460

Certification Regarding Debarment, Suspension, and Other Responsibility Matters

The prospective participant certifies to the best of its knowledge and belief that it and its principals:

(a) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency;

(b) Have not within a three year period preceding this proposal been convicted of or had a civil judgement rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State, or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;

(c) Are not presently indicted for or otherwise criminally or civilly charged by a government entity (Federal, State, or local) with commission of any of the offenses enumerated in paragraph (1)(b) of this certification; and

(d) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State, or local) terminated for cause or default.

I understand that a false statement on this certification may be grounds for rejection of this proposal or termination of the award. In addition, under 18 USC Sec. 1001, a false statement may result in a fine of up to \$10,000 or imprisonment for up to 5 years, or both.

Typed Name & Title of Authorized Representative

Signature of Authorized Representative

Date

____ I am unable to certify to the above statements. My explanation is attached.

PROHIBITION AGAINST LISTED VIOLATED FACILITIES

A. REQUIREMENTS

(1) To comply with all the requirements of section 114 of the Clean Air Act, as amended (42 U.S.C. 1857, et seq., as amended by Pub. L. 92-604) and section 308 of the Clean Water Act (33 U.S.C. 1251, as amended), respectively, which relate to inspection, monitoring, entry, reports, and information, as well as other requirements specified in section 114 and section 308 of the Air Act and the Water Act, respectively, and all regulations and guidelines issued thereunder before the award of this contract.

(2) That no portion of the work required by this prime contract will be performed in a facility listed on the Environmental Protection Agency list of violating facilities on the date when this contract was awarded unless and until the EPA eliminates the name of such facility or facilities from the listing.

(3) To use his best efforts to comply with clean air and clean water standards at the facilities in which the contract is being performed.

(4) To insert the substance of the provisions of this clause, including this paragraph (4), in any nonexempt subcontract.

B. DEFINITIONS

(1) Air Act means the Clean Air Act, as amended (42 U.S.C. 1857 et seq.).

(2) Water Act means the Clean Water Act, as amended (33 U.S.C. 1251 et seq.).

(3) Clean Air Standards means any enforceable rules, regulations, guidelines, standards, limitations, orders, controls, prohibitions, or other requirements which are contained in, issued under, or otherwise adopted under the Air Act or Executive Order 11738, an applicable implementation plan as described in section 110 (d) of the Air Act (42 U.S.C. 1857c-5(d)), an approved implementation procedure or plan under section 111 (c) or section 111(d), or an approved implementation procedure under section 112(d) of the Air Act (42 U.S.C. 1857c-7(d)).

(4) Clean Water Standards means any enforceable limitation, control, condition, prohibition, standard, or other requirement which is promulgated under the Water Act or contained in a permit issued to a discharger by the Environmental Protection Agency or by a State under an approved program, as authorized by section 402 of the Water Act (33 U.S.C. 1342), or by a local government to ensure compliance with pretreatment regulations as required by section 307 of Water Act (33 U.S.C. 1317).

(5) Compliance means compliance with clean air or water standards. Compliance shall also mean compliance with a schedule or plan ordered or approved by a court of competent jurisdiction, the Environmental Protection Agency in accordance with the requirements of the Air Act or Water Act and regulations.

(6) Facility means any building, plant, installation, structure, mine, vessel, or other floating craft, location, or site of operations, owned, leased, or supervised by a contractor or subcontractor, to be used in the performance of a contract or subcontract. Where a location or site of operations contains or includes more than one building, plant, installation, or structure, the entire location or site shall be deemed to be a facility except where the Director, Office of Federal Activities, Environmental Protection Agency, determines that independent facilities are located in one geographical area.

PROHIBITION ON CERTAIN TELECOMMUNICATIONS AND VIDEO SURVEILLANCE SERVICES OR EQUIPMENT

This term and condition implements 2 CFR 200.216 and is effective for obligations and expenditures of EPA financial assistance funding on or after 8/13/2020.

As required by 2 CFR 200.216, EPA recipients and subrecipients, including borrowers under EPA funded revolving loan fund programs, are prohibited from obligating or expending loan or grant funds to procure or obtain; extend or renew a contract to procure or obtain; or enter into a contract (or extend or renew a contract) to procure or obtain equipment, services, or systems that use covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system. As described in Public Law 115-232, section 889, covered telecommunications equipment is telecommunications equipment produced by Huawei Technologies Company or ZTE Corporation (or any subsidiary or affiliate of such entities). Recipients, subrecipients, and borrowers also may not use EPA funds to purchase:

- a. For the purpose of public safety, security of government facilities, physical security surveillance of critical infrastructure, and other national security purposes, video surveillance and telecommunications equipment produced by Hytera Communications Corporation, Hangzhou Hikvision Digital Technology Company, or Dahua Technology Company (or any subsidiary or affiliate of such entities).
- b. Telecommunications or video surveillance services provided by such entities or using such equipment.
- c. Telecommunications or video surveillance equipment or services produced or provided by an entity that the Secretary of Defense, in consultation with the Director of the National Intelligence or the Director of the Federal Bureau of Investigation, reasonably believes to be an entity owned or controlled by, or otherwise connected to, the government of a covered foreign country.

Consistent with 2 CFR 200.471, costs incurred for telecommunications and video surveillance services or equipment such as phones, internet, video surveillance, and cloud servers are allowable except for the following circumstances:

- a. Obligating or expending EPA funds for covered telecommunications and video surveillance services or equipment or services as described in 2 CFR 200.216 to:
 - (1) Procure or obtain, extend or renew a contract to procure or obtain;
 - (2) Enter into a contract (or extend or renew a contract) to procure; or
 - (3) Obtain the equipment, services, or systems.

Certain prohibited equipment, systems, or services, including equipment, systems, or services produced or provided by entities identified in section 889, are recorded in the System for Award Management exclusion list.

BUILD AMERICA, BUY AMERICA (BABA) REQUIREMENTS

The Contractor acknowledges that it understands the goods and services under this Agreement are being funded with federal monies and have statutory requirements commonly known as “Build America, Buy America;” that requires all of the iron and steel, manufactured products, and construction materials used in the project to be produced in the United States (“Build America, Buy America Requirements”) including iron and steel, manufactured products, and construction materials provided by the Contractor pursuant to this Agreement. The Contractor hereby represents and warrants to and for the benefit of the Owner and Funding Authority (a) the Contractor has reviewed and understands the Build America, Buy America Requirements, (b) all of the iron and steel, manufactured products, and construction materials used in the project will be and/or have been produced in the United States in a manner that complies with the Build America, Buy America Requirements, unless a waiver of the requirements is approved, and (c) the Contractor will provide any further verified information, certification or assurance of compliance with this paragraph, or information necessary to support a waiver of the Build America, Buy America Requirements, as may be requested by the Owner or the Funding Authority. Notwithstanding any other provision of this Agreement, any failure to comply with this paragraph by the Contractor shall permit the Owner or Funding Authority to recover as damages against the Contractor any loss, expense, or cost (including without limitation attorney’s fees) incurred by the Owner or Funding Authority resulting from any such failure (including without limitation any impairment or loss of funding, whether in whole or in part, from the Funding Authority or any damages owed to the Funding Authority by the Owner). If the Contractor has no direct contractual privity with the Funding Authority, as a lender or awardee to the Owner for the funding of its project, the Owner and the Contractor agree that the Funding Authority is a third-party beneficiary and neither this paragraph (nor any other provision of this Agreement necessary to give this paragraph force or effect) shall be amended or waived without the prior written consent of the Funding Authority.

Sample Certification for BABA

The following information is provided as a sample letter of certification for BABA compliance. Documentation must be provided on company letterhead.

Date

Company Name

Company Address

City, State Zip

Subject: Build America, Buy America Certification for Project (XXXXXXXXXX)

I, (company representative), certify that the following products and/or materials shipped/provided to the subject project are in full compliance with the Build America, Buy America requirement as mandated in EPA's State Revolving Fund Programs.

Item, Products and/or Materials:

1. Xxx
2. Xxx
3. Xxx

Such process took place at the following location:

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

Signed by company representative

Sample Step Certification for BABA

The following information is provided as a sample letter of step certification for BABA compliance. Documentation must be provided on company letterhead.

Date

Company Name

Company Address

City, State Zip

Subject: Build America, Buy America Step Certification for Project (XXXXXXXXXX)

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

Item, Products and/or Materials:

1. Xxx
2. Xxx
3. Xxx

Such process took place at the following location:

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

Signed by company representative

FIELD ORDER NO.: [Number of Field Order]

Owner: _____ Owner's Project No.: _____
Engineer: _____ Engineer's Project No.: _____
Contractor: _____ Contractor's Project No.: _____
Project: _____
Contract Name: _____
Date Issued: _____ Effective Date of Field Order: _____

Contractor is hereby directed to promptly perform the Work described in this Field Order, issued in accordance with Paragraph 11.04 of the General Conditions, for minor changes in the Work without changes in Contract Price or Contract Times. If Contractor considers that a change in Contract Price or Contract Times is required, submit a Change Proposal before proceeding with this Work.

Reference:

Specification Section(s): _____

Drawing(s) / Details (s): _____

Description:

[Description of the change to the Work]

Attachments:

[List documents supporting change]

Issued by Engineer

By: _____

Title: _____

Date: _____

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DIVISION 01 GENERAL REQUIREMENTS

DIVISION 1 - GENERAL REQUIREMENTS
SECTION 01010 SUMMARY OF WORK

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes:
 - 1. References.
 - 2. Project Description.
 - 3. Contractor's Use of Site and Owner Occupancy.
 - 4. Work Schedule
 - 5. Access to Streets and Highways.
 - 6. Access to Businesses and Property Owners.
 - 7. Coordination.
 - 8. Public Convenience.
 - 9. Utility Coordination.
 - 10. Connections to Existing Water Mains.
 - 11. Startup
 - 12. Description of Work

1.02 REFERENCES

- A. Latest edition of Manual on Uniform Traffic Control Devices for Streets and Highways by the U.S. Department of Transportation Federal Highway Administration.

1.03 PROJECT DESCRIPTION

- A. The New Town 2025 Street & Utility Improvements project will continue the effort to replace inadequate and aging infrastructure as part of the capital improvements plan. The Work is comprised of one contract. All bids shall be on unit price basis. Refer to the Agreement for further description of the Work comprising Contract No. 1.
- B. Project Funding
 - 1. Funding for this Project is through the Drinking Water State Revolving Fund (DWSRF) Program administered by the North Dakota Department of Environmental Quality (NDDEQ). All aspects of this project will follow the requirements of the DWSRF Program.

1.04 CONTRACTOR USE OF SITE AND PREMISES

- A. Limit use of Site and premises to allow:
 - 1. Owner occupancy.
 - 2. Work by Others.

1.05 OWNER OCCUPANCY REQUIREMENTS

- A. Cooperate with Owner to minimize conflict and to facilitate Owner's operations.

Schedule all Work to accommodate this requirement. No interruption will be permitted which adversely affects the degree of service the Owner provides. Contractor shall provide temporary facilities and make temporary modifications as necessary to keep the existing facilities in operation during the construction period.

- B. **Work requiring planned facility shutdown**, once undertaken, **must** be substantially completed to permit restart of facility within scheduled time. Critical Work elements may require continuous, non-stop work during or throughout the night to complete within schedule.
- C. Pre-plan, schedule, coordinate, and stage for required materials, manpower, contractors, subcontractors, etc. to complete critical elements of Work.
- D. Existing materials and equipment removed and not reused as part of the Work, shall remain the OWNER's property, except any item the Owner does not wish to salvage. Refer to the Drawings for particular details on those items that the Owner requires for salvage. Any items the Owner does not elect to salvage shall become property of the Contractor. The Contractor shall properly dispose of these items at no cost to Owner.

1.06 WORK SCHEDULE

- A. Coordinate construction schedule and operations with Owner and Engineer to accommodate Owner occupancy requirements.
- B. Construct Work in logical sequence and stages to accommodate the priority of critical Work and Milestones indicated in the Agreement.

1.07 ACCESS TO STREETS AND HIGHWAYS

- A. The Contractor shall be responsible for all construction signage, flagging, and protection of the public. Signage shall conform to requirements as set forth in the Drawings and Manual on Uniform Traffic Control Devices. Signage for each area to be constructed shall be approved by the Engineer and Owner and in place prior to the start of construction in that area.
- B. Whenever construction is stopped due to inclement weather, weekends, holidays or other reasons, suitable signing, protection of public, and access shall be provided for all property owners at all times.

1.08 ACCESS FOR PROPERTY OWNERS

- A. Contractor shall maintain driveway access or altered means of access to existing facilities affected by construction progress for the duration of the construction period. Cost of providing, maintaining, and removing access roadways shall be incidental to the project.
- B. Maintain access at all times when construction is stopped due to inclement weather, weekends, holidays, or other reasons.

- C. For public protection, provide fencing and barricades near excavations and construction activities in business, private property, and public property access areas.
- D. Provide fencing for the entire open trench length as well as the ends of the open trench.

1.09 COORDINATION

- A. Coordinate work of the various Sections of Specifications to assure efficient and orderly sequence of installation of construction elements, with provisions for accommodating items installed at a later date.
- B. Verify characteristics of elements of interrelated materials are compatible; coordinate work of various Sections having interdependent responsibilities for installing, connection to, and placing in service, such materials.

1.10 PUBLIC CONVENIENCE

- A. The Contractor shall perform Work and operate vehicles and construction equipment (a) in the way that causes the least practicable interference with pedestrians and local traffic, (b) without becoming a hazard to the public, and (c) without interfering with overhead utilities. When transporting materials, vehicles shall not be loaded beyond the capacity set by their manufacturers or applicable Laws. When crossing sidewalks, curbs or landscaped areas, the Contractor shall protect them from damage.
- B. If any road is closed, the Contractor shall maintain traffic over, through or around the Work with the maximum practical convenience, for the full twenty-four (24) hours of each day of the Contract, whether or not Work has ceased temporarily. The Contractor shall notify the Engineer before starting the Work of any construction operations that might in any way inconvenience or endanger traffic so that the necessary arrangements may be determined.
- C. The convenience of the local residents and walking path along the Work shall be provided for in a reasonable, adequate and satisfactory manner. Unless otherwise provided, where existing roads are not available for use as detours, all local and foot traffic shall be permitted to pass through the Work as detailed on the plans.
- D. The Contractor shall provide and maintain in a manner approved and deemed practicable by the Engineer such temporary roads as may be necessary to provide convenient access to driveways, buildings, or other property abutting the Work.
- E. No material or other obstructions shall be placed within fifteen (15) feet of a fire hydrant, valve, manhole, etc., or any closer than it is permitted by local Laws. The Contractor shall not operate valves or otherwise interfere with the operation of the Owner's water system or the water system of any other public utility, without first securing the necessary approvals and permits in writing.

- F. Where construction or local traffic is being permitted to pass through the Work, the Contractor shall provide a smooth, even surface that will provide a satisfactory passageway for use of traffic. The Contractor shall maintain satisfactory dust control measures at all times.
- G. The Contractor shall give to the Engineer and affected owners, two (2) Business days advance notice of Work on or across private driveways. Interference from such Work shall be minimized by restoring service as soon as possible.

1.11 UTILITY COORDINATION

- A. Contractor shall, as provided in the General Conditions, notify all local utilities and pipeline companies including, but not limited to, the following when prosecution of the Work may affect them.

<u>Type of Utility</u>	<u>Utility or Company</u>
(ALL)	North Dakota One Call (1-800-795-0555)

Unless otherwise specified, utilities shall be notified at least 48 hours prior to excavating and backfilling near underground utilities or pole lines. Excavating near utilities shall be done by hand until the utility is exposed. Contractor shall coordinate with the utility if they require their representative to be onsite during excavating and backfilling.

1.12 CONNECTIONS TO EXISTING WATER MAINS

- A. Contractor shall make all connections to existing water mains as indicated on the Drawings. In each case, Contractor shall receive permission from Owner at least two weeks prior to undertaking connections. Contractor shall protect facilities against deleterious substances and damage.
- B. Connections to existing water mains shall be thoroughly planned in advance, and all required equipment, materials, and labor shall be on hand at the time of undertaking the connections. Work shall proceed continuously (around the clock) if necessary or requested by Owner or Engineer to complete connections in the minimum time. Operation of valves or other appurtenances on existing water mains, when required shall be by or under the direct supervision of the Owner.
- C. In the event that a water service interruption affects a customer who for legitimate reasons cannot be without service for the time in question, the Contractor shall either reschedule the work to a time the customer can be without service or arrange to supply temporary service for said customer, all at no additional cost to the Owner.

1.13 STARTUP

- A. Equipment startup will require the Contractor to clean, disinfect, fill, pressurize, test, etc newly installed or modified equipment prior to placing online.

- B. Contractor shall be fully responsible for all preparation leading up to equipment startup including disposal of all cleaning solutions
- C. The Contractor must properly dispose of chlorinated water or other disinfecting solution.
 - 1. Chlorinated water must be de-chlorinated.
 - 2. De-chlorinated water will not be disposed of on the ground.
- D. Refer to individual equipment specification regarding startup requirements.
- E. Contractor shall coordinate all startup activities to comply with all permits, licenses, contracts, and owner requirements.

1.14 DESCRIPTION OF WORK FOR CONTRACT NO. 1 – GENERAL CONSTRUCTION

- A. Front Ends
 - 1. Bidding Documents – All Sections.
 - 2. Contract Documents – All Sections.
- B. Division 1 – General Requirements – All Sections.
- C. Division 2 – Site Work – All Sections.
- D. Drawings:
 - 1. Sheets G1-G7.
 - 2. Sheets C1-C66.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

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DIVISION 1 - GENERAL REQUIREMENTS
SECTION 01015 – SPECIAL PROVISIONS

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes:
 - 1. Reclaimed Asphalt Uses.
 - 2. Uniflanges.
 - 3. Utility Location and Protection.
 - 4. Erosion Control.
 - 5. Dust Control.
 - 6. Dewatering.
 - 7. Temporary Access.
 - 8. Temporary Water Service
 - 9. Excavation of Rock, Coal and Shale

The following Special Provisions shall be incorporated into the Work:

1.02 RECLAIMED ASPHALT BLENDING FOR USE AS STREET BASE

- A. The Contractor shall reclaim, mill, or crush all asphalt pavement designated to be removed.
- B. The Contractor shall have the following material options for use as street base:
 - 1. 100% virgin Type A3 Class 5 aggregate material.
 - 2. Uniformly blended mixture of virgin Type A3 Class 5 aggregate material with reclaimed asphalt millings at a maximum blend of 50% millings.
 - a. Contractor must use NDDOT approved methods and equipment for mixing virgin Class 5 with reclaimed asphalt.
 - b. The use of graders, maintainers, track hoes, and similar equipment to mix class 5 and reclaimed asphalt is not approved.
- C. The Contractor shall stockpile all reclaimed, milled, and/or crushed asphalt that is not used for blended base at a location approved by the Owner. All costs associated with reclaiming, milling, crushing, removing, loading, hauling, and stockpiling of the removed asphalt pavement is covered by the reclaim and salvage bituminous pavement bid item.
- D. Payment for blended base shall be the same as 100% Type A3 Class 5 aggregate material.

1.03 RECLAIMED ASPHALT FOR USE AS GRAVEL

- A. The Contractor shall reclaim, mill, or crush all asphalt pavement designated to be removed.
- B. The Contractor shall have the option to use reclaimed asphalt instead of Type A2 Class 13 gravel material.

- C. The Contractor shall stockpile all reclaimed, milled, and/or crushed asphalt that is not used for blended base at a location approved by the Owner. All costs associated with reclaiming, milling, crushing, removing, loading, hauling, and stockpiling of the removed asphalt pavement is covered by the reclaim and salvage bituminous pavement bid item.
- D. Payment for reclaimed asphalt shall be the same as 100% Type A2 Class 13 gravel material.

1.04 UNIFLANGES

- A. Uniflanges are not permitted for installation on piping exceeding internal pressures of 40 psi.

1.05 UTILITY LOCATION AND PROTECTION

- A. The General Contractor shall be responsible for coordinating with all utility companies for location of buried utilities prior to excavation. All measures necessary to locate and protect utilities during construction shall be taken. All damage to utilities resulting from construction activities shall be the sole responsibility of the Contractor performing the Work and be repaired at such Contractor's expense.
- B. All bracing for light/utility poles required during open excavations shall be coordinated by and the responsibility of the General Contractor. All costs of equipment, vehicles, personnel, or private service shall be incidental to the cost of the project.

1.06 EROSION CONTROL

- A. Contractor shall prepare a Stormwater Pollution Plan (SWPPP) and obtain a North Dakota Pollutant Discharge Elimination System (NDPES) permit from the North Dakota Department of Environmental Quality (NDDEQ).
- B. Contractor is solely responsible for all erosion control permitting and costs. Measures (silt fence, drainage swales, bales, etc.) shall be established at the beginning of construction and maintained during the entire length of construction to control erosion. A SWPPP will be submitted for review before commencement of Work. The SWPPP plan will be updated at the Construction Progress Meetings. Areas that are subject to severe erosion and/or sedimentation are to receive additional erosion control measures, as directed by Engineer.
- C. Contractor shall be responsible for maintenance of erosion and sediment resulting from construction within the project limits. All land-disturbing activities shall be coordinated and conducted so as to minimize the size of the area to be exposed at any one time and to minimize the time of exposure. All land-disturbing activities shall also be coordinated and conducted so as to minimize off-site sedimentation damage.
- D. Contractor shall be responsible for periodically cleaning out and disposing of all

sediment off-site during and at the completion of the project. Additional on-site protection may be needed so that sediment is not permitted to leave the project boundaries.

- E. During construction care will be taken to prevent spills from occurring to prevent any impact to the groundwater resources.
- F. Any waste material generated during construction shall be disposed of properly and not placed in identified floodway areas.
- G. The Contractor is responsible for removing the temporary erosion and sediment control devices and verifying all storm drainage structures are clean, including flumes, pipes, and ditches once final stabilization has occurred. Maintain temporary erosion control devices until permanent facilities are constructed and final stabilization is in place and performing adequately.

1.07 DUST CONTROL

- A. Contractor shall take all measures necessary to control dust within the project limits. Contractor shall keep all haul roads/streets and all streets adjacent to the project clean and free of dirt and debris. These streets will be subject to dust control measures as requested by Engineer or Owner during construction.
- B. Streets that are disturbed by construction and have a temporary gravel surface shall have dust controlled and frequencies of water application shall be conveyed by the Engineer or Owner. Contractor is responsible for the application of all dust control measures, incidental to the contract. Owner will supply the water.

1.08 DEWATERING

- A. The Contractor shall provide and maintain adequate dewatering equipment to remove and dispose of all water entering excavations and trenches at no additional cost to Owner. Excavations and trenches shall be maintained dry during sub-grade preparation and continually thereafter until the structure is built or the pipe is installed (to the extent that no damage from hydrostatic pressure, flotation, or other detrimental effects will result).
- B. All excavations or trenches below groundwater elevation shall be dewatered by lowering the water surface 12 inches below the bottom of the excavation. Surface water shall be diverted or otherwise prevented from entering excavations or trenches.
- C. The Contractor shall obtain all dewatering permits to remove and dispose of water at no additional cost to Owner. The permits shall be obtained prior to the start of construction. Pumping to dewater is subject to the Water Appropriations Act.
- D. All costs associated with dewatering shall be incidental to the Contract.

1.09 TEMPORARY ACCESS

- A. The Contractor shall provide access to residents during construction. If at times

during construction phases this is not possible, the Contractor shall notify the Engineer and property owners prior to disruption of access to coordinate and make alternate arrangements.

1.10 TEMPORARY WATER SERVICE

- A. The Contractor shall maintain water services to all residents and businesses at all times except for short periods when making a new connection. The Contractor shall notify the residents a minimum of 24 hours in advance and businesses a minimum of 48 hours in advance when water service will be disconnected.
- B. The Contractor must provide for continuous water service. Any method used must have the approval of the Engineer. The Contractor shall set up temporary water supply using polyethylene pipe or another pipe approved by the Engineer. Rubberized garden hose may not be used.

1.11 EXCAVATION OF ROCK, COAL, AND SHALE

- A. Rock, Coal, and/or Shale may be encountered during excavation and installation of utilities. The contractor shall be required to excavate, remove, and dispose of rock, coal, and shale with non-explosive means and methods. Refer to the geotechnical report in Appendix A for more information. The Contractor or a Sub-contractor may perform additional boring and testing at their own expense. All cost incurred for additional boring and testing shall be incidental to the project bid price.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

DIVISION 1 - GENERAL REQUIREMENTS
SECTION 01025 - MEASUREMENT AND PAYMENT

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Measurement and payment criteria applicable to the Work.
 - 2. Defect assessment and non-payment for rejected Work.

- B. Related Sections include; but are not limited to:
 - 1. Section 00100 – Instructions to Bidders.
 - 2. Section 00410 – Bid Form.
 - 3. Section 00700 – General Conditions.
 - 4. Section 00800 – Supplementary Conditions.
 - 5. Section 01010 – Summary of Work.

1.02 AUTHORITY

- A. Items of Work described herein are specifically listed in the Bid Form for separate measurement and payment.

- B. The Engineer and Owner will take all measurements and compute quantities accordingly.

- C. The Engineer and Owner will make final determinations regarding the completeness of Work, and subsequent payment of such Work.

- D. Contractor shall assist by providing necessary supporting data as required.

1.03 UNIT QUANTITY BID ITEMS

- A. Items and quantities indicated in the Contract Documents are for Bidding and Contract purposes. Quantities and measurements supplied or placed in the Work as verified and accepted by the Engineer determine payment. Provide the required items at the sum/price contracted.

- B. If the actual Work requires more or fewer quantities than those quantities indicated, provide the required quantities at the unit prices contracted.

- C. No other items of Work required by the Drawings or Specifications shall be measured or paid for separately, but shall be included as part of the listed unit price to which the Work pertains. Failure to list all such related Work in the following descriptions of unit price items shall not invalidate this stipulation nor relieve the Contractor from his obligation for such Work.

- D. Bid quantities have typically been rounded for convenience of Bidding. Final payment will be based on the actual quantities of Work items completed except for Work items specifically stated to be paid for at plan quantity.

- E. Measurement will be made of actual quantities approved, installed, and accepted subject to limitations outlined as follows:
1. New concrete, asphalt, gravel, sidewalk, driveways, and topsoil shall be formed, placed, graded, and finished to complete restoration in accordance with the Drawings and Specifications.
 2. Quantities of surface replaced will be based on the construction limit boundary shown on the Drawings.
 3. No payment will be made for removals or replacements outside the specified Work limits as shown on the Drawings.
 4. Extra surface restoration shall be paid for only when prior written authorization is given by Engineer.
 5. An additional percentage has been added to the following restoration bid quantities listed in the Bid Form.
 - a. Seeding and Maintenance – 10 percent.

1.04 PAYMENT

- A. Payment Includes: Full compensation for all required mobilization, bonding, insurance, submittals, labor, skill, products, tools, equipment, transportation, services, incidentals, erection, clean-up, restoration, application and installation of the Work; submittal of shop drawings, product data and operation and maintenance data or manuals, record data, start-up and system demonstration, training where required; warranties, overhead and profit.
- B. Final payment for Work governed by unit prices will be made on the basis of the actual measurements and quantities accepted by the Engineer and Owner, multiplied by the unit price for Work incorporated in or made necessary by the Work.

1.05 DEFECT ASSESSMENT

- A. Replace the Work or portions of the Work not conforming to specified requirements at no additional cost to the Owner.
- B. If, in the opinion of the Engineer, it is not practical to remove and replace the Work, the Engineer will direct one of the following remedies:
1. The defective Work may remain, but the price will be adjusted to a new price at the discretion of the Engineer and Owner.
 2. The defective Work will be partially repaired to the satisfaction of the Engineer and Owner, and the price will be adjusted at the discretion of the Engineer and Owner.
- C. The authority of the Engineer and Owner to assess the defect and determine payment adjustment is final.

1.06 NON-PAYMENT FOR REJECTED PRODUCTS

- A. Payment will not be made for any of the following:
1. Products wasted or disposed of in a manner that is not acceptable.
 2. Products determined as unacceptable before or after placement.
 3. Products not completely unloaded from the transporting vehicle.
 4. Products placed beyond the lines and levels of the required Work.

5. Products remaining on hand after completion of the Work.
6. Loading, hauling, and disposing of rejected Products.

1.07 DESCRIPTION OF UNIT PRICES

- A. BONDING AND INSURANCE; lump sum (l.s.):
 1. This item shall consist of all bonding and insurance for all Work. The bonding and insurance shall be limited to three percent (3%) of the total Contract Bid Price.
- B. MOBILIZATION; lump sum (l.s.):
 1. This item shall consist of all Work and operations, including, but not limited to, those necessary for the movement of personnel, equipment, supplies, and incidentals to and from the Project Site; for the establishment and subsequent removal of all offices and storage facilities, Contractor's buildings, and other facilities necessary for Work on the project; and for all licenses, fees, and permits; and for all other Work and operations which must be performed, or costs incurred, prior to beginning and after completion of Work on the various items on the Project Site.
 2. When partial payments are made on the contract, payment for mobilization will be made according to the following schedule:
 - a. When 5 percent of the original contract amount is earned, 25 percent of the amount bid for mobilization, or 1-½ percent of the original contract amount, whichever is less, will be paid.
 - b. When 10 percent of the original contract amount is earned, 50 percent of the amount bid for mobilization, or 5 percent of the original contract amount, whichever is less, will be paid.
 - c. When 25 percent of the original contract amount is earned, 60 percent of the amount bid for mobilization, or 6 percent of the original contract amount, whichever is less, will be paid.
 - d. When 65 percent of the original contract amount is earned, 90 percent of the amount bid for mobilization, or 9 percent of the original contract amount, whichever is less, will be paid.
 - e. When 80 percent of the original contract amount is earned, 100 percent of the amount bid for mobilization, or 10 percent of the original contract amount, whichever is less, will be paid.
 3. Upon completion of all Work on the Project, payment of any amount bid for mobilization in excess of 10 percent of the total contract amount will be paid.
- C. EROSION CONTROL/SWPPP; lump sum (l.s.):
 1. Price includes developing, submitting, purchasing, and complying to the required erosion control plan and/or Storm Water Pollution Prevention Plan (SWPPP) procedures. Price includes furnishing, installing, and removing erosion measures devices including anchors, stakes, staples, non-biodegradable components. Unit price also includes cost associated with equipment, labor, soil preparation, backfill, compaction, maintenance and replacement of materials; temporary pumping, treatment, water quality testing; and incidentals necessary to complete the work.
- D. TRAFFIC CONTROL; lump sum (l.s.):
 1. Price includes all costs for furnishing, installing, maintaining, and removing

all necessary traffic control devices such as temporary fencing, barricades and warning signs for the Work as set forth in the latest revision of the Manual of Uniform Traffic Control Devices and "Standard Highway Signs" and as described on the plans, in the specifications or as directed by the Engineer. Lump sum price includes maintaining access to all users including local traffic, safety fencing, drums, cones, and conformance with North Dakota D.O.T. Provided all traffic control devices have been properly installed and maintained, payment for this item will be as follows:

- a. Percent payment will be equal to percent of project completion. When substantial completion has been met as determined by the engineer, 100 percent of the traffic control will be paid.

E. REMOVAL QUANTITIES:

1. Unit prices include all costs for labor, material, and equipment for reclaiming, milling, crushing, removing, stockpiling, protecting, transporting, disposing and/or salvaging of:
 - a. bituminous pavement, square yard (s.y.),
 - b. concrete sidewalk, square foot (s.f.),
 - c. concrete driveways, square foot (s.f.),
 - d. concrete curb and gutter, linear foot (l.f.),
 - e. concrete valley gutter, square foot (s.f.),
 - f. salvage topsoil – 4" thickness, square yard (s.y.),
 - g. tree – each (ea.)
2. Prices include all costs for labor, skill, tools, materials, handling, equipment, protection of existing utilities, demolition, saw cuts, brooming, cleaning before and after milling, asphalt removal, transportation; landfill charges, cleaning, incidental labor, backfilling materials and installation, repair, and maintenance of haul routes, and all other necessary appurtenances. In addition, price includes any disposal fees collected at the disposal location.
3. Measurement will be made of actual unit price removed, disposed and/or salvaged. No payment will be made for removal outside construction limits or ROW. Extra removal and disposal shall be measured and paid for only when prior written authorization is given by Engineer.

F. SITE RESTORATION:

1. HOT-MIX ASPHALT (4") FAA 43 w/ PG 58s-28 Oil; square yard (s.y.): Unit price includes all costs for labor, skill, tools, materials, handling, surveying, and equipment for; required over excavation and fill, subgrade preparation and material; prime and tack oil; aggregate, bitumen, paving and hot bituminous equipment, mix control, mix design, heating, mixing, spot leveling, curing, water, rolling, compacting, maintaining, grading, sampling, testing, materials; cleanup; disposal of waste materials; and all other appurtenances necessary to furnish and install asphalt pavement road restoration as indicated on the Drawings. Certified scale tickets for each truck and daily Mix Bitumen Cutoff Reports shall be delivered to Engineer.

Includes raising, lowering, leveling, adjusting, protecting, or removing all manhole castings, water valve risers, sewer cleanouts, storm sewer inlets, and other utilities to match new pavement profile.

2. STREET BASE – 4" CLASS 5 AGGREGATE; square yard (s.y.): Unit price includes all costs for submittals; labor, products, material and equipment for removing, transporting, and disposing of existing subgrade and base; furnishing, stockpiling, and protection; cleaning, repair, and maintenance of haul routes; labor, installation, products, material, and equipment for restoration, including blending, subgrade preparation, compaction, and testing; hauling, placing, compaction, grading, and testing of virgin class 5 aggregate and/or blended materials required for the placement of pavement surfaces.

Blended materials refer to uniform blended mixture of virgin Type A3 Class 5 aggregate material with reclaimed asphalt millings at a maximum blend of 50% millings. Refer to section 01015 Special Provisions.

3. 12" CONCRETE STABILIZATION; square yard (s.y.); Unit price includes cement stabilized base to a depth of 12 inches measured along the centerline of the road for the width of the roadway base being stabilized or as directed by the Engineer. This work shall include all equipment, labor, and materials required for testing and sampling, application of cement and water, mixing, pulverizing, shaping and compacting, inspections, curing, protection, and all other appurtenances associated for the item of work.

The quantities for cement shall be based on six (6) percent by dry unit weight of the soils. Adjustment for cement above 6" percent will be included in a change order for materials only and paid for as cement adjustment.

All costs to properly complete the work specified herein and/or shown on the Plans, including mix designs, shall be included in the prices bid for these or other items unless applicable bid items are included on the Bid Form.

Refer to section 02241 Cement Stabilized Base.

4. TEMPORARY GRAVEL; square yard (s.y.); Unit price includes all costs for submittals; labor, products, material and equipment for removing, transporting, and disposing of existing subgrade, base, and surface material; furnishing stockpiling, and protection; cleaning, repair, and maintenance of haul routes; labor, equipment, products, and material for installation and restoration, subgrade and base preparation, compaction, and testing; hauling and placing of class 13 aggregate and/or reclaimed asphalt material required for complete restoration of driving surfaces.

Contractor has the option of using reclaimed asphalt instead of Type A2 Class 13 aggregate material. Refer to section 01015 Special Provisions.

Contractor shall provide a temporary 4" (minimum) gravel driving surface within 72 hours of closing roadway. In addition, the contractor shall also provide all necessary traffic control and signage as required to close the roadway and detour traffic. After surface restoration is complete, the salvaged temporary gravel will become the property of the contractor, and shall be removed prior to the placement of aggregate base course for the roadways.

5. CONCRETE SIDEWALK – 4” Thickness; square foot (s.f.): Unit price includes all costs for labor, skill, tools, materials, handling, and equipment required for; subgrade preparation and material; furnishing, producing, loading, hauling, transportation fees, scale weighing, handling, depositing, laydown, spreading, and finishing aggregate base course; fitting, handling, and protection of existing facilities required to install: formwork, contraction joints, expansion materials, reinforcement, concrete roadway, drainage, sampling, testing, curing and protection, removal of formwork, cleaning, incidental labor, disposal of waste materials; and all other appurtenances necessary to furnish and install concrete sidewalk as indicated on the Drawings.

All concrete sidewalks behind and/or adjacent to a driveway shall be 6” thick and paid for under the 6” concrete driveway pay item.

Measurement and payment for this item will be for actual area approved, installed, and accepted. Additional sidewalk shall be measured and paid for only when prior written authorization is given by Engineer.

6. CONCRETE SIDEWALK WITH STEP – 4” Thickness; square foot (s.f.): Unit price includes all costs for labor, skill, tools, materials, handling, and equipment required for; subgrade preparation and material; furnishing, producing, loading, hauling, transportation fees, scale weighing, handling, depositing, laydown, spreading, and finishing aggregate base course; fitting, handling, and protection of existing facilities required to install: formwork, contraction joints, expansion materials, reinforcement, concrete roadway, drainage, sampling, testing, curing and protection, removal of formwork, cleaning, incidental labor, disposal of waste materials; and all other appurtenances necessary to furnish and install concrete sidewalk with step as indicated on the Drawings.

Measurement and payment for this item will be for actual area approved, installed, and accepted. Additional sidewalk with step shall be measured and paid for only when prior written authorization is given by Engineer.

7. CONCRETE DRIVEWAY – 6” Thickness; square foot (s.f.): Price includes all costs for labor, skill, tools, materials, handling, and equipment required for; subgrade preparation and material; furnishing, producing, loading, hauling, transportation fees, scale weighing, handling, depositing, laydown, spreading, and finishing aggregate base course and concrete stabilization; fitting, handling, and protection of existing facilities required to install: formwork, contraction joints, expansion materials, reinforcement, concrete roadway, drainage, sampling, testing, curing and protection, removal of formwork, cleaning, incidental labor, disposal of waste materials; and all other appurtenances necessary to furnish and install concrete driveway as indicated on the Drawings.

All concrete sidewalks behind and/or adjacent to a driveway shall be 6” thick and paid for under the 6” concrete driveway pay item.

Price also includes raising, lowering, leveling, adjusting, or removing all manhole castings, water valve risers, sewer cleanouts, storm sewer inlets, and other utilities to match new pavement profile.

Measurement and payment for this item will be for actual area approved, installed, and accepted. Additional driveway shall be measured and paid for only when prior written authorization is given by Engineer.

8. ASPHALT DRIVEWAY (4"); square yard (s.y.): Unit price includes all costs for labor, skill, tools, materials, handling, surveying, and equipment for; required over excavation and fill, subgrade preparation and material; furnishing, producing, loading, hauling, transportation fees, scale weighing, handling, depositing, laydown, spreading, and finishing aggregate base course and concrete stabilization; prime and tack oil; aggregate, bitumen, paving and hot bituminous equipment, mix control, mix design, heating, mixing, spot leveling, curing, water, rolling, compacting, maintaining, grading, sampling, testing, materials; cleanup; disposal of waste materials; and all other appurtenances necessary to furnish and install asphalt pavement road restoration as indicated on the Drawings. Certified scale tickets for each truck and daily Mix Bitumen Cutoff Reports shall be delivered to Engineer.

Includes raising, lowering, leveling, adjusting, protecting, or removing all manhole castings, water valve risers, sewer cleanouts, storm sewer inlets, and other utilities to match new pavement profile.

9. CLASS 13 AGGREGATE DRIVEWAY (6"); square yard (s.y.): Unit price includes all costs for submittals; labor, products, material and equipment for removing, transporting, and disposing of existing subgrade, base, and surface material; furnishing stockpiling, and protection; cleaning, repair, and maintenance of haul routes; labor, equipment, products, and material for installation and restoration, subgrade and base preparation, compaction, and testing; furnishing, producing, loading, hauling, transportation fees, scale weighing, handling, depositing, laydown, spreading, and finishing aggregate base course; hauling and placing of class 13 aggregate and/or reclaimed asphalt material required for complete restoration of driving surfaces.

Contractor has the option of using reclaimed asphalt instead of Type A2 Class 13 aggregate material. Refer to section 01015 Special Provisions.

10. CONCRETE CURB AND GUTTER; linear foot (l.f.): Unit price includes all costs for labor, skill, tools, materials, handling, and equipment required for; subgrade preparation and material; furnishing, producing, loading, hauling, transportation fees, scale weighing, handling, depositing, laydown, spreading, and finishing new aggregate base course and concrete stabilization; fitting, handling, and protection of existing facilities, formwork, testing of concrete and compaction, dowels, contraction joints, expansion materials, concrete, concrete testing, finish work, curing and protection, and backfilling needed to match existing surface drainage, removal of formwork, cleaning, incidental labor, disposal of waste materials; and all

other appurtenances necessary to furnish and install concrete curb and gutter as indicated on the Drawings. Price also includes raising, lowering, leveling, adjusting, or removing all manhole castings, water valve risers, sewer cleanouts, storm sewer inlets, and other utilities to match new pavement profile.

Measurement will be made of actual length approved, installed, and accepted by Engineer. Additional curb and gutter installation shall be measured and paid for only when prior written authorization is given by Engineer. No payment will be made for unauthorized curb and gutter placement.

11. CONCRETE VALLEY GUTTER – 6” Thickness; square foot (s.f.): Unit price includes all costs for labor, skill, tools, materials, handling, and equipment required for; subgrade preparation and material; furnishing, producing, loading, hauling, transportation fees, scale weighing, handling, depositing, laydown, spreading, and finishing new aggregate base course and concrete stabilization; fitting, handling, and protection of existing facilities, formwork, testing of concrete and compaction, dowels, rebar, contraction joints, expansion materials, concrete, concrete testing, finish work, curing and protection, and backfilling needed to match existing surface drainage, removal of formwork, cleaning, incidental labor, disposal of waste materials; and all other appurtenances necessary to furnish and install concrete valley gutter as indicated on the Drawings.

Measurement and payment for this item will be for actual area approved, installed, and accepted. Additional valley gutters shall be measured and paid for only when prior written authorization is given by Engineer.

12. DETECTABLE WARNING PANEL; each (ea.): Unit price includes all costs for labor, skill, tools, materials, handling, and equipment required for; subgrade preparation and material; furnishing, producing, loading, hauling, transportation fees, scale weighing, handling, depositing, laydown, spreading, and finishing aggregate base course; fitting, handling, and protection of existing facilities required to install: formwork, contraction joints, expansion materials, reinforcement, concrete roadway, drainage, sampling, testing, curing and protection, removal of formwork, cleaning, incidental labor, disposal of waste materials; and all other appurtenances necessary to furnish and install ADA concrete ramp and truncated dome as indicated on the Drawings.
13. HYDROSEEDING AND MAINTENANCE; square yards (s.y.): Price includes all costs for labor, materials, bed preparation, maintenance of topsoil, fertilizer, herbicide, seed, maintenance, watering; and incidentals for re-establishing vegetation. Measurement and payment for this item will be for actual area installed as approved and accepted by the Engineer. No payment will be made for unauthorized seeding outside the specified limits.
14. TOPSOIL RESTORATION – 4” Thickness; square yards (s.y.): Unit price includes all costs for submittals; labor, materials, products, storage, protection, and equipment for removing, stripping, loading, transporting,

and stockpiling topsoil; cleaning, removal and proper disposal of all excavated materials where necessary; cleaning, repair, and maintenance of haul routes; labor, and all else required for complete excavation and salvage of topsoil materials.

G. FURNISH AND INSTALL PIPING; linear foot (l.f.):

1. Payment for piping shall be made on the basis of the unit price bid for each type and size indicated: Measurements for payment shall be made on a horizontal plane, after installation, on the basis of the pipe stationing as determined by the installation surveys, with all stations carefully measured.

Unit price includes all cost for furnishing; handling; laying; materials; and pipe. Installation shall include miscellaneous fittings, service ways and service bends, couplings, detector tape and tracer wire, corporation stops, service saddles, plugs, caps, stainless steel bolts/straps, harnessed mechanical joints, tie rods, restrained coupling gland joints, spools, restraints and associated pipe joints; trench excavation; pipebursting; cleaning; dewatering; sheeting; shoring; bracing; pipe supports, locating existing utilities and pipe, trench boxes, protecting existing facilities, removal and disposal or abandoning of existing pipe and appurtenances; thrust blocking or reaction backing; pipe bedding materials; special placement of bedding materials; polyethylene encasement; rock removal, backfilling with job excavated material or select backfill; compaction; compaction testing; flushing; leakage and hydrostatic pressure testing; disinfection; bacteria testing; flush hydrants needed for disinfection and hydrostatic pressure testing; dechlorinating heavily chlorinated water from the disinfection of the watermain or proper disposal of heavily chlorinated water; providing temporary water services; recording as-built information; repair of utilities damaged by Contractor's operation; coordination of utility relocation by the utility company.

Unit price includes removal, transportation, and disposal of excess excavated material; fugitive dust control; import of select backfill (if excavated material is unsuitable for compaction) and cleaning, repair, and maintenance of haul routes.

Unit price for sanitary sewer main includes mandrel testing, leakage testing, post installation video inspection, and all associated work and materials. The Contractor shall provide the owner with a paper and electronic copy of the post installation inspection report, and an electronic copy of the post installation video inspection. All electronic copies shall be provided on a USB jump drive.

Payment will be made for various sizes and types listed in the Bid Form. After completion of pipe installation and backfill, but prior to completion of testing, payment for sewer and watermain installation shall be paid a maximum of 95% of the contract bid price. Remaining 5% payment for installation of the sewer and water shall not be paid in full until testing, and all other work in this pay item has been completed. Only after meeting these requirements will the bid price be paid for at 100%, minus retainage set forth in the agreement.

2. 4" THICK INSULATION; linear feet (l.f.): Unit price includes all costs for submittals; labor, products, material and equipment for installing 4" thick pipe insulation at water and sanitary sewer crossings with storm sewer, as indicated on the project plans, and also over top of sewermain and water and sewer services, as indicated on the project plans.

H. FURNISH AND INSTALL SERVICES; each (ea.):

1. Payment for water services shall be made on the basis of unit price for each type and size indicated, new or existing, includes all costs for submittals; furnishing; handling; installation; laying; products; materials; pipe; service saddle; corporation stop; curb stop; box; meter pit; fittings; couplings; and appurtenances; excavation; dewatering; sheeting; shoring; bracing; thrust blocking or reaction backing; bedding material; placement of bedding materials; backfilling with select backfill; topsoil removal and replacement; removal and disposal of existing curb stops; connections to new water main, installation of new service from the new water main to the existing curb stop; compaction; compaction testing; flushing; leakage and hydrostatic pressure testing; disinfection; recording as-built information; repair of all landscaping elements damaged during installation including but not limited to fencing, grassed areas, rock gardens, retaining walls, etc.; repair of utilities damaged by Contractor's operation; coordination of utility relocation by the utility company.

New curb stops shall be installed 3 feet behind the curb unless otherwise specified. In cases where sidewalk exists adjacent to the curb, new curb stops shall be installed 3 feet behind the sidewalk.

Payment for sanitary sewer services shall be made on the basis of unit price for each type and size indicated, new or existing, includes all cost for submittals; furnishing; handling; installation; laying; products; materials; pipe; fittings; excavation; dewatering; sheeting; shoring; bracing; bedding materials; placement of bedding materials; backfilling with select backfill; topsoil removal and replacement, maintaining sewer service, connections to new sewer main, installation of service from the new sewer main to a minimum of two feet beyond the back of curb unless otherwise specified, connections to existing services, fittings required to connect to existing piping, fittings to connect dissimilar pipe and pipe materials, thrust blocking or reaction backing, backfilling, compacting, compaction testing, recording as-built information, repair of all landscaping elements damaged during installation including but not limited to fencing, grassed areas, rock gardens, retaining walls, etc.; repair of utilities damaged by Contractor's operation; coordination of utility relocation by the utility company; flag persons, warning lights, and barricades.

Includes removal, transportation, and disposal of excess excavated material; erosion and fugitive dust control; import of select backfill; and cleaning, repair, and maintenance of haul routes.

Payment for each service will be made for the various sizes listed in the Bid Form. Transition couplings required to connect to existing services are included in this bid item, in addition, any other products necessary for connection shall be considered incidental.

- I. PRECAST CONCRETE MANHOLES AND CASTINGS; each (ea.):
1. Unit price includes all costs for labor, materials, equipment, and supervision necessary for the replacement of existing manhole structure. Price includes bypass pumping, excavation, removal and disposal of the existing manhole structure, new manhole structure, adjusting rings, casting, backfilling, compaction and restoration
- Unit price includes all cost for supplying, handling, laying, and setting materials, precast concrete, lining, manhole riser, adjusting rings, base, castings, mastic, per the Drawings and Specifications; excavation; dewatering; shoring; bracing; bedding materials; special placement of bedding materials; backfilling with job excavated or select backfill; compaction testing; pipe couplings; recording as-built information; utility repair of existing utilities damaged by contractor's operation, and coordination of utilities with utility for placement of manholes as shown on Drawings. Payment will be made for the various types listed on Bid Form.
- J. FURNISH AND INSTALL VALVES AND HYDRANTS; each (ea.):
1. Unit price includes all costs for furnishing, handling, laying, setting, materials, appropriate ends, position indicators, gaskets, jointing materials, actuators, riser, box, and cover, trench adaptors, components and fittings, restrained couplings, Dresser couplings, stainless steel bolts/rods, polyethylene encasement, retainer glands, restraints, trench excavation, dewatering, sheeting, shoring, bracing, thrust blocking or reaction backing, valve blocking or restraints, resting block or concrete pad, bedding materials, special placement of bedding materials, backfilling with job excavated material or select backfill, compaction, compaction testing, flushing, leakage and hydrostatic pressure testing, sterilization, operating wrenches, recording as-built information, utility repair of utilities damaged by Contractor's operation, and coordination of utility with utility company to furnish and install valves as shown on the Drawings.
- Includes removal, transportation, and disposal of excess excavated material; fugitive dust control; import of select backfill (if excavated material is unsuitable for compaction); and cleaning, repair, and maintenance of haul routes. The price also includes removal and disposal or abandoning of existing valves, hydrants, and appurtenances.
- Payment will be made for various sizes listed in the Bid Form. Unit price for Hydrants includes fittings, pipe, and appurtenances to reach isolation valve.
- K. FURNISH AND INSTALL FITTINGS; each (ea.):
1. Unit price includes all cost for submittals; furnishing; handling; installation; laying; products; materials; fitting; polyethylene encasement; trench excavation; dewatering; sheeting; shoring; bracing; bedding materials; special placement of bedding materials; backfilling with job excavated material or select backfill; compaction; compaction testing; flushing; leakage and hydrostatic pressure testing; sterilization; recording as-built information; utility repair of utilities damaged by Contractor's operation, and coordination of utility with utility company to furnish and install fittings as shown on the Drawings.

Includes removal, transportation, and disposal of excess excavated material; fugitive dust control; import of select backfill (if excavated material is unsuitable for compaction); and cleaning, repair, and maintenance of haul routes.

This bid item shall include all crosses, tees, reducers, bends, and other fittings necessary to connect pipes and valves. This item shall also include all additional fittings required to reroute pipelines around existing utilities in such cases where the utility cannot be relocated.

All other necessary fittings not shown on Bid Form shall be incidental. This bid item shall not include transition couplings required to connect to existing pipes and services. (Refer to "connect to existing").

Payment will be made for the sizes listed in the Bid Form.

L. CONNECT TO EXISTING; each (ea.):

1. Unit price includes all costs for furnishing, handling, laying, materials, polyethylene encasement, trench excavation, trench dewatering, isolation of existing systems and flows; dewatering existing mains to nearest existing sectionalizing valve, modifications to existing piping, pipe, fittings, adaptors, restrained couplings, jointing materials, transition couplings, Dresser couplings, sheeting, shoring, bracing, removal and disposal of existing water or sewer main and appurtenances; thrust blocking or reaction backing, restraints, pipe bedding materials, special placement of bedding materials, backfilling with job excavated material or select backfill, compaction, compaction testing, flushing, leakage and hydrostatic pressure testing, providing temporary water services, recording as-built information, utility repair of utilities damaged by Contractor's operation, and coordination of utility with the utility company to furnish and install connections as shown on the Drawings.

Unit price for connect to existing sanitary sewer bid item and connect to existing sanitary sewer manhole bid item should include all cost for submittals, furnishing, handling, laying, materials, pipe, trench excavation, bedding materials, special placing of bedding materials, topsoil removal and replacement, dewatering, sheeting, shoring, bracing, backfilling, compacting, compaction testing, maintaining sewer service, recording as-built information, utility repair of utilities damaged by Contractor's operation, coordination of utility relocation by the utility, connection to new sewer main, fittings required to connect to existing piping, fittings to connect dissimilar pipe and pipe materials, thrust blocking or reaction backing, flag persons, warning lights, and barricades.

Includes removal, transportation, and disposal of excess excavated material; fugitive dust control; import of select backfill (if excavated material is unsuitable for compaction); cleaning, repair, and maintenance of haul routes; plugging existing pipe end abandoned in place, and removal of existing thrust blocks encountered at the ends of the existing piping where connection needs to occur.

Transition couplings, reducers, and all fittings necessary to connect to existing utility lines are included in this bid item, in addition any other products necessary for connections shall be considered incidental.

Payment will be made for the various sizes and types on the Drawings and listed in the Bid Form.

1.08 CHANGES IN PLAN QUANTITY

- A. Plan quantities are based on assumed existing conditions and/or as stated in payment articles. An increase or decrease from the number of units shown in the Bid Schedule shall not cause a change in the price except as allowed by the Contract Documents.

1.09 MAXIMUM PAYMENTS

- A. Maximum Payment Width: payment for surface restoration shall not exceed the widths shown on the Drawings including asphalt, concrete, sidewalk, curb and gutter, seeding, and sodding. If necessary, the Contractor shall reduce trench width to protect trees, sidewalk, or curb and gutter running longitudinally with the trench. The width stated is maximum restoration payment width only. If the Contractor deems it necessary to disturb greater than the construction limits, he or she may do so with all additional costs paid by the Contractor.

1.10 INCIDENTAL ITEMS

- A. Work required by the Contract Documents but not listed as a Bid Item shall be included in the cost for the item to which the Work pertains.

1.11 CLEAN-UP AND SURFACE RESTORATION

- A. Clean-up and restoration of all Work areas, storage areas, and traffic routes shall be considered incidental to the Contract, and shall be performed as required and as directed by the Owner or Engineer.
- B. Repair of new or existing surfaces or features damaged by Contractor's Work operations shall be performed incidental to the Contract, and shall consist of restoration in-kind to the satisfaction of the Owner and Engineer.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

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DIVISION 1 - GENERAL REQUIREMENTS
SECTION 01027 - APPLICATIONS FOR PAYMENT

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes:
 - 1. Format and Preparation of Applications.
 - 2. Schedule of Values.
 - 3. Submittal Procedures.
 - 4. Substantiating Data.

- B. Related Sections include; but are not limited to:
 - 1. Document 00520 – Agreement Form.
 - 2. Document 00700 – General Conditions.
 - 3. Section 01028 – Modification Requirements.
 - 4. Section 01300 – Submittals.
 - 5. Section 01700 – Contract Closeout.

1.02 FORMAT AND PREPARATION OF APPLICATIONS

- A. Utilize: EJCDC Application for Payment Form (form C-620, 2018 Edition).
Include continuation sheets when required.

- B. Preparation
 - 1. Present required information in typewritten form.
 - 2. Execute certification by signature of authorized officer.
 - 3. Use data from approved Schedule of Values. Provide dollar value in each column for each line item for portion of work performed and for stored Products.
 - 4. List each authorized Change Order as an extension on Continuation Sheet, listing Change Order number and dollar amount as for an original item of Work.
 - 5. Prepare Application for Final Payment as specified in Section 01700.

1.03 SCHEDULE OF VALUES

- A. Submit:
 - 1. Typed schedule of values in format similar to EJCDC Application for Payment (C-620, 2018 Edition).
 - 2. In duplicate within 15 days after date of Owner-Contractor Agreement.

- B. Format:
 - 1. Utilize the Table of Contents within Contract Documents.
 - 2. Identify line items corresponding with number and title of Specification Section.
 - 3. Identify site mobilization, bonds, and insurance.
 - 4. Include within each line item a direct proportional amount of Contractor's overhead and profit.

- C. Revise Schedule of Values to list approved Change Orders, and submit with each Application for Payment.

1.04 SUBMITTAL PROCEDURES

- A. The City Council must approve all pay estimates for construction contracts before payment can be made. The City Council normally meets on the third Wednesday of the month to consider payments on construction contracts. To allow adequate time to prepare the monthly estimates, the cut-off date for Work items to be included in the estimate shall be the Friday prior to the second Wednesday of the month.
- B. Submittals
 1. One (1) original and an electronic copy of each Application for Payment.
 2. Updated construction schedule with each Application for Payment.
 3. Payment Periods: As stipulated in the Agreement.
 4. Submit with transmittal letter as specified for Submittals in Section 01300.
 5. Submit lien waivers with final application for payment.

1.05 SUBSTANTIATING DATA

- A. When Engineer requires substantiating information, submit data justifying dollar amounts in question.
- B. Provide one (1) copy of data with cover letter for each copy of submittal. Show application number and date, and line item by number and description.
- C. Provide copies of invoice(s) for payment of contractor furnished materials incorporated into Work **OR** stored on-Site. Payment will not be made for materials which are not stored on-Site or stored in a facility not approved by Engineer and Owner.

PART 2 PRODUCTS

- A. Not Used.

PART 3 EXECUTION

- A. Not Used.

END OF SECTION

Contractor's Application for Payment

Owner: _____	Owner's Project No.: _____
Engineer: _____	Engineer's Project No.: _____
Contractor: _____	Contractor's Project No.: _____
Project: _____	
Contract: _____	
Application No.: _____	Application Date: _____
Application Period: From _____ to _____	

1. Original Contract Price	\$	-
2. Net change by Change Orders	\$	-
3. Current Contract Price (Line 1 + Line 2)	\$	-
4. Total Work completed and materials stored to date (Sum of Column G Lump Sum Total and Column J Unit Price Total)	\$	-
5. Retainage		
a. _____ X \$ - Work Completed	\$	-
b. _____ X \$ - Stored Materials	\$	-
c. Total Retainage (Line 5.a + Line 5.b)	\$	-
6. Amount eligible to date (Line 4 - Line 5.c)	\$	-
7. Less previous payments (Line 6 from prior application)		
8. Amount due this application	\$	-
9. Balance to finish, including retainage (Line 3 - Line 4)	\$	-

Contractor's Certification

The undersigned Contractor certifies, to the best of its knowledge, the following:

(1) All previous progress payments received from Owner on account of Work done under the Contract have been applied on account to discharge Contractor's legitimate obligations incurred in connection with the Work covered by prior Applications for Payment;

(2) Title to all Work, materials and equipment incorporated in said Work, or otherwise listed in or covered by this Application for Payment, will pass to Owner at time of payment free and clear of all liens, security interests, and encumbrances (except such as are covered by a bond acceptable to Owner indemnifying Owner against any such liens, security interest, or encumbrances); and

(3) All the Work covered by this Application for Payment is in accordance with the Contract Documents and is not defective.

Contractor: _____

Signature: _____ **Date:** _____

Recommended by Engineer	Approved by Owner
By: _____	By: _____
Title: _____	Title: _____
Date: _____	Date: _____
Approved by Funding Agency	
By: _____	By: _____
Title: _____	Title: _____
Date: _____	Date: _____

Progress Estimate - Unit Price Work

Contractor's Application for Payment

Owner: _____ Engineer: _____ Contractor: _____ Project: _____ Contract: _____	Owner's Project No.: _____ Engineer's Project No.: _____ Contractor's Project No.: _____
---	--

Application No.: _____ Application Period: From _____ to _____ Application Date: _____

A	B	C	D	E	F	G	H	I	J	K	L		
Bid Item No.	Description	Contract Information				Work Completed		Materials Currently Stored (not in G) (\$)	Work Completed and Materials Stored to Date (H + I) (\$)	% of Value of Item (J / F) (%)	Balance to Finish (F - J) (\$)		
		Item Quantity	Units	Unit Price (\$)	Value of Bid Item (C X E) (\$)	Estimated Quantity Incorporated in the Work	Value of Work Completed to Date (E X G) (\$)						
Original Contract													
					-			-		-	-		
					-			-		-	-		
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					-			-		-	-		
Original Contract Totals					\$	-		\$	-	\$	-	\$	-

Progress Estimate - Unit Price Work

Contractor's Application for Payment

Owner:		Owner's Project No.:	
Engineer:		Engineer's Project No.:	
Contractor:		Contractor's Project No.:	
Project:			
Contract:			

Application No.: _____ Application Period: From _____ to _____ Application Date: _____

A	B	C	D	E	F	G	H	I	J	K	L		
Bid Item No.	Description	Contract Information				Work Completed		Materials Currently Stored (not in G) (\$)	Work Completed and Materials Stored to Date (H + I) (\$)	% of Value of Item (J / F) (%)	Balance to Finish (F - J) (\$)		
		Item Quantity	Units	Unit Price (\$)	Value of Bid Item (C X E) (\$)	Estimated Quantity Incorporated in the Work	Value of Work Completed to Date (E X G) (\$)						
Change Orders													
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Change Order Totals					\$	-		\$	-	\$	-	\$	-
Original Contract and Change Orders													
Project Totals					\$	-		\$	-	\$	-	\$	-

DIVISION 1 - GENERAL REQUIREMENTS
SECTION 01028 - MODIFICATION REQUIREMENTS

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Submittals.
 - 2. Documentation of Change in Contract Price and Contract Time.
 - 3. Change Procedures.
 - 4. Work Directive Change.
 - 5. Stipulated Price Change Order.
 - 6. Unit Price Change Order.
 - 7. Time and Material Change Order.
 - 8. Execution of Change Orders.
 - 9. Correlation of Contractor Submittals.

- B. Related Sections include; but are not limited to:
 - 1. Document 00520 – Agreement Form.
 - 2. Document 00700 – General Conditions.
 - 3. Document 00800 – Supplementary Conditions.
 - 4. Section 01019 – Contract Considerations.
 - 5. Section 01027 – Applications for Payment.
 - 6. Section 01300 – Submittals.
 - 7. Section 01600 – Material and Equipment.
 - 8. Section 01700 – Contract Closeout.

1.02 SUBMITTALS

- A. Submit name of the individual authorized to receive change documents and be responsible for informing others in Contractor's employ or Subcontractors of changes to the Work.

- B. Change Order Forms: EJCDC form C-941 (2018 Edition).

1.03 DOCUMENTATION OF CHANGE IN CONTRACT PRICE AND CONTRACT TIME

- A. Contractor will not be entitled to any compensation for causes resulting in delays or hindrances to the Work. Extensions of time will be granted for unavoidable delays, as set forth in the General Conditions. The Engineer must receive a written request for time extension from the Contractor not more than 20 days after commencement of delay before any time extension will be considered. Requests made beyond the 20 day limit will be cause for denial. Any extension of time will not relieve the Contractor or his sureties from their obligations which shall remain in full force and effect until the satisfactory discharge of the contract.

- B. Maintain detailed records of Work done on a time and material basis. Provide full information required for evaluation of proposed changes, and to substantiate costs of changes in the Work.

- C. Document each quotation for a change in cost or time with sufficient data to allow evaluation of the quotation.
- D. Provide additional data to support computations:
 - 1. Quantities of products, labor, and equipment.
 - 2. Taxes, insurance, and bonds.
 - 3. Overhead and profit.
 - 4. Justification for any change in Contract Time.
 - 5. Credit for deletions from Contract, similarly documented.
- E. Support each claim for additional costs, and for Work done on a time and material basis, with additional information:
 - 1. Origin and date of claim.
 - 2. Dates and times work was performed, and by whom.
 - 3. Time records and wage rates paid.
 - 4. Invoices and receipts for products, equipment, and subcontracts, similarly documented.

1.04 CHANGE PROCEDURES

- A. The Engineer will advise of minor changes in the Work not involving an adjustment to Contract Price or Contract Time by issuing supplemental instructions.
- B. The Engineer may issue a Proposal Request that includes a detailed description of a proposed change with supplementary or revised Drawings and Specifications and a change in Contract Time for executing the change. Contractor will prepare and submit an estimate within seven (7) days.
- C. The Contractor may propose a change by submitting a request for change to the Engineer, describing the proposed change and its full effect on the Work, with a statement describing the reason for the change, and the effect on the Contract Price and Contract Time with full documentation and a statement describing the effect on Work by separate or other contractors. Documents any requested substitutions in accordance with Section 01600.

1.05 WORK DIRECTIVE CHANGE

- A. Engineer may issue a document, signed by the Owner, instructing the Contractor to proceed with a change in the Work, for subsequent inclusion in a Change Order.
- B. The document will describe changes in the Work and will designate method of determining any change in Contract Price or Contract Time.
- C. Promptly execute the change in Work.

1.06 STIPULATED PRICE CHANGE ORDER

- A. Based on Proposal Request and Contractor's fixed price quotation or Contractor's request for a Change Order as approved by Engineer.

1.07 UNIT PRICE CHANGE ORDER

- A. For pre-determined unit prices and quantities, the Change Order will be executed on a fixed unit price basis.
- B. For unit costs or quantities of units of work which are not pre-determined, execute Work under a Work Directive Change.
- C. Changes in Contract Sum/Price or Contract Time will be computed as specified for Time and Material Change Order.

1.08 TIME AND MATERIAL CHANGE ORDER

- A. Submit itemized account and supporting data after completion of change, within time limits indicated in the Conditions of the Contract.
- B. Engineer will determine the change allowable in Contract Price and Contract Time as provided in the Contract Documents.
- C. Maintain detailed records of work done on Time and Material basis.
- D. Provide full information required for evaluation of proposed changes, and to substantiate costs for changes in the Work.

1.09 EXECUTION OF CHANGE ORDERS

- A. Execution of Change Orders: Engineer will prepare the formal Change Order document(s) for signatures of parties as provided in the Conditions of the Contract.

1.10 CORRELATION OF CONTRACTOR SUBMITTALS

- A. Promptly revise Schedule of Values and Application for Payment forms to record each authorized Change Order as a separate line item and adjust the Contract Price.
- B. Promptly revise progress schedules to reflect any change in Contract Time, revise sub-schedules to adjust times for other items of work affected by the change, and resubmit.
- C. Promptly enter changes in Project Record Documents.

PART 2 PRODUCTS

- A. Not Used.

PART 3 EXECUTION

- A. Not Used.

END OF SECTION

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CHANGE ORDER NO.: [Number of Change Order]

Owner: _____ Owner's Project No.: _____
 Engineer: _____ Engineer's Project No.: _____
 Contractor: _____ Contractor's Project No.: _____
 Project: _____
 Contract Name: _____
 Date Issued: _____ Effective Date of Change Order: _____

The Contract is modified as follows upon execution of this Change Order:

Description:

[Description of the change]

Attachments:

[List documents related to the change]

Change in Contract Price	Change in Contract Times [State Contract Times as either a specific date or a number of days]
Original Contract Price: \$ _____	Original Contract Times: Substantial Completion: _____ Ready for final payment: _____
[Increase] [Decrease] from previously approved Change Orders No. 1 to No. [Number of previous Change Order] : \$ _____	[Increase] [Decrease] from previously approved Change Orders No.1 to No. [Number of previous Change Order] : Substantial Completion: _____ Ready for final payment: _____
Contract Price prior to this Change Order: \$ _____	Contract Times prior to this Change Order: Substantial Completion: _____ Ready for final payment: _____
[Increase] [Decrease] this Change Order: \$ _____	[Increase] [Decrease] this Change Order: Substantial Completion: _____ Ready for final payment: _____
Contract Price incorporating this Change Order: \$ _____	Contract Times with all approved Change Orders: Substantial Completion: _____ Ready for final payment: _____

Recommended by Engineer (if required)

Accepted by Contractor

By: _____

Title: _____

Date: _____

Authorized by Owner _____ Approved by Funding Agency (if applicable) _____

By: _____

Title: _____

Date: _____

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WORK CHANGE DIRECTIVE NO.: [Number of Work Change Directive]

Owner: _____ Owner's Project No.: _____
Engineer: _____ Engineer's Project No.: _____
Contractor: _____ Contractor's Project No.: _____
Project: _____
Contract Name: _____
Date Issued: _____ Effective Date of Work Change Directive: _____

Contractor is directed to proceed promptly with the following change(s):

Description:

[Description of the change to the Work]

Attachments:

[List documents related to the change to the Work]

Purpose for the Work Change Directive:

[Describe the purpose for the change to the Work]

Directive to proceed promptly with the Work described herein, prior to agreeing to change in Contract Price and Contract Time, is issued due to:

Notes to User—Check one or both of the following

Non-agreement on pricing of proposed change. Necessity to proceed for schedule or other reasons.

Estimated Change in Contract Price and Contract Times (non-binding, preliminary):

Contract Price: \$ _____ **[increase] [decrease] [not yet estimated].**

Contract Time: _____ days **[increase] [decrease] [not yet estimated].**

Basis of estimated change in Contract Price:

Lump Sum Unit Price Cost of the Work Other

Recommended by Engineer

Authorized by Owner

By: _____

Title: _____

Date: _____

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DIVISION 1 - GENERAL REQUIREMENTS
SECTION 01039 - COORDINATION AND MEETINGS

PART 1 **GENERAL**

1.01 SUMMARY

- A. Section Includes:
 - 1. Coordination and Project Conditions.
 - 2. Field Engineering.
 - 3. Preconstruction Meeting.
 - 4. Progress Meetings.

- B. Related Sections Include; but are not limited to:
 - 1. Section 01011 – Summary of Project.
 - 2. Section 01700 – Contract Closeout.

1.02 COORDINATION AND PROJECT CONDITIONS

- A. General:
 - 1. Coordinate scheduling, submittals, and Work of the various sections of the Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later.
 - 2. Verify utility requirements and characteristics of operating equipment are compatible with site utilities. Coordinate Work of various sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.
 - 3. Coordinate access to site for correction of defective Work and Work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

- B. Responsibilities of the Contractor:
 - 1. Duties and responsibilities in scheduling and performance of the Work.
 - a. Allocate and coordinate use of Site for field offices and construction trailers and for access, traffic, and parking facilities.
 - b. Instruct and coordinate the use of temporary utilities and construction facilities.
 - c. Coordinate field engineering and layout Work.
 - 2. Verify all shop drawing dimensions.
 - 3. Submit (and revise) progress schedule in accordance with Section 01300 coordinating the entire project construction schedule.
 - 4. Organize and submit Applications for Payment.
 - 5. Submit shop drawings, product data, and samples in accordance with Section 01300.
 - 6. Submit request for interpretation of Contract Documents and obtain instructions through Engineer.
 - 7. Process requests for Change Orders through Engineer.
 - 8. Organize all closeout submittals and preliminary inspection reports for transmittal to Engineer. Organize all record drawings and submit to Engineer. Review all drawings before submitting to Engineer.
 - 9. Notify Engineer when ready for final inspection and organize Substantial

- and Final inspections.
- 10. Ensure punch list items are completed prior to scheduling final inspection by Engineer.
- 11. Provide information required by Construction Coordinator for preparation of record drawings.

1.03 FIELD ENGINEERING

- A. Contractor shall field verify and confirm all dimensions and elevations. Notify Engineer concerning discrepancies.
- B. Contractor shall locate and protect survey control and reference points.
- C. Engineer shall provide field engineering services and equipment to establish baselines and benchmarks for grades, lines, and levels by use of recognized engineering survey practices. Contractor shall protect established survey markers from damage. Once established, Contractor shall obtain the services of a licensed surveyor to replace damaged or lost survey reference markers.
- D. Contractor shall maintain required elevations, lines, and levels utilizing recognized engineering practices. Contractor shall obtain the services of a licensed surveyor as required to ensure Work is in accordance with the grade and elevation shown on the Drawings.
- E. Site service utilities are shown in their approximate locations on the Drawings. Contractor shall be responsible for field verification of all utility locations as required to accommodate construction activities.
- F. Control datum for construction is that shown on Drawings.

1.04 PRECONSTRUCTION MEETING

- A. Engineer will schedule a meeting at the Project Site after Notice of Award.
- B. Attendance required by:
 - 1. Construction Coordinator.
 - 2. Contractor(s).
 - 3. Contractor's Superintendent(s).
 - 4. Owner.
 - 5. Engineer.
 - 6. Major SubContractor(s).
- C. Agenda:
 - 1. Contract Forms and Conditions of the Contract.
 - 2. Distribution of Contract Documents.
 - 3. Submission of list of SubContractors, list of Products, Schedule of Values, and progress schedule.
 - 4. Designation of personnel representing the parties in Contract, and the Engineer.
 - 5. Procedures and processing of field decisions, submittals, substitutions, applications for payments, proposal request, Change Orders, and

- 6. Contract closeout procedures.
Scheduling.

D. Engineer will record minutes and distribute copies after meeting to participants.

1.05 PROGRESS MEETINGS

A. Engineer will:

- 1. Schedule and administer meetings at the Site throughout progress of the Work at weekly intervals, or as deemed necessary by the Engineer.
- 2. Make arrangements for hosting meetings.

B. Attendance required by:

- 1. Construction Coordinator.
- 2. Contractor's Superintendent(s).
- 3. Major Subcontractors and suppliers.
- 4. Owner.
- 5. Engineer.
- 6. Others as appropriate to agenda topics for each meeting.

C. Agenda:

- 1. Review minutes of previous meetings.
- 2. Review of Work progress.
- 3. Field observations, problems, and decisions.
- 4. Identification of problems which impede planned progress.
- 5. Review of submittals schedule and status of submittals.
- 6. Review of off-site fabrication and delivery schedules.
- 7. Maintenance of progress schedule.
- 8. Corrective measures to regain projected schedules.
- 9. Planned progress during succeeding Work period.
- 10. Coordination of projected progress.
- 11. Maintenance of quality and Work standards.
- 12. Effect of proposed changes on progress schedule and coordination.
- 13. Other business relating to Work.

D. Engineer will record minutes and distribute copies after meeting to participants.

PART 2 PRODUCTS

A. Not Used.

PART 3 EXECUTION

A. Not Used.

END OF SECTION

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DIVISION 1 - GENERAL REQUIREMENTS
SECTION 01045 - CUTTING AND PATCHING

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Requirements and limitations for cutting and patching of Work.

- B. Related Sections include; but are not limited to:
 - 1. Section 01010 – Summary of Work
 - 2. Section 01300 – Submittals.
 - 3. Section 01600 – Materials and Equipment
 - 4. Individual Product Specification Sections:
 - a. Cutting and patching incidental to Work of other Sections.
 - b. Advance notification for openings required in Work related to other Sections.

1.02 SUBMITTALS

- A. Submit written request in advance of cutting or alteration which affects:
 - 1. Structural integrity of any element of Project.
 - 2. Integrity of weather exposed or moisture resistant element.
 - 3. Efficiency, maintenance, or safety of any operational element.
 - 4. Visual qualities of sight exposed elements.
 - 5. Work or operations of Owner or separate Contractor(s) as applicable.

- B. Include in request:
 - 1. Identification of Project.
 - 2. Location and description of affected Work.
 - 3. Necessity for cutting or alteration.
 - 4. Description of proposed Work and Products to be used.
 - 5. Alternatives to cutting and patching.
 - 6. Effect on work or operations of Owner or separate Contractor(s) as applicable.
 - 7. Written permission of affected separate Contractor(s) if applicable.
 - 8. Date and time Work will be executed.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Those required for original installation.

- B. Product Substitution: For any proposed change in materials, submit request for substitution in accordance with Section 01600.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine existing conditions prior to commencing Work, including elements subject to damage or movement during cutting and patching.
- B. After uncovering existing Work, assess conditions affecting performance of Work.
- C. Beginning of cutting or patching means acceptance of existing conditions.

3.02 PREPARATION

- A. Provide temporary supports to ensure structural integrity of the Work. Provide devices and methods to protect other portions of Project from damage.
- B. Provide protection from elements for areas which may be exposed by uncovering work.
- C. Maintain excavations free of water.

3.03 CUTTING

- A. Execute cutting and fitting to complete the Work.
- B. Uncover Work to install improperly sequenced Work.
- C. Remove and replace defective or non-conforming Work.
- D. Remove samples of installed work for testing, when requested.
- E. Coordinate openings in the Work for penetration of mechanical and electrical Work.
- F. Employ original installer of new Work to perform cutting for weather exposed and moisture resistant elements, and sight-exposed surfaces.
- G. Cut rigid materials, masonry, pre-stressed concrete, and concrete using masonry saw or core drill. Cut bituminous pavement using cutting wheel or saw. Pneumatic tools not allowed without prior approval.

3.04 PATCHING

- A. Execute patching to complement adjacent Work.
- B. Fit Products together to integrate with other Work.
- C. Execute Work by methods to avoid damage to other Work, and which will provide appropriate surfaces to receive patching and finishing.
- D. Employ original installer of new Work to perform patching for weather and moisture resistant elements, and sight-exposed surfaces.

- E. Restore Work with new Products in accordance with requirements of Contract Documents.
- F. Fit Work air tight and water tight as appropriate to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- G. Identify any hazardous substance or condition exposed during the Work to the Engineer for decision or remedy.

3.05 ALTERATION PROJECT PROCEDURES

- A. Materials: As specified in Product sections; match existing Products and Work for patching and extending Work.
- B. Employ skilled and experienced installer to perform alterations.
- C. Remove, cut, and patch Work in a manner to minimize damage and to provide means of restoring Products and finishes to original or specified condition.
- D. Where new Work abuts or aligns with existing, provide a smooth and even transition. Patch Work to match existing adjacent Work in texture and appearance.
- E. When finished surfaces are cut so that a smooth transition with new Work is not possible, terminate existing surface along a straight line at a natural line of division and submit recommendation to Engineer for review.
- F. Patch or replace portions of existing surfaces which are damaged, lifted, discolored, or showing other imperfections.
- G. Finish surfaces as specified in individual Product Sections.

END OF SECTION

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DIVISION 1 - GENERAL REQUIREMENTS
SECTION 01300 - SUBMITTALS

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Submittal Procedures.
 - 2. Construction Progress Schedules.
 - 3. Proposed Products List.
 - 4. Product Data.
 - 5. Shop Drawings.
 - 6. Samples.
 - 7. Test Reports.
 - 8. Manufacturer's Certificates.
 - 9. Manufacturer's Instructions.
 - 10. Manufacturer's Field Reports.

- B. Related Sections include; but are not limited to:
 - 1. Section 01400 – Quality Control.
 - 2. Section 01700 – Contract Closeout.

1.02 SUBMITTAL PROCEDURES

- A. Transmit each submittal with Engineer accepted form.

- B. Sequentially number the transmittal form. Submit revised submittals with original number and a sequential alphabetic suffix.

- C. Identify Project, Contractor, Subcontractor or supplier; pertinent drawing and detail number, and specification section number, as appropriate.

- D. Completely review all submittal materials prior to submission to Engineer. Apply Contractor's stamp, signed or initialed certifying that review, approval, verification of Products required, field dimensions, adjacent construction Work, and coordination of information is in accordance with the requirements of the Work and Contract Documents.

- E. Schedule submittals to expedite the Project, and deliver to Engineer at business address. Coordinate submission of related items.

- F. For each submittal for review allow, at minimum, fifteen (15) days excluding delivery time to and from the Contractor.

- G. Identify variations from Contract Documents and Product or system limitations that may be detrimental to successful performance of the completed Work. Highlight and/or clearly designate specific Product details and information so as to confirm Product meets or exceeds Product specifications.

- H. Provide space for Contractor and Engineer review stamps.

- I. When revised for resubmission, identify all changes made since previous submission.
- J. Distribute copies of reviewed submittals as appropriate. Instruct parties to promptly report any inability to comply with requirements. Clearly transmit Engineer review comments to suppliers and subcontractors as required to minimize Product delivery errors and miscommunications.
- K. Submittals not requested will not be recognized or processed.

1.03 CONSTRUCTION PROGRESS SCHEDULES

- A. Submit initial schedule in duplicate within 15 days after date of Owner-Contractor Agreement.
- B. Revise and resubmit as required.
- C. Submit revised schedules with each Application for Payment, identifying changes since previous version.
- D. Submit a horizontal bar chart with separate line for each major portion of Work or operation, identifying first workday of each week.
- E. Sheet Size: 11x17 inches.
- F. Content
 - 1. Show complete sequence of construction by activity, with dates for beginning and completion of each element of construction. Indicate the early and late start, early and late finish, float dates, and duration.
 - 2. Identify Work of separate stages and other logically grouped activities.
 - 3. Provide sub-schedules to define critical portions of the entire schedule.
 - 4. Include conferences and meetings in schedule.
 - 5. Indicate estimated percentage of completion for each item of Work at each submission.
 - 6. Provide separate schedule of submittal dates for shop drawings, product data, and samples, and dates reviewed submittals will be required from Engineer. Allow sufficient time for review by Engineer. Indicate decision dates for selection of finishes.
 - 7. Coordinate content with Schedule of Values.
- G. Provide narrative report to define problem areas, anticipated delays, and impact on Schedule.
- H. Distribution
 - 1. Distribute copies of reviewed schedules to Project Site file, Subcontractors, suppliers, and other concerned parties.
 - 2. Instruct recipients to promptly report, in writing, problems anticipated by projections indicated in schedules.

1.04 PROPOSED PRODUCTS LIST

- A. Within ten (10) days after date of Owner-Contractor Agreement, submit list of major Products proposed for use, with name of manufacturer, trade name, and model number of each Product.
- B. For products specified only by reference standards, give manufacturer, trade name, model or catalog designation, and reference standards.

1.05 PRODUCT DATA

- A. Submitted to Engineer for review for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents.
- B. After review, provide copies and distribute in accordance with SUBMITTAL PROCEDURES article above and for record document purposes described in Section 01700.
- C. Submit the number of copies that the Contractor requires, plus three (3) copies that will be retained by the Engineer.
- D. Mark each copy to identify applicable Products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.

1.06 SHOP DRAWINGS

- A. Submitted to Engineer for review for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents.
- B. After review, produce copies and distribute in accordance with SUBMITTAL PROCEDURES article above and for record document purposes described in Section 01700.
- C. If submitting hard copies, submit the number of copies which Contractor requires, plus three (3) copies which will be retained by Engineer.
- D. One (1) electronic submittal will be accepted.

1.07 TEST REPORTS

- A. Submit for the Engineer's record and for the Owner.
- B. Submit test reports for information for the limited purpose of assessing conformance with information given and the design concept expressed in the Contract Documents.
- C. Retain one (1) copy of all test reports and results on-Site in a location accessible to Engineer.

1.08 MANUFACTURER'S CERTIFICATES

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

1.09 MANUFACTURER'S INSTRUCTIONS

- A. When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, to Engineer for delivery to Owner in quantities specified for Product Data.
- B. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.
- C. Refer to Section 01400 - Quality Control, Manufacturers' Field Services article.

1.10 MANUFACTURER'S FIELD REPORTS

- A. Submit reports for the Engineer's records and for the Owner.
- B. Submit report in triplicate within 30 days of observation to Engineer for information purposes.
- C. Submit the manufacturer's field reports for the limited purpose of assessing conformance with information given and the design concept expressed in the Contract Documents.

PART 2 PRODUCTS

- A. Not Used.

PART 3 EXECUTION

- A. Not Used.

END OF SECTION

DIVISION 1 - GENERAL REQUIREMENTS
SECTION 01400 - QUALITY CONTROL

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes:
 - 1. Quality Assurance - Control of Installation.
 - 2. Tolerances.
 - 3. References and Standards.
 - 4. Testing Services.
 - 5. Manufacturers' Field Services.

- B. Related Sections include; but are not limited to:
 - 1. Section 01300 – Submittals.
 - 2. Section 01600 – Material and Equipment.

1.02 QUALITY ASSURANCE - CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, Products, services, Site conditions, and workmanship, to produce Work of specified quality.

- B. Comply with manufacturer's instructions, including each step in sequence.

- C. Should manufacturer's instructions conflict with Contract Documents, request clarification from Engineer before proceeding.

- D. Comply with specified standards as minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

- E. Perform Work by persons qualified to produce required and specified quality.

- F. Verify that field measurements are as indicated on Contract Drawings, shop drawings, or as instructed by the manufacturer.

- G. Secure Products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.

1.03 TOLERANCES

- A. Monitor fabrication and installation tolerance control of Products to produce acceptable Work. Do not permit tolerances to accumulate.

- B. Comply with manufacturers' tolerances. Should manufacturers' tolerances conflict with Contract Documents, request clarification from Engineer before proceeding.

- C. Adjust Products to appropriate dimensions; position before securing Products in place.

1.04 REFERENCES AND STANDARDS

- A. For Products or workmanship specified by association, trade, or other consensus standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- B. Conform to reference standard by date of issue current on date of Contract Documents, except where a specific date is established by code.
- C. Obtain copies of standards where required by Product specification sections.
- D. Neither the contractual relationships, duties, responsibilities of the parties in Contract, nor those of the Engineer shall be altered from the Contract Documents by mention or inference otherwise in any reference document.

1.05 TESTING SERVICES

- A. Contractor shall appoint, employ, and pay for specified services of an independent firm to perform testing including:
 - 1. Concrete materials and mix designs.
 - 2. Asphaltic materials and mix designs.
 - 3. Embedment and backfill materials.
 - 4. Concrete, slump, air, cylinders. Quantity determined by Engineer.
 - 5. Moisture-density (Proctor) and relative density tests on embedment and backfill materials. Quantity determined by Engineer.
 - 6. In-place field density tests on embedment and backfill materials. Quantity determined by Engineer.
 - 7. Bacteriological testing.
 - 8. All other tests and engineering data required for Engineer's review of materials and equipment proposed to be used in the Work. Contractor shall obtain Engineer's acceptance of the testing firms before having services performed, and shall pay all costs for these testing services. All costs for testing shall be incidental.
- B. The independent firm will perform tests and other services specified in individual specification sections and as required by the Engineer.
- C. Testing and source quality control may occur on or off the Site. Perform off-Site testing as required by the Engineer or the Owner.
- D. Reports will be submitted by the independent firm to the Engineer and Contractor, in duplicate, indicating observations and results of tests and indicating compliance or non-compliance with Contract Documents.

- E. Cooperate with independent firm; furnish samples of materials, design mix, equipment, tools, storage, safe access, and assistance by incidental labor as requested.
 - 1. Notify Engineer and independent firm 48 hours prior to expected time for operations requiring services.
 - 2. Make arrangements with independent firm and pay for additional samples and tests required for Contractor's use.
- F. Testing does not relieve Contractor from performing Work according to Contract requirements.
- G. Re-testing required because of non-conformance to specified requirements shall be performed by the same independent firm on instructions by the Engineer. Payment for re-testing will be paid by the Contractor.

1.06 MANUFACTURERS' FIELD SERVICES

- A. When specified in individual specification sections, require material or Product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust and balance of equipment and other services as applicable, and to initiate instructions when necessary.
- B. Submit qualifications of observer to Engineer 30 days in advance of required observations. Observer subject to approval of Engineer.
- C. Report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.
- D. Refer to Section 01300 – Submittals.

PART 2 PRODUCTS

- A. Not Used.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that existing Site conditions and substrate surfaces are acceptable for subsequent Work. Beginning Work means acceptance of existing conditions.
- B. Verify that existing substrate is capable of structural support or attachment of new Work being applied or attached.
- C. Examine and verify specific conditions described in individual specification sections.
- D. Verify that utility services are available, of the correct characteristics, and in the correct locations.

3.02 PREPARATION

- A. Clean substrate surfaces prior to applying next material or substance.
- B. Seal cracks or openings of substrate prior to applying next material or substance.
- C. Apply manufacturer required or recommended substrate preparation, primer, sealer, or conditioner prior to applying any new material or substance in contact or bond.

END OF SECTION

DIVISION 1 - GENERAL REQUIREMENTS
SECTION 01500 - CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

PART 1 **GENERAL**

1.01 SUMMARY

- A. Section Includes:
 - 1. Temporary Utilities.
 - 2. Temporary Controls.
 - 3. Construction Facilities.

- B. Related Sections include:
 - 1. Section 01011 – Summary of Project.
 - 2. Section 01700 – Contract Closeout.

1.02 TEMPORARY ELECTRICITY

- A. By Contractor
 - 1. Provide temporary electric feeder from existing electrical service as required. Do not disrupt Owner's use of service.
 - 2. Provide power outlets for construction operations, with branch wiring and distribution boxes located as necessary. Provide flexible power cords as required.
 - 3. Provide main service disconnect and over-current protection at convenient location as applicable.
 - 4. Permanent convenience receptacles may be utilized during construction.
 - 5. Provide adequate distribution equipment, wiring, and outlets for single-phase branch circuits for power and lighting as required for construction.
 - 6. Exercise measures to conserve power usage.
 - 7. If required, provide separate metering or reimburse Owner for cost of energy used.

1.03 TEMPORARY LIGHTING FOR CONSTRUCTION PURPOSES

- A. By Contractor
 - 1. Provide branch wiring from power source to distribution boxes with lighting conductors, pigtails, and lamps as required.
 - 2. Maintain lighting and provide routine repairs.
 - 3. Permanent building lighting may be utilized during construction. Replace lamps in fixtures, if required, at Final Completion.

1.04 TEMPORARY HEATING

- A. By Contractor
 - 1. Provide and pay for heating devices and heat as needed to maintain specified conditions for construction operations.
 - 2. If required, provide separate metering or reimburse Owner for cost of energy used.
 - 3. Prior to operation of permanent equipment for temporary heating purposes, verify that installation is approved for operation, equipment is

lubricated and filters are in place. Provide and pay for operation, maintenance, and regular replacement of filters and worn or consumed parts.

4. Maintain minimum ambient temperature of 50 degrees F in areas, unless indicated otherwise in product sections.
5. Coordinate construction heating requirements with General Construction Contractor.
6. Exercise measures to minimize construction heating.

1.05 TEMPORARY VENTILATION

- A. Ventilate enclosed areas to achieve curing of materials, to dissipate humidity, and to prevent accumulation or spread of dust, fumes, vapors, or gases.
- B. Comply with specific applications as specified in Special Provisions.

1.06 TELEPHONE/EMAIL SERVICE

- A. Provide, maintain, and pay for telephone and Email service to field office and cellular phone service to project superintendent from time of project mobilization to Final Completion.

1.07 TEMPORARY WATER SERVICE

- A. Contractor may connect to existing water sources for temporary construction operations at time of mobilization. All connections shall be approved by Owner and Engineer prior to use.
- B. Owner will pay cost of water used. Exercise measures to conserve water.

1.08 TEMPORARY SANITARY FACILITIES

- A. Use of Owner's facilities is permitted. Maintain field facilities in working order and clean from time of mobilization to Final Completion, if used.
- B. Each Contractor shall provide and maintain required facilities and enclosures. Existing facility use is not permitted. Provide from time of project mobilization to final completion.

1.09 BARRIERS

- A. Provide barriers to prevent unauthorized entry to construction areas, to allow for Owner's use of Site, and to protect existing or new facilities and adjacent features from damage by construction operations.
- B. Protect non-owned vehicular traffic, stored materials, Site, and structures from damage.

1.10 WATER CONTROL

- A. By Contractor
 - 1. Grade site to drain.
 - 2. Maintain excavations free of water.
 - 3. Provide, operate, and maintain pumping equipment.
 - 4. Protect site from puddling or running water.
 - 5. Provide water barriers as required to protect site from soil erosion.

1.11 EXTERIOR ENCLOSURES

- A. Provide temporary weather tight closure of exterior openings to accommodate acceptable working conditions and protection for Products, to allow for temporary heating and maintenance of required ambient temperatures identified in individual specification Sections, and to prevent entry of unauthorized persons. Provide access doors with locks; Owner shall have access to Site at all times.

1.12 INTERIOR ENCLOSURES

- A. Provide temporary partitions with access doors to separate Work areas from Owner occupied areas, to prevent penetration of dust, fumes, and moisture into Owner occupied areas, and to prevent damage to existing materials and equipment.
- B. Comply with specific applications as specified in Special Provisions.

1.13 PROTECTION OF INSTALLED WORK

- A. Protect installed Work and provide special protection where specified in individual specification Sections.
- B. Provide temporary and removable protection for installed Products. Control activity in immediate Work area to prevent damage.
- C. Provide protective coverings at walls, projections, jambs, sills, and soffits or openings.
- D. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.
- E. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.
- F. Prohibit traffic from landscaped areas.

1.14 PARKING

- A. Contractor and personnel shall park all personal vehicles in an area acceptable to Owner and applicable property owners.

1.15 ACCESS ROADS

- A. By General Contractor.
 - 1. Maintain access roads leading into Site.
 - 2. Provide means of removing mud from vehicle wheels before entering streets and roads.

1.16 FIELD OFFICES AND SHEDS

- A. Field Office: Contractor's option.
- B. Construction trailer or shed: Contractor's option.

1.17 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

- A. Remove temporary utilities, equipment, facilities, and materials prior to Final Application for Payment and inspection.
- B. Remove underground installations to a minimum depth of 2 feet. Grade site as indicated.
- C. Clean and repair damage caused by installation or use of temporary Work.
- D. Restore existing and permanent facilities used during construction to original condition. Restore new and modified facilities used during construction to specified condition.

PART 2 PRODUCTS

- A. Not Used.

PART 3 EXECUTION

- A. Not Used.

END OF SECTION

DIVISION 1 - GENERAL REQUIREMENTS
SECTION 01600 - MATERIAL AND EQUIPMENT

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes:
 - 1. Products.
 - 2. Transportation and Handling.
 - 3. Storage and Protection.
 - 4. Product Options.
 - 5. Substitutions.

- B. Related Sections include, but are not limited to:
 - 1. Document 00100 – Instruction to Bidders.
 - 2. Document 00700 – General Conditions.
 - 3. Document 00800 – Supplementary Conditions.
 - 4. Section 01300 – Submittals.
 - 5. Section 01400 – Quality Control.

1.02 PRODUCTS

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

- B. All products that may come into contact with water intended for use in a public water system shall meet American National Standards Institute (ANSI)/National Sanitation Foundation (NSF) International Standards 60 and 61, as appropriate. A product will be considered as meeting these standards if so certified by NSF, the Underwriters Laboratories, or other organization accredited by ANSI to test and certify each product.

- C. Do not use materials and equipment removed from existing premises, except as specifically permitted by the Contract Documents.

- D. Provide interchangeable components of the same manufacturer for components being replaced.

1.03 TRANSPORTATION AND HANDLING

- A. Transport and handle Products in accordance with manufacturers' instructions.

- B. Promptly inspect shipments to ensure that Products comply with requirements, quantities are correct, and Products are undamaged.

- C. Provide equipment and personnel to handle Products by methods to prevent soiling, disfigurement, or damage.

1.04 STORAGE AND PROTECTION

- A. Store and protect Products in accordance with manufacturers' instructions. Owner shall provide limited storage space. Contractor is responsible for locating and obtaining permission for additional space required.
- B. Store with seals and labels intact and legible.
- C. Store sensitive Products in weather tight, climate controlled, enclosures in an environment favorable to Product.
- D. For exterior storage of fabricated Products, place on sloped supports above ground.
- E. Provide bonded off-Site storage and protection when Site does not permit local storage or protection.
- F. Cover Products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of Products.
- G. Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.
- H. Provide equipment and personnel to store Products by methods to prevent soiling, disfigurement, or damage.
- I. Arrange storage of Products to permit access for inspection. Periodically inspect to verify Products are undamaged and are maintained in acceptable condition.

1.05 PRODUCT OPTIONS

- A. Products Specified by Reference Standards or by Description Only: Any Product meeting those standards or description.
- B. Products Specified by Naming One or More Manufacturers: Products of manufacturers named and meeting specifications, no options or substitutions allowed.
- C. Products Specified by Naming One or More Manufacturers with an option for an "Approved Equivalent" Manufacturer: Submit a request for the "approved equivalent" in accordance with the following article.

1.06 SUBSTITUTIONS

- A. "Approved Equivalent" products will be considered only if written request is made at least 15 days prior to bid opening.
- B. Substitutions will be considered only when a Product becomes unavailable through no fault of the Contractor.
- C. Document each request with complete data substantiating compliance of proposed Substitution with Contract Documents.

- D. A request constitutes a representation that the Bidder/Contractor:
 - 1. Has investigated proposed Product and determined that it meets or exceeds the quality level of the specified Product.
 - 2. Will provide the same warranty for the Substitution as for the specified Product.
 - 3. Will coordinate installation and make changes to other Work which may be required for the Work to be complete with no additional cost to Owner.
 - 4. Waives claims for additional costs or time extension which may subsequently become apparent.
 - 5. Will reimburse Owner and Engineer for review or redesign services and associated with re-approval by authorities.

- E. Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals, without separate written request, or when acceptance will require revision to the Contract Documents.

- F. Substitution Submittal Procedure:
 - 1. Submit three copies of request for consideration. Limit each request to one proposed Substitution.
 - 2. Submit shop drawings, product data, and certified test results attesting to the proposed Product equivalence. Burden of proof is on proposer.
 - 3. The Engineer will notify Contractor in writing of decision to accept or reject request.
 - 4. Accepted substitutions will be listed by addendum.

PART 2 PRODUCTS

2.01 TOOLS

- A. For any equipment or equipment components furnished, requiring special tools, the Contractor shall supply the Owner with such tools to allow for the maintenance and removal/replacement of equipment components.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install all equipment in full compliance with the manufacturers' recommendations.

END OF SECTION

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DIVISION 1 - GENERAL REQUIREMENTS
SECTION 01700 - CONTRACT CLOSEOUT

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Closeout Procedures.
 - 2. Final Cleaning.
 - 3. Adjusting.
 - 4. Project Record Documents.
 - 5. Spare Parts and Maintenance Products.
 - 6. Warranties and Bonds.
 - 7. Maintenance Service.

- B. Related Sections include; but are not limited to:
 - 1. Section 01025 – Measurement and Payment.
 - 2. Section 01300 – Submittals.

1.02 CLOSEOUT PROCEDURES

- A. Submit written certification that Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with Contract Documents and ready for Engineer's review.

- B. Provide submittals to Engineer that are required by governing or other authorities.

- C. Submit Final Application for Payment identifying total adjusted Contract Sum, previous payments, and sum remaining due.

- D. Owner will occupy all portions of the Project.

1.03 FINAL CLEANING

- A. Execute final cleaning prior to final Work assessment.

- B. Clean Site; sweep paved areas and rake clean landscaped surfaces affected by Work.

- C. Remove waste and surplus materials, rubbish, and construction facilities from the Site.

1.04 ADJUSTING

- A. Adjust operating Products and equipment to ensure smooth and unhindered operation.

1.05 PROJECT RECORD DOCUMENTS

- A. Maintain on site one set of the following record documents and record actual revisions to the Work:
 - 1. Drawings.
 - 2. Specifications.
 - 3. Addenda.
 - 4. Change Orders and other modifications to the Contract.
 - 5. Reviewed Shop Drawings, Product Data, and Samples.
 - 6. Manufacturer's instruction for assembly, installation, and adjusting.
- B. Ensure entries are complete and accurate, enabling current and future reference by Owner and Engineer.
- C. Store record documents separate from documents used for construction.
- D. Record information concurrent with construction progress.
- E. Specifications: Legibly mark and record at each Product section description of actual Products installed, including the following:
 - 1. Manufacturer's name and Product model and number.
 - 2. Product substitutions or alternates utilized.
 - 3. Changes made by Addenda and modifications.
- F. Record Drawings and Shop Drawings: Legibly mark each item to record actual construction including:
 - 1. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 - 2. Field changes of dimension and detail.
 - 3. Details not on original Contract drawings.
- G. Submit documents to Engineer with claim for Final Application for Payment.

1.06 SPARE PARTS AND MAINTENANCE PRODUCTS

- A. Provide spare parts, maintenance, and extra Products in quantities specified in individual specification Sections.
- B. Deliver to Site and place in location as directed by Owner; obtain receipt prior to final payment.

1.07 WARRANTIES AND BONDS

- A. Provide duplicate notarized copies.
- B. Execute and assemble transferable warranty documents from Subcontractors, suppliers, and manufacturers.
- C. Provide Table of Contents and assemble in D size three ring binders with durable plastic cover.

- D. Submit prior to final Application for Payment.
- E. For items of Work delayed beyond date of Substantial Completion, provide updated submittal within 10 days after acceptance, listing date of acceptance as start of warranty period.

1.08 MAINTENANCE SERVICE

- A. Furnish service and maintenance of components during the warranty period.
- B. Include systematic examination, adjustment, and lubrication of components. Repair or replace parts whenever required. Use parts produced by the manufacturer of the original component.
- C. Maintenance service shall not be assigned or transferred to any agent or Subcontractor without prior written consent of the Owner.

PART 2 PRODUCTS

- A. Not Used.

PART 3 EXECUTION

- A. Not Used.

END OF SECTION

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DIVISION 02 SITEWORK

DIVISION 2 - SITE WORK
SECTION 02072 - MINOR DEMOLITION

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Minor demolition to facilitate new improvements.
 - 2. Removal of components for salvage, relocation, or re-installation.
 - 3. Preparation of existing substrates or surfaces as required for new construction.
 - 4. Capping and identification of utilities to facilitate completion of the Work.
 - 5. Saw cutting and coring concrete as required for new construction.
 - 6. Major items only are indicated on Drawings. Demolition shall be sufficient to obtain finishes, modifications, and alterations indicated or specified, and install new elements into existing conditions.

- B. Related Sections include, but are not limited to:
 - 1. Division 00700 – General Conditions.
 - 2. Section 01010 – Summary of Work.
 - 3. Section 01025 – Measurement and Payment.
 - 4. Section 01039 – Coordination and Meetings.
 - 5. Section 01045 – Cutting and Patching.

1.02 QUALIFICATIONS

- A. Company qualified in performing the Work of this Section.

1.03 SUBMITTALS

- A. Submit demolition, removal, and discovery or investigative demolition procedures and schedule under provisions of Section 01300.

- B. Submit project record documents under provisions of Section 01700.

1.04 REGULATORY REQUIREMENTS

- A. Conform to applicable code for demolition of structures, safety of adjacent structures, dust control and disposal.

- B. Do not disrupt or compromise effectiveness of water supply and treatment operations without written permission of Owner.

- C. Conform to procedures applicable if hazardous or contaminated materials are discovered.

1.05 SEQUENCING

- A. Sequence Work under the provisions of Section 01010.

1.06 SCHEDULING

- A. Schedule Work under the provisions of Section 01010.
- B. Describe demolition removal procedures and schedule.

PART 2 PRODUCTS

- A. Not Used.

PART 3 EXECUTION

3.01 PREPARATION

- A. Provide, erect, and maintain temporary barriers, temporary partitions, and security devices as specified in Section 01500.
- B. Provide temporary service (electrical, piping, plumbing, etc.) as required for construction.
- C. Protect existing appurtenances and structures which are not to be demolished.
- D. Prevent movement of adjacent structures. Provide bracing and shoring.

3.02 DEMOLITION REQUIREMENTS

- A. Explosives are not allowed.
- B. Conduct demolition to minimize interference with adjacent piping, structures, and occupancies.
- C. Cease operations immediately if adjacent structures appear to be in danger. Notify Engineer. Do not resume operations until directed.

3.03 DEMOLITION

- A. Prevent damage to adjacent materials, surfaces, and new construction when removing materials to be re-installed or retained. Store and protect in accordance with requirements of Section 01600.
- B. Saw cut or core concrete required for demolition, or as otherwise required for construction.
- C. Core concrete required for installation of pipes, drain lines, conduit, or as otherwise required for construction.
- D. Demolish items shown or as required to complete Work.
- E. Coordinate with Owner and Engineer for salvaged material.
- F. Remove demolished materials for disposal from Site, dispose of in appropriate facility.

3.04 TOLERANCES

- A. The limits of demolition shall be the dimension shown on the Drawings unless otherwise modified by erection drawings.

3.05 SCHEDULES

- A. All demolition as indicated on Drawings. Perform all other minor demolition shown on Drawings or specified in other Sections or as required to complete Work.
- B. Disconnect, remove, protect and re-install designated features as shown on Drawings or specified for re-use, or as required to complete construction.

END OF SECTION

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DIVISION 2 - SITE WORK
SECTION 02076 PAVEMENT REMOVAL

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes:
 - 1. The sawcut, removal, and satisfactory disposal of pavement materials including asphalt pavement, concrete pavement, side-walks, curbs and gutter, and driveways.

- B. Related Sections include, but are not limited to:
 - 1. Section 01010 - Summary of Work.
 - 2. Section 01300 - Submittals.
 - 3. Section 01500 - Construction Facilities and Temporary Controls.
 - 4. Section 01700 - Contract Closeout.

1.02 REFERENCES

- A. Reference Standards include:
 - 1. "Standard Specifications for Road and Bridge Construction" by North Dakota Department of Transportation, 2014.

1.03 PROTECTION

- A. Protect and maintain survey monuments or any construction staking from disturbance during pavement removal.

- B. Confine Work and stockpiling to easement area, City right-of-way or an area approved by Engineer. Leave undisturbed all street and utility appurtenances not indicated for removal or renovation.

- C. Maintain, during this operation and at completion, the pavement removal area in such condition that it will be well drained at all times.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

3.01 PREPARATION

- A. Become familiar with required lines of removal and saw cutting. Where portions of an existing structure, pavement, curb, gutter, sidewalk, or similar item are to be left in the surface of the finished work, removal shall be to an existing joint or sawed to a specified vertical face.

- B. Identify underground utilities.

- C. Provide, erect, and maintain adequate barriers and warning lights.
- D. Keep streets, sidewalks, and driveways in usable condition; avoid property owner inconvenience insofar as practicable; do not trespass on private property.
- E. Verify traffic control in place prior to commencement of pavement removal.
- F. Inspect and record existing conditions on site and at adjacent areas prior to starting construction. Commencement of this Section's Work means acceptance of existing conditions.

3.02 REMOVAL

- A. Saw cutting will be required on concrete and asphalt pavements. Pavement removal beyond the limits established in the notes on the Drawings shall be replaced at the Contractor's expense.
- B. Saw cut vertically; remove on straight lines approximately parallel or perpendicular to centerline of pavement.
- C. Saw cut vertically full depth to obtain a clean break. After saw cutting, use pneumatic jackhammer or similar device prior to breaking out pavement.
- D. Disturbances, breakage or damage of areas not designated for removal shall be restored at Contractor's expense.
- E. Pavement removed beyond the limits established shall be replaced to the same specifications as the adjacent removal at Contractor's expense.
- F. Break out remainder of pavement.
- G. Leave underlying sub-base material in a trafficable condition if construction sequence involves delays and if local situation requires access by the public.

3.03 TOLERANCES

- A. Saw cut full depth to achieve a clean break.
- B. If line of removal falls within 2 feet of an existing joint, adjust line of removal to be the existing joint.
- C. Remove entire width of sidewalk if removal width is less than sidewalk width.

3.04 SALVAGE/DISPOSAL

- A. Remove broken pavement and dispose of materials not indicated to be stockpiled or remain as Owner's property at a location chosen by the Contractor that is acceptable to local authorities and regulatory agencies.

END OF SECTION

DIVISION 2 - SITE WORK
SECTION 02110 - SITE CLEARING

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Protection of features not designated for removal.
 - 2. Removal of surface features.
 - 3. Clearing site of plant life and grass.
 - 4. Topsoil excavation.

- B. Related Sections include, but are not limited to:
 - 1. Section 01025 – Measurement and Payment.
 - 2. Section 02205 – Soil Materials.
 - 3. Section 02211 – Grading.
 - 4. Section 02222 – Excavation.
 - 5. Section 02223 – Backfilling.

1.02 REGULATORY REQUIREMENTS

- A. Conform to all applicable regulations for proper disposal of debris.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Topsoil: Reused; graded free of roots, rocks, subsoil, debris, and large weeds. Refer to Section 02205.

PART 3 EXECUTION

3.01 PREPARATION

- A. Beginning Work of this Section means acceptance of existing conditions.

3.02 PROTECTION

- A. Locate, identify, and protect those utilities, which are not designated for removal, from damage.

- B. Protect benchmarks, monuments, and existing structures and features from damage.

3.03 CLEARING

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

- B. Clearing and grubbing shall be incidental to the contract.

3.04 REMOVAL

- A. Remove debris, rock, and extracted plant life from Site.

3.05 TOPSOIL EXCAVATION

- A. Strip existing topsoil full depth or a maximum of 8 inches from entire area to be disturbed and where excavated material is stockpiled.
- B. Do not excavate wet topsoil. Wet topsoil is defined as having a moisture content exceeding the plastic limit.
- C. Stockpile on approved site to a depth not exceeding 8 feet and protect from erosion.

END OF SECTION

DIVISION 2 – SITEWORK
SECTION 02115 – SUBGRADE PREPARATION

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes:
1. Scarifying, compacting and shaping the earth subgrade.
 2. Perform subgrade preparation on all areas to receive concrete pavement, aggregate base course, and/or aggregate surface course.

1.02 REFERENCES

- A. Reference Standards include:
1. ASTM D698 – Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 5.5 lb Rammer and 12 inch Drop.
 2. ASTM D2487 – Classification of Soils for Engineering Purposes.
 3. ASTM D2922 – Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
 4. ASTM D3017 – Test Method for Moisture Content of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
 5. ASTM D4318 – Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.

PART 2 PRODUCTS

2.01 OTHER MATERIALS

- A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to approval of the Engineer.
- B. Suitable Soil Materials: On-Site excavated material or imported material meeting subsoil classification S1 or S2, as defined in Section 02205, free of rock or gravel larger than 2 inches in any dimension, debris, waste, frozen materials, vegetation and other deleterious matter.

PART 3 EXECUTION

3.01 GENERAL

- A. Subgrade Preparation shall consist of producing a firm and stable subgrade prior to placement of the surface or base course.

3.02 SUBGRADE PREPARATION

- A. The Contractor shall compact and shape the subgrade for its full width as may be necessary to produce, at the time the base course is placed, the required density in the upper 12-inches of the base and the required grade and cross-section.

- B. The subgrade shall be prepared by scarifying the upper 12-inches of subgrade soil and compacting according to Section 02223. Subgrade preparation shall extend deeper than 12-inches if the Engineer believes that additional subgrade preparation is necessary to support construction.
- C. If areas are encountered that cannot be compacted, subexcavate unstable materials and replace with materials that can be compacted.
- D. Any irregularities or depressions that develop during rolling shall be corrected by loosening the material at these places and adding, removing, or replacing material until the surface is smooth and uniform.
- E. Contractor shall be responsible for drying the subgrade soil or applying water as may be necessary to obtain the required density. Contractor shall also be responsible for grading the Work area and providing drainage so that accumulating water will drain away from the subgrade.
- F. The finished subgrade surface shall be smooth and uniform and shall not rut, shove, flex, or displace when any construction equipment is placed on it.
- G. The required grade and cross-section for subgrades shall consist of a smooth subgrade surface that conforms to the prescribed elevations for the particular subgrade being prepared, prior to constructing an additional course thereon. The required grade and cross-section for rough graded surfaces shall consist of a smooth graded surface that conforms to the prescribed elevations for that particular rough grade being prepared. The prescribed elevation for any point on the subgrade or rough graded surfaces shall be as determined from the grades staked by the Engineer.
- H. Finish subgrade or rough graded surfaces shall not deviate by more than 0.05 feet from the required section and grade.
- I. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or lose compaction due to subsequent construction operations, vehicular traffic, or weather conditions.
- J. Surface or base course shall not be placed on subgrades until the subgrade has been tested and Contractor has proven that the requirements specified herein have been met. Upon completion of a successful test, Contractor shall maintain the subgrade and repair any damage prior to placing subsequent materials.
- K. Subgrade preparation shall apply to all paved and graveled areas, including roads, driveways, parking areas, sidewalks, and ramps.

3.03 FIELD QUALITY CONTROL

- A. Section 01400 - Quality Control: Field inspection and testing.
- B. Compaction testing will be performed in accordance with ASTM D698 and ASTM D2922.

- C. If tests indicate Work does not meet specified requirements, remove Work, replace and retest at no cost to Owner.
- D. Frequency of Tests:
 - 1. One per driving lane per 200 feet of road length or as directed by the Engineer.
- E. Proof Rolling: In addition to compaction testing, Proof Rolling will be performed to confirm adequate compaction.
 - 1. The Proof Rolling will utilize a fully loaded tandem axel dump truck, or an Engineer approved vehicle, rolling across the driving area.
 - 2. If the vehicle does not cause obvious informity and instability, the compaction can be approved as adequate.
 - 3. The Proof Rolling must be performed in the presence of the Engineer, Owner and Contractor.
 - 4. Proof Rolling will be performed on all driving areas prior to placement of aggregate base.

END OF SECTION

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DIVISION 2 – SITE WORK
SECTION 02204 – BYPASS PUMPING

PART 1 GENERAL

1.01 SUMMARY

- A. It is the intent of this Specification to provide the minimum requirements for bypass pumping/sewage flow control necessary to facilitate sewer line inspection and/or sewer line rehabilitation activities.
- B. CONTRACTOR shall provide all labor, equipment, supervision and materials necessary to reduce/control flows via sewage flow control mechanisms or eliminate flows via bypass pumping through a section or sections of pipe designated for inspection and/or rehabilitation. CONTRACTOR shall be responsible for controlling and maintaining all sanitary and storm flows within the sewer system during the Work. CONTRACTOR may drain flows by pipes, chases, fluming, bypass pumping, or other appropriate methods approved by OWNER. Plugging of any sewer line shall not be permitted without bypassing unless approved in writing by the City of Rugby.

1.02 RELATED SECTIONS

- A. Related Sections include but are not limited to:
 - 1. Bidding Requirements, Contract Forms, and Conditions of the Contract.
 - 2. General Provisions.
 - 3. Section 02513 – Cured-In-Place Pipe.
 - 4. Section 02560 – Internal Inspection of Pipelines and Manholes.
 - 5. Section 02562 – Sewer Pipe and Structure Cleaning.
 - 6. Section 02710 – Sanitary Sewer System.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Manhole/Sewer Main Blocking plugs shall be made of natural rubber compound, with a NPT tire inflation valve and eye bolt. The plugs shall be manufactured by Lansas Products or Chern Industries. All plugs using air pressure shall have monitoring gages at the surface so that they can be visually monitored at all times. The use of any other product must be pre-approved in writing by the City of Rugby. Plugs may be either single or multi size.
- B. Flexible hoses and associated couplings and connectors shall be abrasion resistant suitable for the intended service and shall be rated for the external and internal loads anticipated including test pressures. External loading design shall incorporate all anticipated traffic loadings, including traffic impact loading.
- C. Where bypass piping crosses streets, driveways, sidewalks and/or other public ways, the contractor must place provisions to permit normal pedestrian and vehicular traffic reasonable access to concourses.
- D. **THE USE OF SANDBAGS IS NOT ALLOWED**

PART 3 EXECUTION

3.01 PROTECTION OF PUBLIC AND PRIVATE PROPERTY

- A. Precautions shall be taken to ensure that flow control and dewatering operations shall not cause flooding or damage to public or private properties. In the event flooding or damage occurs, CONTRACTOR shall make provisions to correct such damage at no additional cost to OWNER. CONTRACTOR shall be responsible for any damages to public or private property, overflows from the sewer system and violations resulting in fines as a result of the dewatering/bypass operation.
- B. CONTRACTOR shall assume all responsibility for notification to and coordination with all customers whose building sewer laterals will be out of service during the Work. Notifications shall be in writing via door hanger, door flier or U.S. mail. Notification shall be given 24-hours in advance of loss of service, (excluding weekends and holidays). Notice shall clearly state the purpose of the work, shall advise all affected customers against water usage until the sewer line is placed back in service, and shall clearly state the potential consequences of use of residential wastewater generating facilities during the time when the building sewer service will be out of service (i.e. sewer back-up). The notice shall include the project name, project number, City department name, City employee contact number, and CONTRACTOR's local 24-hour contact number for residents to call if they have questions regarding the work.

3.02 BYPASS PUMPING

- A. When required by the Contract Documents or when required by the manufacturer of the sewer line rehabilitation product in order to facilitate the installation of a sewer line rehabilitation product, CONTRACTOR shall provide all labor, equipment and materials necessary for the transfer of flow around the section or sections of pipe designated. The bypass shall be made by diversion of the flow from an existing upstream location, around the section(s) to be taken from service for inspection or rehabilitation, to an existing downstream location. The bypass system shall be of adequate capacity to handle all flows including wet weather related flows. If bypass pumping is utilized by CONTRACTOR to control flows, CONTRACTOR shall be responsible for monitoring and manning the bypass pumping operation at all times until Work is complete. A minimum pump size of 6" will be required for any bypass pumping on a 10," or larger trunkline. In no case shall the bypass pumping go to a smaller sewer line than the line being bypass pumped. If pumping has to go to smaller lines, the pump discharge must be split in order to prevent overcharging the smaller lines. The location of pump(s), force main, discharge point, pumping rates, etc., shall be approved by OWNER and shall be monitored by CONTRACTOR.

- B. CONTRACTOR shall prepare a detailed Flow Control Plan that describes the measures to be used to control flows. CONTRACTOR shall submit the Plan to and obtain approval of the Plan from the ENGINEER or SEWER & WATER DEPARTMENT prior to beginning any flow control work. CONTRACTOR's Plan shall include, but not necessarily be limited to the following:
 - 1. Location of flow diversion structures, collapsible sewer plugs, dams, pumps and related materials and equipment.
 - 2. Key operational control factors, (i.e. maximum flow elevations upstream of dams).
 - 3. Pump sizes and flow rates.
 - 4. Destination of bypassed flows including routing of force mains and provisions for vehicular and pedestrian traffic as necessary.
 - 5. Wet weather event procedures.
- C. The Contractor shall have adequate standby equipment available and ready for immediate operation and use in the event of emergency or breakdown. One standby pump for each pump utilized, providing 100% redundancy.
- D. Testing of the bypass pumping equipment shall take place prior to any saw cutting or removal of pipe or sewer appurtenances downstream of the bypass.

3.03 WET WEATHER EVENTS

- A. Where the flow control mechanism is not sufficient to handle a wet weather event, the flow control/diversion or pumping system shall be capable of quick removal so as not to create an overflow to surface waters, overflow to ground, or back-up in buildings. Any monetary fines associated with avoidable overflows shall be paid for by CONTRACTOR.

3.04 MEASUREMENT AND PAYMENT

- A. Payment for bypass pumping/sewage flow control, including provisions for wet weather flow control, shall be paid at the contract lump sum bid price for "Sanitary Sewer Bypass Pumping".

END OF SECTION

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DIVISION 2 - SITE WORK
SECTION 02205 SOIL MATERIALS

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes:
 - 1. Subsoil materials.
 - 2. Topsoil materials.
 - 3. Valve and manhole backfill materials.
 - 4. Source quality control.
 - 5. Topsoil removal.
 - 6. Stockpiling.

- B. Related Sections include, but are not limited to:
 - 1. Section 01300 – Submittals.
 - 2. Section 01400 – Quality Control.
 - 3. Section 02211 – Grading.
 - 4. Section 02212 – Restoration of Disturbed Areas.
 - 5. Section 02223 – Backfilling.
 - 6. Section 02923 – Landscape Grading.
 - 7. Section 02936 – Hydroseeding.

1.02 REFERENCES

- A. Reference Standards include:
 - 1. ASTM D698 – Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort.
 - 2. ASTM D2487 – Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System).
 - 3. ASTM D4318 – Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.

1.03 SUBMITTALS

- A. Section 01300 – Submittals: Procedures for submittals.

- B. Samples: Submit in air-tight containers to testing laboratory, 10 pound (lb.) sample of each type of fill for Standard Proctor Density testing.

- C. Laboratory Results: Submit to Engineer in accordance with Section 01300.

1.04 QUALITY ASSURANCE

- A. Section 01400 - Quality Control: Field Samples.

- B. Materials Source: Submit name of imported materials source.

- C. Provide materials for each material type from the same source throughout the Work. Change of source requires Engineer approval.

PART 2 PRODUCTS

2.01 SUBSOIL MATERIALS

- A. Subsoil materials shall be: Excavated material; imported borrow, and select or local borrow. Graded free of lumps larger than 3 inches, rocks larger than 2 inches, and debris conforming to the following:
1. Type S1: Imported or re-used; fine sand, silty sands, and sand-clay mixtures. Conforming to ASTM D2487 Group Symbol SP, SM or SP-SM. Gravel or sharp materials larger than 1-inch shall not be used.
 2. Type S2: Reused excavated soils (job excavated material). Job excavated material may be used for compacted backfill when the job excavated material is finely divided and free from debris, organic material, cinders or other corrosive material, and stones larger than 3 inches in greatest dimension. Masses of moist, stiff clay shall not be used.
 3. Type S3: Non-used; All frozen material, vegetation, trash, rocks, and concrete and bituminous chunks having a dimension exceeding 3 inches.

2.02 TOPSOIL MATERIALS

- A. Type S4: Topsoil: Excavated material; select, unclassified, and imported borrow. Graded free of sod, hard lumps, gravel, stones, roots, rocks larger than ½ inch, subsoil, debris, large weeds, and foreign matter.
1. Imported or re-used; loose, friable loamy black soil. Acidity range (pH) of 5.5 to 7.5 containing a minimum of 4 percent and a maximum of 25 percent organic matter conforming to ASTM D2487 group symbol OL or OH.
 2. Topsoil shall be removed to its full depth.
 3. Stockpile and Salvage: The equipment and methods shall be adjusted to avoid the removal of subsoil or other unsuitable material.
 4. All stockpiled topsoil shall be spread evenly over the buried pipeline.

2.03 VAULT AND MANHOLE BACKFILL MATERIALS

- A. Type S2: On-site soils shall be reused as the valve vault backfill. Vault and manhole foundations to bear in-situ soils, however, Contractor shall not over excavate. Any disturbed soils shall be removed and replaced with concrete or Type S1 soil compacted to at least 95 percent of Standard Proctor Density.

2.04 SOURCE QUALITY CONTROL

- A. Section 01400 - Quality Control: Testing and analysis of soil material.
- B. Contractor shall submit samples, obtain laboratory results, and submit for Engineer's approval.
- C. Testing and Analysis of Subsoil Material: Perform in accordance with ASTM D1557, ASTM D2487, and ASTM D4318.
- D. Testing and Analysis of Topsoil Material: Perform in accordance with ASTM D2487.

- E. If tests indicate materials do not meet specified requirements, change material and retest.
- F. Provide materials of each type from the same source throughout the Work.

PART 3 EXECUTION

3.01 TOPSOIL REMOVAL

- A. Topsoil shall be removed from all excavation areas and stockpiled at acceptable locations outside the grading limits.
- B. Topsoil shall be removed to its full depth, but not exceed 8 inches.
- C. All stockpiled topsoil shall be spread evenly over the entire area of the excavation.
- D. Prevent contamination of topsoil.

3.02 SOIL REMOVAL

- A. Excavate subsoil required from all areas designated for construction.
- B. Remove lumped soil, boulders, rock, debris, and large weeds.
- C. Stockpile excavated material in an area acceptable to Owner. Remove and dispose of legally from the site unsuitable excess material not being used.

3.03 STOCKPILING

- A. Stockpile materials within construction limits. Stockpile topsoil and backfill material within easement limits.
- B. Stockpile in sufficient quantities to meet Project schedule and requirements.
- C. Separate differing materials with dividers or stockpile apart to prevent mixing.
- D. Prevent intermixing of soil types or contamination of stockpiled soils.
- E. Direct surface water away from stockpile site to prevent erosion or deterioration of materials.

3.04 STOCKPILE CLEANUP

- A. Remove stockpile(s), leave area in a clean and neat condition. Grade site surface to prevent free standing surface water.
- B. If a borrow area is used, leave area in a clean and neat condition. Grade site surface to prevent free standing surface water.

END OF SECTION

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DIVISION 2 - SITE WORK
SECTION 02207 - AGGREGATE MATERIALS

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes:
 - 1. Aggregate materials.

- B. Related Sections include, but are not limited to:
 - 1. Section 01300 – Submittals.
 - 2. Section 01400 – Quality Control.
 - 3. Section 02205 – Soil Materials.
 - 4. Section 02212 – Restoration of Disturbed Areas.
 - 5. Section 02222 – Excavation.
 - 6. Section 02223 – Backfilling.
 - 7. Section 02225 – Trenching.
 - 8. Section 02660 – Water Distribution System.
 - 9. Section 02710 – Sanitary Sewer Systems.

1.02 REFERENCES

- A. Reference Standards include, but are not limited to:
 - 1. ASTM C33 - Standard Specification for Concrete Aggregates.
 - 2. ASTM C136 - Method for Sieve Analysis of Fine and Coarse Aggregates.
 - 3. ASTM D1557 – Standard Test Methods for Laboratory Compaction Characteristics oil Soil Using Modified Effort.
 - 4. ASTM D2487 - Classification of Soils for Engineering Purposes.
 - 5. Standard Specifications for Road and Bridge Construction, Latest Edition, by North Dakota Department of Transportation.

1.03 SUBMITTALS FOR REVIEW

- A. Section 01300 – Submittals: Procedures for submittals.

- B. Samples: Submit, in air-tight containers, 10 pound sample of each type of aggregate to testing laboratory. Submit Laboratory Results to Engineer.

1.04 QUALITY ASSURANCE

- A. Section 01400 – Quality Control: Field Samples.

- B. Material Source: Submit name of imported material supplier(s). Provide materials from the same source throughout the Work. Change of source requires Engineer approval.

PART 2 PRODUCTS

2.01 COARSE AGGREGATE MATERIALS

- A. Coarse Aggregate Type A1: Well graded crushed stone or gravel conforming to the requirements of ASTM C33, Gradation 67.
- B. Coarse Aggregate Type A2: Gravel; Angular crushed, or natural stone; free of shale, clay, friable material and debris; graded in accordance with North Dakota Department of Transportation referenced specifications, Section 816, Class 13.
- C. Coarse Aggregate Type A3: Gravel; Angular crushed, or natural stone; free of shale, clay, friable material and debris; graded in accordance with North Dakota Department of Transportation referenced specifications, Section 816, Class 5.
- D. Aggregate for Asphalt Mix: Refer to Section 2510, Paragraph 2.01B.

2.02 FINE AGGREGATE MATERIALS

- A. Fine Aggregate Type A4 (Sand): Natural river or bank sand; free of silt, clay, loam, friable or soluble materials, and organic matter; graded in accordance with ASTM C136; within the following limits:

<u>Sieve Size</u>	<u>Percent Passing</u>
3/8-in.	100
No. 4	95 to 100
No. 8	80 to 100
No. 16	50 to 85
No. 30	25 to 60
No. 50	10 to 30
No. 100	2 to 10

2.03 SOURCE QUALITY CONTROL

- A. Section 01400 – Quality Control: Source testing and analysis of aggregate material.
- B. Coarse Aggregate Material - Testing and Analysis: Perform in accordance with ASTM C136 and ASTM D1557.
- C. Fine Aggregate Material - Testing and Analysis: Perform in accordance with ASTM C136 and ASTM D1557.
- D. If tests indicate materials do not meet specified requirements, change material or material source and retest.
- E. Provide materials of each type of aggregate from the same source throughout the Work.

PART 3 EXECUTION

3.01 STOCKPILING

- A. Stockpile materials on site at a location acceptable to Owner.
- B. Stockpile in sufficient quantities to meet Project Schedule and requirements.
- C. Separate differing materials with dividers or stockpile apart to prevent mixing.
- D. Direct surface water away from stockpile site so as to prevent erosion or deterioration of materials.

3.02 STOCKPILE CLEANUP

- A. Remove stockpile, leave area in a clean and neat condition. Grade site surface to prevent standing surface water.
- B. If a borrow area is indicated, leave area in a clean and neat condition. Grade borrow site surface to prevent standing surface water.

END OF SECTION

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DIVISION 2 - SITE WORK
SECTION 02211 - GRADING

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes:
 - 1. Removal of topsoil and subsoil.
 - 2. Cutting, grading, filling, rough contouring, and compacting.

- B. Related Sections include, but are not limited to:
 - 1. Section 01039 – Coordination and Meetings.
 - 2. Section 01400 – Quality Control.
 - 3. Section 01500 – Construction Facilities and Temporary Controls.
 - 4. Section 01700 – Contract Closeout.
 - 5. Section 02110 – Site Clearing.
 - 6. Section 02205 – Soil Materials.
 - 7. Section 02207 – Aggregate Materials.
 - 8. Section 02212 – Restoration of Disturbed Areas.
 - 9. Section 02222 – Excavating.
 - 10. Section 02223 – Backfilling.
 - 11. Section 02225 – Trenching.
 - 12. Section 02923 – Landscape Grading
 - 13. Section 02936 – Hydroseeding

1.02 REFERENCES

- A. Reference Standards include, but are not limited to:
 - 1. AASHTO T180 - Moisture-Density Relations of Soils Using a 10-lb. (4.54 kg) Rammer and an 18-in. (457 mm) Drop.
 - 2. ASTM C136 - Method for Sieve Analysis of Fine and Coarse Aggregates.
 - 3. ASTM D1557 – Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort.
 - 4. ASTM D2487 - Classification of Soils for Engineering Purposes.
 - 5. ASTM D6938 – Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).

1.03 PROJECT RECORD DOCUMENTS

- A. Submit under provision of Section 01700.

- B. Accurately record actual locations of utilities remaining by horizontal dimensions, elevations or inverts, and slope gradients.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Topsoil: Type S4 as specified in Section 02205.

- B. Subsoil Fill: Type S1 or S2 as specified in Section 02205.
- C. Structural Fill: Type A1 as specified in Section 02207.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that survey benchmark and intended elevations for the Work are as indicated.
- B. Verify site conditions under provisions of Section 01039.

3.02 PREPARATION

- A. Identify required lines, levels, contours, and datum.
- B. Contractor shall be responsible for coordinating with all utility companies for location of buried utilities prior to excavation.
- C. Locate, identify, and protect all utilities that remain, from damage.
- D. Notify utility company to remove and/or relocate utilities that interfere with construction.
- E. Protect plant life, lawns, and other features remaining as a portion of final landscaping.
- F. Protect bench marks, survey control points, and existing structures, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.

3.03 SUBSOIL EXCAVATION

- A. Excavate subsoil from areas to be further excavated, re-landscaped, or re-graded.
- B. Do not reuse excavated subsoil as backfill if wet unless material has been dried to obtain optimum moisture content.
- C. When excavating through roots, perform Work by hand and cut roots with sharp axe.
- D. Stockpile in area designated on site to depth not exceeding 8 feet and protect from erosion. Remove subsoil not being reused from site.
- E. Stability: Replace damaged or displaced subsoil to same requirements as for specified fill.
- F. Compact sub-base to density requirements for subsequent backfill materials.
- G. Cut out soft areas of sub-base not capable of compaction in-place. Backfill with Type A1 fill as specified in Section 02207 and compact to density equal to or greater than requirements for subsequent fill material.

- H. Identify soft spots; fill and compact to density equal to or greater than requirements for subsequent fill material.

3.04 BACKFILLING

- A. As specified in Section 02223.

3.05 TOLERANCES

- A. Top Surface of Backfilling Under Structures and Roadways: Plus or minus 0.1 feet from required elevations.
- B. Top Surface of General Backfilling: Plus or minus 0.2 feet from required elevations.

3.06 FIELD QUALITY CONTROL

- A. See Section 01400 – Quality Control.
- B. Perform compaction testing in accordance with ASTM D1557 and ASTM D6938.
- C. If tests indicate Work does not meet specified requirements, remove Work, replace and retest at no cost to Owner.
- D. Frequency of Density Tests: As specified in Section 02223.

3.07 SCHEDULE

- A. As specified in Section 02223.

3.08 PROTECTION OF FINISHED WORK

- A. Protect finished Work under provisions of Section 01500.
- B. Reshape and re-compact fills subjected to vehicular traffic.

END OF SECTION

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DIVISION 2 - SITE WORK
SECTION 02212 - RESTORATION OF DISTURBED AREAS

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes:
 - 1. Restoration of areas designated for restoration.
 - 2. Restoration of all items not specifically identified for restoration, but damaged through construction.
 - 3. Restoration of paved surfaces.
 - 4. Restoration of grassed areas.
 - 5. Clean up.

- B. Related Sections include, but are not limited to:
 - 1. Section 01700 – Contract Closeout.
 - 2. Section 02205 – Soil Materials.
 - 3. Section 02207 – Aggregate Materials.
 - 4. Section 02223 – Backfilling.
 - 5. Section 02923 – Landscape Grading
 - 6. Section 02936 – Hydroseeding

1.02 REFERENCES

- A. Reference Standards include, but are not limited to:
 - 1. North Dakota State Highway Department Standard Specifications for Road and Bridge Construction, latest edition.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Refer to Paragraph 1.01 B. for appropriate material Specification Section.

PART 3 EXECUTION

3.01 EXECUTION

- A. Observe all surface features requiring protection, removal and replacement, and/or restoration prior to construction.

- B. The Contractor shall be responsible for the preservation of all property and shall protect carefully from disturbance or damage all land monuments and property marks until the Engineer has witnessed or otherwise referenced their location and shall not move them until directed.

- C. The Contractor shall be responsible for all damage or injury to property of any character during the prosecution of the Work, resulting from any act, omission, neglect or misconduct in his manner or method of executing the Work, or at any time due to defective Work or materials, and said responsibility will not be released until the project shall have been completed and accepted.
- D. When any direct or indirect damage or injury is done to public or private property by or on account of any act, omission, neglect, or misconduct in the execution of the Work, or in consequence of the non-execution thereof by the Contractor, he shall restore, at his own expense, such property to the condition similar or equal to that existing before such damage or injury was done, by repairing, rebuilding, or otherwise restoring as may be directed, or he shall make good such damage or injury in an acceptable manner.

3.02 RESTORATION

- A. Restore all areas disturbed by construction to a condition equal to or better than existed prior to construction.
- B. Restore items such as road signs, power poles, fences, foundation walls, yard lights, driveways, and the like, whether or not specifically identified on the Plans, to a condition equal to or better than existed before construction.
- C. Replace all concrete removed or damaged during construction with equal or better materials. Restore to match existing conditions.
- D. Place topsoil per Section 02205 and restore grassed areas disturbed by construction per Sections 32 920.
- E. All damage to driveways and grassed areas, etc., due to the Contractor's construction techniques shall be repaired at the Contractor's expense prior to final payment.
- F. Remove all excess dirt, concrete, materials, and debris from project Site immediately upon completion of Work. Contractor shall be required to clean site to the condition prior to the start of construction before final payment will be made.
- G. All restoration shall be completed prior to opening any section of Work.

END OF SECTION

DIVISION 2 - SITE WORK
SECTION 02222 - EXCAVATION

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Excavating for site structures, including lift station and valve vault.

- B. Related Sections include, but are not limited to:
 - 1. Section 01400 – Quality Control.
 - 2. Section 02110 – Site Clearing.
 - 3. Section 02225 – Trenching.
 - 4. Section 02607 – Precast Concrete Structures.
 - 5. Section 02223 – Backfilling.
 - 6. Section 02660 – Water Distribution System.
 - 7. Section 02710 – Sanitary Sewer System.

1.02 FIELD MEASUREMENTS

- A. Verify that survey benchmark and intended elevations for the Work are as indicated.

PART 2 PRODUCTS

- A. Not Used.

PART 3 EXECUTION

3.01 PREPARATION

- A. Contractor shall be responsible for coordinating with all utility owners for location of buried utilities prior to excavation.
- B. Identify required lines, levels, contours, and datum locations.
- C. Locate, identify, and protect utilities that remain from damage.
- D. Notify utility owners to locate utilities prior to excavation.
- E. Protect plant life, lawns, and other features remaining as a portion of final landscaping.
- F. Protect benchmarks, survey control points, existing structures, fences, sidewalks, and paving from excavating equipment and vehicular traffic.

3.02 EXCAVATING

- A. Excavate subsoil to accommodate building foundations, slabs-on-grade, and site structures, construction operations, bore pits, and other Work.
- B. Compact disturbed load bearing soil in direct contact with foundations to original bearing capacity; perform compaction in accordance with Section 02223.
- C. Slope banks with machine to angle of repose or less unless shored.
- D. Do not interfere with 45 degree bearing splay of foundations.
- E. Grade top perimeter of excavations to prevent surface water from draining into excavation.
- F. Hand trim excavations. Remove loose matter.
- G. Remove lumped subsoil, boulders, and rock up to 1/3 cu. yd. measured by volume.
- H. Notify Engineer of unexpected subsurface conditions and discontinue affected Work in area until notified to resume Work.
- I. Correct areas over excavated per approval by Engineer.
- J. Stockpile excavated material in area on site and remove excess or unsuitable material from Site. Contractor to bear all cost for removal, haul, and/or spread excess fill.

3.03 FIELD QUALITY CONTROL

- A. Section 01400 – Quality Control.
- B. Provide for visual inspection of bearing surfaces.

3.04 PROTECTION

- A. Prevent displacement or loose soil from falling into excavation; maintain soil stability.
- B. Protect bottom of excavations and soil adjacent to and beneath foundation from freezing.

END OF SECTION

DIVISION 2 - SITE WORK
SECTION 02223 BACKFILLING

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Materials.
 - 2. Backfilling.
 - 3. Placement.
 - 4. Compaction schedule.
 - 5. Fill for over-excavation.
 - 6. Settlement.

- B. Related Sections include, but are not limited to:
 - 1. Section 01400 – Quality Control.
 - 2. Section 02205 – Soil Materials.
 - 3. Section 02207 – Aggregate Materials.
 - 4. Section 02222 – Excavation.
 - 5. Section 02607 – Precast Concrete Structures.
 - 6. Section 02660 – Water Distribution System.
 - 7. Section 02710 – Sanitary Sewer System.
 - 8. Section 02722 – Storm Sewer.
 - 9. Section 02321 – Casing Pipe.

1.02 REFERENCES

- A. Reference Standards include, but are not limited to:
 - 1. ASTM D698 – Tests Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12.400 ft-lbf/ft³(600 kN-m/m³)).
 - 2. ASTM D1557 – Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort.
 - 3. ASTM D3017 - Test Methods for Moisture Content of Soil and Soil-Aggregate Mixtures.
 - 4. ASTM D6938 – Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth).

PART 2 PRODUCTS

2.01 FILL MATERIALS

- A. Subsoil and Topsoil Fills: As specified in Section 02205.

- B. Aggregate Fills: As specified in Section 02207.

PART 3 EXECUTION

3.01 PREPARATION

- A. Verify sub-drainage, dampproofing, waterproofing, and insulation have been inspected and approved.
- B. Verify structural ability of unsupported walls to withstand loads imposed by fill.
- C. Compact subgrade to density requirements for subsequent backfill materials.
- D. Cut out soft areas of subgrade not capable of compaction in-place. Backfill with approved fill and compact to density equal to or greater than requirements for subsequent fill material.
- E. Identify soft spots; fill and compact to density equal to or greater than requirements for subsequent fill material.
- F. Contractor shall remove and stockpile topsoil for finishing ground surfaces as specified herein and as indicated on the drawings. The topsoil layer shall be restored to its original depth and quality.

3.02 BEDDING

- A. Placed at trench bottom in compliance with Section 02207 and the Project details.

3.03 BACKFILLING

- A. Backfill areas to contours and elevations with specified materials.
- B. Systematically backfill to allow maximum time for natural settlement. Do not backfill over porous, wet, frozen, or spongy subgrade surfaces.
- C. Aggregate Fill: Place and compact materials in equal continuous layers not exceeding 6 inches compacted depth.
- D. Soil Fill: Place and compact material in equal continuous layers not exceeding 8 inches compacted depth.
- E. Employ a placement method that does not disturb or damage other Work.
- F. Maintain optimum moisture content of backfill materials to attain required compaction density.
- G. Remove surplus backfill materials from Site. Contractor to bear all costs associated with loading and hauling excess soil material off Site.
- H. Leave fill material stockpile areas free of excess materials.

- I. All compacted backfill shall be compacted pneumatic tampers or equipment designed specifically for use in compaction of soils. Improvised methods such as use of a backhoe bucket will not be permitted for compaction of backfill.
- J. Type S1 and S2 materials shall be placed in uniform layers not exceeding 8 inches in uncompacted thickness. Each layer of material shall have moisture content within the specified rangers.
- K. Earth backfill material to be placed above embedments shall be free of brush, roots more than 2 inches in diameter, debris, cinders, or other corrosive material, but may contain rubble and detritus from rock excavation, stones, and boulders in certain portions of the trench depth.
- L. Backfill material above embedments shall be placed by methods which will not impose excessive concentrated or unbalanced loads, shock, or impact on and which will not result in displacement of installed pipe.
- M. Compact masses of stiff clay or other consolidated material more than one cubic foot in volume shall not be permitted to fall more than 5 feet into the trench unless cushioned by at least 2 feet of loose backfill above pipe embedment.
- N. No trench backfill material containing rocks, or rock excavation detritus, shall be placed in the upper 18 inches of the trench, nor shall any stone larger than 8 inches in its greatest dimension be placed within 3 feet of the top of pipe. Large stones, not exceeding 18 inches in their greatest dimension, may be placed in the remainder of the trench backfill only if well separated and so arranged that no interference with backfill settlement will result.

3.04 TOLERANCES

- A. Top Surface of General Backfilling: Plus or minus 0.1 feet from required elevations.

3.05 FIELD QUALITY CONTROL

- A. Section 01400 - Quality Control: Field inspection and testing.
- B. Compaction testing will be performed in accordance with ASTM D698 and ASTM D2922.
- C. If tests indicate Work does not meet specified requirements, remove Work, replace and retest at no cost to Owner.
- D. Frequency of Tests:
 - 1. One per every 2 feet of backfill height per 150 ft. laying length, or as directed by the Engineer.
 - 2. One per every 2 feet of backfill height around each manhole, or as directed by the Engineer.

3.06 PROTECTION OF FINISHED WORK

- A. Protect finished Work under provisions of Section 01500.
- B. Re-shape and re-compact fills subjected to vehicular traffic.
- C. Compaction equipment shall travel no closer than 18 inches from new concrete surfaces to avoid excessive stresses.

3.07 PLACEMENT

- A. Type A4 material shall be spread and the surface graded to provide a uniform and continuous support beneath the pipe at all points between bell holes or pipe joints. It will be permissible to slightly disturb the finished subgrade surface by withdrawal of pipe slings or other lifting tackle.
- B. After each pipe has been graded, aligned, and placed in final position on the bedding material and shoved home, sufficient pipe embedment material shall be deposited and compacted under and around each side of the pipe and back of the bell or end thereof by shovel slicing or other methods acceptable to Engineer to hold the pipe in proper position and alignment during subsequent pipe jointing and embedment operations.
- C. Embedment material shall be deposited and compacted in a manner which will not cause significant scratching or abrasion of the pipe coating or damage to the polyethylene tube protection.
- D. Embedment material shall be deposited, and compacted where required, uniformly and simultaneously on each side of the pipe to prevent lateral displacement.

3.08 COMPACTION SCHEDULE

- A. Fill Under Landscaped Areas:
 - 1. Fill Type S1 or S2, to 4 inches below finish grade, compacted to a minimum of 90 percent of the Standard Proctor Density (ASTM D698).
 - 2. Cover with Fill Type S4 (topsoil).
 - 3. Grade topsoil and prepare topsoil for seeding.
- B. Fill under Cast-in-Place Structures and Manholes:
 - 1. Fill Type A3, to 12 inches thick, compacted to a minimum of 95 percent of the Standard Proctor Density (ASTM D698), and at a moisture content of -3 to +3 percent of optimum moisture content.
- C. Fill to Correct Over-excavation:
 - 1. Fill Type S1 or S2, flush to required elevation, compacted to a minimum of 95 percent of the Standard Proctor Density (ASTM D698), and at a moisture content of -3 to +3 percent of optimum moisture content.
- D. Pipe Trench Zone:
 - 1. Type S2 as shown on Drawings, compacted to a minimum of 95 percent of the Standard Proctor Density (ASTM D698), and at a moisture content

of -3 to +3 percent of optimum moisture content.

- E. Pipe Bedding Zone:
 - 1. Type A4 as shown on Drawings, compacted to a minimum of 90 percent of the Standard Proctor Density (ASTM D698), and at a moisture content of -3 to +3 percent of optimum moisture content.

- F. Subgrade Base Preparation:
 - 1. Fill Type S1 or S2 as specified in Section 02205, compacted to a minimum of 95 percent of the Standard Proctor Density (ASTM D698), and at a moisture content of -3 to +3 percent of optimum moisture content.

- G. Base Preparation:
 - 1. Fill Type Blend Course 50 percent maximum milled asphalt and 50 percent Class 5 Aggregate as specified in Section 02207, compacted to a minimum of 100 percent of the Standard Proctor Density (ASTM D698), and at a moisture content of -3 to +3 percent of optimum moisture content.
 - 2. Fill Type A3 Class 5 aggregate as specified in Section 02207, compacted to a minimum of 100 percent of the Standard Proctor Density (ASTM D698), and at a moisture content of -3 to +3 percent of optimum moisture content.

- H. Fill in Undeveloped Areas:
 - 1. Fill Type S1 or S2, to 4 inches below finish grade, compacted to a minimum of 90 percent of the Standard Proctor Density (ASTM D698).
 - 2. Cover with Fill Type S4 (topsoil).
 - 3. Grade topsoil and prepare topsoil for seeding.

3.09 SETTLEMENT

- A. The Contractor shall be responsible for all settlement of backfill, fills, and embankments which may occur within the correction period stipulated in the Supplementary Conditions.

- B. The Contractor shall make, or cause to be made, all repairs or replacements made necessary by settlement within 30 days after notice from the Engineer or Owner, or sooner if required by Engineer or Owner, depending on the critical nature of the settlement.

END OF SECTION

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DIVISION 2 - SITE WORK
SECTION 02225 - TRENCHING

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes:
 - 1. Excavating trenches for utilities.
 - 2. Compacted bedding and fill of utilities to sub grade elevations.

- B. Related Sections:
 - 1. Section 01039 – Coordination and Meetings.
 - 2. Section 01400 – Quality Control.
 - 3. Section 02110 – Site Clearing.
 - 4. Section 02205 – Soil Materials.
 - 5. Section 02207 – Aggregate Materials.
 - 6. Section 02222 – Excavating.
 - 7. Section 02223 – Backfilling.
 - 8. Section 02660 – Water Distribution System.
 - 9. Section 02710 – Sanitary Sewer Systems.
 - 10. Section 02722 – Storm Sewer.
 - 11. Section 02923 – Landscape Grading.
 - 12. Section 02936 – Hydroseeding.

- C. References include, but are not limited to:
 - 1. ASTM C136 - Method for Sieve Analysis of Fine and Coarse Aggregates.
 - 2. ASTM D1557 – Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort.
 - 3. ASTM D6938 – Standard Test Methods for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)..

1.02 DEFINITIONS

- A. Utility: Any buried pipe, duct, conduit, cable, vault, manhole, or inlet.

1.03 FIELD MEASUREMENTS

- A. Verify that survey benchmark, control point, and intended elevations for the Work are as shown on Drawings.

1.04 COORDINATION

- A. Coordinate Work under provisions of Section 01039.

- B. Verify Work associated with lower elevation utilities is complete before placing higher elevation utilities.

PART 2 PRODUCTS

2.01 FILL MATERIALS

- A. Subsoil Fill: As specified in Section 02205.
- B. Aggregate Fill: As specified in Section 02207.

PART 3 EXECUTION

3.01 PREPARATION

- A. Identify required lines, levels, contours, and datum locations.
- B. Protect plant life, lawns, and other features remaining as a portion of final landscaping.
- C. Protect benchmarks, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.
- D. Notify utility company to locate utilities.
- E. Maintain and protect above and below grade utilities, which are to remain.
- F. Cut out soft areas of subgrade not capable of compaction in place. Backfill with Fill Type S1 or S2 and compact to density equal to or greater than requirements for subsequent backfill material.

3.02 TRENCHING

- A. Shore as required to protect workmen, banks, adjacent structures and facilities.
- B. Provide uniform bearing support for each pipe section along its entire length.
- C. Excavate trenches sufficiently wide to enable installation and allow inspection.
- D. Hand trim trench. Remove loose matter and all unsuitable material from trench.
- E. Slope banks with machine to angle of repose or less until shored.
- F. Contractor shall be responsible for meeting OSHA standards for trench excavations.
- G. Notify Engineer of unexpected subsurface conditions and discontinue affected Work in area until notified to resume Work.
- H. Excavate subsoil required for installation of utilities to required depths.
- I. Correct areas over-excavated in accordance with Section 02222 and 02223.

- J. Stockpile excavated material in an orderly manner, at sufficient distance from the trench to avoid overloading. Prevent slides and cave-ins. Remove excess material not being used from site.
- K. Excavate to over-depth of a minimum of 6 inches below pipe in areas of bedrock or other extensive rock formations by jack hammer, blasting, or other approved method. Trench width shall be minimum 1.25 times the outside diameter of the pipe.

3.03 EXCAVATING

- A. As specified in Section 02222.

3.04 BACKFILLING

- A. As specified in Section 02223.

3.05 TOLERANCES

- A. Top surface as specified in Section 02223.
- B. Trenches shall be kept within settlement tolerances through the warranty period.

3.06 FIELD QUALITY CONTROL

- A. Section 01400 – Quality Control.

3.07 PROTECTION OF FINISHED WORK

- A. Protect finished Work under provisions of Section 01500.
- B. Reshape and re-compact fills subjected to vehicular traffic during construction.
- C. Clean pavements adjacent to trenches during construction as required or directed by Engineer.

END OF SECTION

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DIVISION 2 – SITEWORK
SECTION 02231 – AGGREGATE BASE AND SURFACE COURSE

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Aggregate Base Course.
 - 2. Temporary Aggregate Surface Course.

- B. Related Sections include, but are not limited to:
 - 1. Section 01025 – Measurement and Payment.
 - 2. Section 01400 – Quality Control.
 - 3. Section 02205 – Soil Materials
 - 3. Section 02207 – Aggregate Materials.
 - 4. Section 02211 – Grading.
 - 5. Section 02212 – Restoration of Disturbed Areas.
 - 6. Section 02510 – Superpave Bituminous Pavement.

1.02 REFERENCES

- A. Reference Standards include, but are not limited to:
 - 1. ASTM D698 – Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 5.5 lb Rammer and 12-inch Drop.
 - 2. ASTM D2167 – Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.
 - 3. ASTM D2922 – Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
 - 4. ASTM D3017 – Test Methods for Moisture Content of Soil and Soil-Aggregate in place by Nuclear Methods (Shallow Depth).

1.03 SUBMITTALS FOR REVIEW

- A. Section 01300 – Submittals: Procedures for Submittals.

- B. Samples: Submit, in air-tight containers, 30 lb. Sample of each type of fill to independent testing laboratory.

- C. Materials Source: Submit name of imported materials supplier(s). Provide materials from same source throughout the Work. Change of source requires Owner or Engineers approval.

- D. Laboratory Results: Submit in accordance with Section 01300.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Base Course:
 - 1. Aggregate Base Course material as specified in Section 02207.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify subsoil has been inspected; gradients and elevations are correct.
- B. Verify subsoil is compacted to specified density and that subgrade test results have been submitted prior to placing aggregate course.
- C. Verify subgrade is dry.

3.02 PREPARATION

- A. Correct irregularities in subsoil gradient and elevation by scarifying, reshaping, and re-compacting.
- B. Do not place fill on soft, muddy, or frozen surfaces.

3.03 AGGREGATE PLACEMENT

- A. Place aggregate in maximum 6-inch layers and compact to specified density. When placing over geotextile fabric, place in minimum 12-inch layers.
- B. Level and contour surfaces to elevations and gradients indicated.
- C. Add water to assist compaction. If excess water is apparent, remove aggregate and aerate to reduce moisture content.
- D. Use mechanical tamping equipment in areas inaccessible to compaction equipment.

3.04 TOLERANCES

- A. Flatness: Maximum variation of $\frac{1}{4}$ inch measured with 10-foot straight edge.
- B. Scheduled Compacted Thickness: Within $\frac{1}{2}$ inch.
- C. Variation From Design Elevation: Within $\frac{1}{2}$ inch.

3.05 FIELD QUALITY CONTROL

- A. Section 01400 - Quality Control: Field inspection and testing.
- B. Compaction testing shall be performed in accordance with ASTM D698, ASTM D2167, and/or, ASTM D2922.
- C. If, during progress of Work, tests indicate that compacted materials do not meet specified requirements, remove defective Work, replace, and retest. Contractor shall bear all costs associated with repair and retesting of defective Work.

3.06 SCHEDULES

- A. Base Course under Sidewalk and Curb and Gutter: Aggregate Base Course material per Section 02207. Level and compact base course to 97 percent of maximum ASTM D698 dry density. One compaction test in each repair location.
- B. Base Course under Roadways: Aggregate Base Course material per Section 02207. Level and compact base course to 100 percent of maximum ASTM D698 dry density. One compaction test required every location of AC pavement repair.

END OF SECTION

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DIVISION 2 – SITE WORK
SECTION 02241 – CEMENT STABILIZED BASE

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes:
 - 1. Woven Geotextile Reinforcement Fabric.
 - 2. Non-woven Geotextile Reinforcement Fabric.

- B. Related Sections include, but are not limited to:
 - 1. Section 01025 – Measurement and Payment.
 - 2. Section 01300 – Submittals.
 - 3. Section 01400 – Quality Control.
 - 4. Section 02115 – Subgrade Preparation.
 - 5. Section 02205 – Soil Materials.
 - 6. Section 02207 – Aggregate Materials.
 - 7. Section 02212 – Restoration of Disturbed Areas.
 - 8. Section 02222 – Excavating.
 - 9. Section 02223 – Backfilling.
 - 10. Section 02231 – Aggregate Base and Surface Course.
 - 11. Section 02511 – Tack Coat.
 - 12. Section 02520 – Concrete Pavement.

1.02 REFERENCES

- A. Reference Standards include, but are not limited to:
 - 1. North Dakota Department of Transportation Standard Specifications for Road and Bridge Construction, latest edition.
 - 2. American Association of State Highway and Transportation Officials (AASHTO)
 - a. M85 – Standard Specification for Portland Cement.
 - b. T2 – Sampling of Aggregates.
 - c. T11 – Materials Finer than #200 sieve in Mineral Aggregates by Washing.
 - d. T27 – Sieve Analysis of Fine and Coarse Aggregates.
 - e. T89 – Standard Method of Test for Determining the Liquid Limit of Soils.
 - f. T90 – Standard Method of Test for Determining the Plastic Limit and Plasticity Index of Soils.
 - g. T99 – Moisture-Density Relations of Soils.
 - h. T134 – Moisture-Density Relations of Soil-Cement Mixtures
 - i. T208 – Standard Method of Test for Unconfined Compressive Strength of Cohesive Soil.
 - j. T248 – Reducing Samples of Aggregate to Testing Size.
 - k. T265 – Standard Method of Test for Laboratory Determination of Moisture Content of Soils.

1.03 SUBMITTALS

A. Preconstruction Mix Design

1. At least 7 days before stabilization work is to begin, submit mix design(s) for the Portland cement stabilization to the Owner that meet(s) the requirements specified herein. If the Owner does not approve the mix design, revise and submit a revised mix design. Allow for up to 7 additional days for the Owner to review the revised mix design before beginning stabilization work. Approval of the mix design by the Owner is solely for monitoring quality control and in no way releases Contractor from its responsibilities.
2. The Contractor shall employ an independent testing laboratory to perform a mix design to determine the optimum cement content to stabilize the existing aggregate base and subgrade soil. The mix design should be prepared under the supervision of a registered professional engineer.
3. Contractor shall assist the testing laboratory in obtaining samples of the existing aggregate base and subgrade soil to the specified depth and perform appropriate testing to establish the mix design. Samples must be obtained inclusive of the depth to be stabilized. Sampled materials must be properly processed and prepared to closely simulate field conditions. When in-place materials change significantly, additional mix designs may be performed to establish representative mixes for the entire project.
4. Mix Design: The Contractor's mix design report shall contain the following minimum requirements:
 - a. Moisture-density relation to determine maximum dry density and optimum moisture of the prepared blend of existing aggregate base and subgrade soil in accordance with AASHTO T99.
 - b. Atterberg limits tests to determine liquid limit, plastic limit, and plasticity index of the prepared blend of existing aggregate base and subgrade soil in accordance with AASHTO T89 and T90.
 - c. Particle size analysis of the prepared blend of existing aggregate base and subgrade soil in accordance with AASHTO T11 and T27.
 - d. Moisture-density relation for each cement content tested to determine maximum dry density and optimum moisture of the prepared blend of existing aggregate base and subgrade soil with Portland cement in accordance with AASHTO T134.
 - e. Specimens of cement treated aggregate base/subgrade soil blend shall be prepared and molded for strength testing. The specimens shall be prepared as described in AASHTO T-134.
 1. The specimens shall be allowed to cure at room temperature for a period of 7 days in an environment that will prevent moisture loss.

2. After curing, compressive strength of prepared specimens of cement treated aggregate base/subgrade soil blend shall be determined in accordance with AASHTO T208.
 3. A cement content curve shall be generated by plotting compressive strength of cement treated aggregate base/subgrade soil blend versus the cement content used in each sample. Specimens shall be prepared for a minimum of 3 cement contents. Specimens shall be prepared at a range of cement contents sufficient to achieve a minimum compressive strength of 200 psi. The lowest cement content, for each test at various moisture contents, with the unconfined compressive strength greater than 200 psi, but not greater than 400 psi, shall be the design cement content to stabilize that blend of aggregate base and subgrade soil. Specimens shall be molded at varying moisture contents to determine an allowable tolerance of water to maintain the performance of the mix but allows the Contractor to make slight adjustments based on field conditions during the time of application.
- f. Recommendation for the percent of Portland cement to be blended into the existing aggregate base and subgrade soil. A recommendation should also be provided for the tolerance for moisture content.

PART 2 PRODUCTS

2.01 CEMENT

- A. Conform to NDDOT Specification Section 804 except as modified herein:
1. Cement shall be either Portland Cement – Type I, IA, or II, or
 2. Blended Hydraulic Cement – Type IL(MS).

2.02 AGGREGATE

- A. Conform to Section 02231 – Aggregate Base and Surface Course.

2.03 WATER

- A. Use only potable water, free of contaminates and substances deleterious to the hardening of the cement treated material.

PART 3 EXECUTION

3.01 GENERAL REQUIREMENTS

- A. Prior to the start of the work, all utilities and drainage systems shall be protected or relocated as necessary.

- B. Milling, blending, and reclamation may be performed with any machine or combination of machines or equipment as approved by the Engineer prior to the start of the Project which will produce a satisfactory product meeting the requirements for pulverization, cement and water application, mixing, compacting, finishing, and curing as provided in this specification.
- C. Prior to the actual reclaiming of the roadway, drop inlets or catch basins that might be affected shall be sufficiently barricaded to prevent reclaimed subbase material, silt, or runoff from plugging the drainage system.
- D. Sufficient surface drainage must be provided for each stage of construction so that ponding does not occur on the exposed roadway surface prior to the placement of bituminous concrete.

3.02 PAVEMENT MILLING

- A. Existing bituminous surface course and existing aggregate base shall be milled to the depth of ½" below the bottom of the existing asphalt pavement layer. Millings are the property of the City and shall be transported and stockpiled at the City Landfill or at another location specified by the Engineer.
- B. Care shall be taken when milling around structures and adjacent to curb and gutter. Damaged surfaces shall be replaced or repaired to the satisfaction of the Engineer at no cost to the Owner.

3.03 CEMENT STABILIZATION PREPARATION

- A. Cement stabilization process shall not commence when the soil aggregate or subgrade is frozen, or when the air temperature is below 40° F (4° C).
- B. Before cement is applied, initial pulverization or scarification may be required to the full depth of mixing. Scarification or pre-pulverization is a requirement for the following conditions:
 - 1. When the processed material is more than five (5) percent above or below optimum moisture content. When the material is below optimum moisture content, water shall be added. The pre-pulverized material shall be sealed and properly drained at the end of the day or if rain is expected.
 - 2. For slurry application of cement, initial scarification shall be required to provide a method to uniformly distribute the slurry over the processed material without excessive runoff or ponding.

3.04 CEMENT APPLICATION

- A. The operation of cement application, mixing, spreading, compacting, and finishing shall be continuous and completed within 2 hours from the start of mixing. Any processed material that has not been compacted and finished shall not be left undisturbed for longer than 30 minutes.

- B. The specified quantity of cement shall be applied uniformly over the existing base in a manner that minimizes dust and is satisfactory to the Engineer. If cement is applied as a slurry, the time from first contact of cement with water to application on the soil shall not exceed 60 minutes. The time from cement placement on the soil to start of mixing shall not exceed 30 minutes.
- C. Spreading of the Portland cement shall be performed with a spreader truck designed to spread dry particulate such as Portland cement to insure a uniform distribution. Spreaders or distributors used shall be able to demonstrate a consistent and accurate application rate, as well as dust control during application. The mechanical cement spreader shall be capable of dispensing a measured quantity of cement +/-3 pounds per square yard in advance of the reclaimer/pulverizer just prior to each pass of the stabilizing operation. The blending equipment shall abut or slightly overlap (.5") previous pass to ensure a continuous homogeneous mass of granular material and cement. Cement spreader does not have to abut or overlap previous pass as long as the calculated quantity of cement is dispersed in front of the reclaimer/pulverizer.
- D. Portland cement shall not be spread over puddled water, during rain, or when rain is imminent. Spreading shall not be performed when wind speeds are 15 miles per hour or greater, or any time when excessive drifting occurs.

3.05 BLENDING

- A. Blending shall be accomplished by means of a self-propelled, traveling rotary reclaimer or equivalent machine capable of cutting through existing bituminous concrete pavement, aggregate base, and subgrade soil to depths of up to 16 inches with one pass. The machine shall be equipped with an adjustable grading blade leaving its path generally smooth for initial compaction. Equipment such as road planers or cold milling machines designed to mill or shred the existing bituminous concrete, rather than crush or fracture it, shall not be allowed during the reclaiming process. Agricultural disks or motor graders are not acceptable blending equipment.
- B. Any existing bituminous concrete pavement that remains after milling must be removed or pulverized and blended with the existing aggregate base and subgrade soil to form a homogenous mass which will bond together when compacted.
- C. Moisture in the blended material shall be monitored during construction. Water shall be added as necessary to adjust the moisture content of the blended material to within the tolerances defined in the mix design prior to the start of compaction.
- D. Water may be applied through the mixer or with water trucks equipped with pressure-spray bars. If using the spray bar system, road base shall be pre-wet to obtain required moisture content prior to the dispensing of cement.
- E. Mixing shall begin as soon as possible after the cement has been spread and shall continue until a uniform mixture is produced. Cement and water shall be incorporated into the existing base material at the prescribed percentages and

mixed to a depth of 12 inches into the existing aggregate base and subgrade soil. The mixed material shall meet the following gradation conditions:

1. The final mixture (bituminous surface, granular base, and sub-grade soil) shall be pulverized such that 100% passes the 1-in. (25 mm) sieve, except for occasional rocks present in the subgrade soil.
 2. Blending operations shall be continued until the product is uniform in color, meets gradation requirements, and is at the required moisture content throughout. The entire operation of cement spreading, water application, and mixing shall result in a uniform pulverized asphalt, soil, cement, and water mixture for the full design depth and width.
- F. Reshaping using the reclaimed base material should be minimized in order to ensure that the roadway has a uniform thickness of stabilized aggregate base/subgrade material throughout.
- G. A motor grader shall be used for shaping, fine grading, and finishing the surface of the reclaimed material or any other granular materials placed to form the surface prior to paving.
- H. Any surface irregularities which develop during or after the above-described work shall be corrected until it is brought to a firm and uniform surface satisfactory to the Engineer.

3.06 COMPACTION

- A. The processed material shall be compacted with one or a combination of the following: Tamping or grid roller, pneumatic-tire roller, steel-wheel roller, vibratory roller, or vibrating-plate compactor. The blended material shall be rolled with a vibratory pad/tamping foot roller and a vibratory steel drum soil compactor. The pad/tamping foot roller drum shall have a minimum of 112 tamping feet 3" in height, a minimum contact area per foot of 17 in², and a minimum width of 84 in. The vibratory steel drum roller shall have a minimum 84 in width single drum.
- B. The blended material shall be uniformly compacted to a minimum of 98% of maximum density. Field density of compacted material can be determined by nuclear method in the direct transmission mode (AASHTO T 310), sand cone method (AASHTO T 191), or rubber balloon method (ASTM D 2167). Optimum moisture and maximum density shall be determined for samples of the blended material in the field during construction by a moisture-density relation test (AASHTO T 134).
- C. At the time of compaction, the moisture content shall be maintained within range of moisture determined by the mix design. No section shall be left undisturbed for longer than 30 minutes during compaction operations. All compaction operations shall be completed within 2 hours from start of mixing.

3.07 FINISHING AND CURING

- A. As compaction nears completion, the surface of the stabilized base material shall be shaped to the specified lines, grades, and cross sections. If necessary or as required by the Engineer, the surface shall be lightly scarified or broom-dragged to remove imprints left by equipment or to prevent compaction planes. Compaction shall then be continued until uniform and adequate density is obtained.
- B. During the finishing process the surface shall be kept moist by means of water spray devices that will not erode the surface until paving operations have begun. Compaction and finishing shall be done in such a manner as to produce a dense surface free of compaction planes, cracks, ridges, or loose material. All finishing operations shall be completed within 4 hours from start of mixing.
- C. Finished portions of the stabilized base that are traveled on by equipment used in constructing an adjoining section shall be protected in such a manner as to prevent equipment from marring or damaging completed work.
- D. After completion of final finishing, the surface shall be cured by being kept continuously moist for a period of 7 days, or until surface pavement is placed, with a water spray that will not erode the surface of the cement stabilized base.
- E. Sufficient protection from freezing shall be given to the cement-treated material for 7 days after its construction or as approved by the Engineer. Contractor assumes all materials and costs to keep cement stabilized base moist for the period of protection, or until the surface course is applied.
- F. The stabilized base shall be allowed to cure a minimum of 72 hours before subsequent aggregate or pavement layers can be placed. Cure time may be reduced if approved by the Engineer and provided the stabilized base is sufficiently stable to support the required construction equipment without marring or permanent distortion of the surface.

3.08 TRAFFIC

- A. Completed portions of cement stabilized base may be opened upon approval from the Engineer, provided that traffic is limited to low-speed local traffic and to construction equipment only, further provided the curing material or moist curing operations are not impaired, and provided the stabilized base is sufficiently stable to withstand traffic without marring or permanent deformation.

3.09 MAINTENANCE

- A. The Contractor shall maintain the stabilized material in good condition until all work is completed and accepted. Such maintenance shall be done by the Contractor incidental to the Item of Work to cement stabilize the existing base material.
- B. Maintenance shall include immediate repairs of any defects that may occur. If it is necessary to replace any processed material, the replacement shall be for the full depth, with vertical cuts, using either cement-treated material or concrete. No skin patches will be permitted.

3.10 FIELD QUALITY CONTROL

- A. Contractor shall coordinate and schedule a qualified independent testing laboratory to perform geotechnical testing.
- B. Contractor shall assist the testing agency in performing field tests.
- C. If testing agency reports failing tests, Contractor shall correct the deficiencies until specified compaction is obtained.
- D. The minimum amount of testing must be completed as detailed in Section 01 4300 – Quality Requirements.
- E. Before placement of base material, subgrade will be checked by the Engineer.
 - 1. A tolerance of 0.04 feet above or below the finished subgrade elevation will be allowed.

3.11 MEASUREMENT AND PAYMENT

- A. This work will be paid for at the contract unit price per square yard (SY) for Cement Stabilized Base to a depth of 12 inches measured along the centerline of the road for the width of the roadway base being stabilized or as directed by the Engineer. This work shall include all equipment, labor, and materials required for testing and sampling, application of cement and water, mixing, pulverizing, shaping and compacting, inspections, curing, protection and all other appurtenances associated for the Item of work.
- B. The quantities for cement shall be based on six (6) percent by dry unit weight of the soils. Adjustment for cement above 6 percent will be included in a change order for materials only and paid for a cement adjustment.
- C. All costs to properly complete the work specified herein and/or shown on the Plans, including mix designs, shall be included in the prices bid for these or other items unless applicable bid items are included on the Bid Form.

END OF SECTION

DIVISION 2 – SITE WORK
SECTION 02248 – GEOTEXTILE FABRIC

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes:
 - 1. Woven Geotextile Reinforcement Fabric.
 - 2. Non-woven Geotextile Reinforcement Fabric.

- B. Related Sections include, but are not limited to:
 - 1. Section 01300 – Submittals.
 - 2. Section 01400 – Quality Control.
 - 3. Section 02115 – Subgrade Preparation.
 - 4. Section 02205 – Soil Materials.
 - 5. Section 02207 – Aggregate Materials.
 - 6. Section 02211 – Site Grading.
 - 7. Section 02222 – Excavating.
 - 8. Section 02223 – Backfilling.
 - 9. Section 02231 – Aggregate Base and Surface Course.

1.02 REFERENCES

- A. Reference Standards include, but are not limited to:
 - 1. North Dakota Department of Transportation Standard Specifications for Road and Bridge Construction, latest edition.
 - 2. ASTM D4355 – UV-Resistance.
 - 3. ASTM D4491 – Permeability.
 - 4. ASTM D4632 – Grab Tensile Strength and Elongation.
 - 5. ASTM D4751 – Apparent Opening Size (AOS).
 - 6. ASTM D4533 – Trapezoid Tear Strength.
 - 7. ASTM D6241 – Static Puncture Strength.
 - 8. ASTM D4873 – Guide for Identification, Storage, and Handling of Geosynthetics.

1.03 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Provide product data on Geotextile Fabric.
- C. Submit manufacturer's installation instructions. Indicate special procedures and conditions requiring special attention.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. The geotextile rolls shall be furnished with suitable wrapping for protection against moisture and extended ultraviolet exposure prior to placement.

- B. Rolls shall be stored in a manner which protects them from the elements. At no time shall the geotextile be exposed to ultraviolet light for a period exceeding fourteen days.
- C. The geotextile rolls shall be labeled as per ASTM D 4873, "Guide for Identification, Storage, and Handling of Geosynthetics".

PART 2 PRODUCTS

2.01 MATERIAL

- A. Geotextile Reinforcement Fabric, Woven, Type R1 geotextile fabric as specified in Section 858 of the reference North Dakota Department of Transportation standard specifications.
- B. Geotextile Fabric, Non-woven, Type RR geotextile fabric as specified in Section 858 of the reference North Dakota Department of Transportation standard specifications.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify subgrade has been inspected, gradients and elevations are correct, surface is dry, and ready to receive Work.

3.02 PREPARATION OF SUBGRADE

- A. See Section 02115 Subgrade Preparation for requirements.

3.03 PLACEMENT

- A. The geotextile shall be laid out smooth without wrinkles or folds on the prepared subgrade in the direction of the construction traffic.
- B. Adjacent geotextile rolls shall be overlapped a minimum of 2.5 feet; ends of rolls shall be overlapped 3 feet.
- C. On curves, the fabric may be folded or cut to conform to the curves. The fold or overlap shall be in the direction of construction and shall be held in place by staples, pins or aggregate piles.
- D. Damaged areas shall be repaired by overlaying the area with sufficient material to overlap on all edges by at least 2.5 feet.
- E. The aggregate base material shall be placed by end dumping onto the geotextile from the edge or over previously placed base aggregate. Construction equipment shall not be allowed directly on the geotextile fabric.
- F. A minimum of 8 inches of aggregate must be placed on the geotextile prior to the movement of construction equipment above the fabric.

- G. Turning movements must be carefully monitored to avoid rutting of the aggregate. Any ruts occurring during construction shall be filled with additional gravel aggregate and compacted to the specified density.
- H. If placement of the backfill causes damage to the geotextile, the damaged area shall be repaired as described in Section 3.03.D.
- I. Install in the location as indicated on drawings.

3.04 FIELD QUALITY CONTROL

- A. Section 01400 – Quality Assurance: Field inspection.

END OF SECTION

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DIVISION 2 – SITE WORK
SECTION 02372 – TEMPORARY EROSION AND SEDIMENT CONTROL

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Prevention of sedimentation of waterways, open drainage ways, and storm and sanitary sewers due to construction activities.
- B. Restoration of areas eroded due to insufficient preventative measures.
- C. Related Sections include, but are not limited to:
 - 1. Section 02110 – Site Clearing
 - 2. Section 02205 – Soil Materials
 - 3. Section 02211 – Grading
 - 4. Section 02212 – Restoration of Disturbed Areas
 - 5. Section 02222 – Excavating
 - 6. Section 02225 – Trenching
 - 7. Section 02248 – Geotextile Fabrics
 - 8. Section 02923 – Landscape Grading
 - 9. Section 02936 – Hydroseeding

1.02 REFERENCES

- A. North Dakota Department of Transportation (NDDOT) Erosion and Sediment Control Handbook – Latest Edition
- B. North Dakota Department of Environmental Quality (NDDEQ) – Division of Water Quality – “A Guide to Temporary Erosion Control Measures” – Latest Edition
- C. ASTM D 4355 – Standard Test Method for Deterioration of Geotextiles by Exposure to Light, Moisture, and Heat in a Xenon Arc Type Apparatus; 2005.
- D. ASTM D 4491 – Standard Test Methods for Water Permeability of Geotextiles by Permittivity; 1999a (Reapproved 2004).
- E. ASTM D 4533 – Standard Test Method for Trapezoid Tearing Strength of Geotextiles; 2004.
- F. ASTM D 4632 – Standard Test Method for Grab Breaking Load and Elongation of Geotextiles; 1991 (Reapproved 2003).
- G. ASTM D 4751 – Standard Test Method for Determining Apparent Opening Size of a Geotextile; 2004.
- H. ASTM D 4873 – Standard Guide for Identification, Storage, and Handling of Geosynthetic Rolls and Samples, 2002.

1.03 PERFORMANCE REQUIREMENTS

- A. Comply with all requirements of the North Dakota Department of Environmental Quality.
- B. Do not begin clearing, grading, or other work involving disturbance of ground surface cover until applicable permits have been obtained; furnish all documentation required to obtain applicable permits.
 - 1. Obtain and pay for permits and provide security required by authority having jurisdiction.
- D. Timing: Put preventative measures in place as soon as possible after disturbance of surface cover and before precipitation occurs.
- E. Erosion On Site: Minimize wind, water, and vehicular erosion of soil on project site due to construction activities for this project.
 - 1. Control movement of sediment and soil from temporary stockpiles of soil.
 - 2. Prevent development of ruts due to equipment and vehicular traffic.
 - 3. If erosion occurs due to non-compliance with these requirements, restore eroded areas at no cost to Owner.
- F. Erosion Off Site: Prevent erosion of soil and deposition of sediment on other properties caused by water leaving the project site due to construction activities for this project.
 - 1. Prevent windblown soil from leaving the project site.
 - 2. Prevent tracking of mud onto public roads outside of the site.
 - 3. Prevent mud and sediment from flowing onto sidewalks and pavements.
 - 4. If erosion occurs due to non-compliance with these requirements, restore eroded areas at no cost to Owner.
- G. Sedimentation of Waterways On Site: Prevent sedimentation of waterways on the project site, including rivers, streams, lakes, ponds, open drainage ways, storm sewers, and sanitary sewers.
 - 1. If sedimentation occurs, install or correct preventive measures immediately at no cost to Owner; remove deposited sediments; comply with requirements of authorities having jurisdiction.
 - 2. If sediment basins are used as temporary preventative measures, pump dry and remove deposited sediment after each storm.
- H. Sedimentation of Waterways Off Site: Prevent sedimentation of waterways off the project site, including rivers, streams, lakes, ponds, open drainage ways, storm sewers, and sanitary sewers.
 - 1. If sedimentation occurs, install or correct preventive measures immediately at no cost to Owner; remove deposited sediments; comply with requirements of authorities having jurisdiction.
- I. Open Water: Prevent standing water that could become stagnant.
- J. Maintenance: Maintain temporary preventive measures until permanent measures have been established.

PART 2 PRODUCTS

2.01 MATERIALS

A. Silt Fence.

1. Geotextile Fabric: Polypropylene geotextile resistant to common soil chemicals, mildew, and insects; non-biodegradable; in longest lengths possible; fabric including seams with the following minimum average roll lengths:
 - a. Average Opening Size: 30 U.S. Std. Sieve, maximum, when tested with ASTM D 4751.
 - b. Permittivity: 0.1 sec^{-1} , minimum when tested in accordance with ASTM 4491.
 - c. Ultraviolet Resistance: Retaining at least 70 percent of tensile strength, when tested in accordance with ASTM D 4355 after 500 hours exposure.
 - d. Tensile Strength: 100 lb-f, minimum, in cross-machine direction; 124 lb-f, minimum, in machine direction; when tested in accordance with ASTM D 4632.
 - e. Elongation: 15 to 30 percent, when tested in accordance with ASTM D 4632.
 - f. Tear Strength: 65 lb-f., minimum when tested in accordance with ASTM D 4533.
 - g. Color: Manufacturer's standard.
2. Posts: 5 feet long:
 - a. Steel T-section, with minimum mass of 1.26 lb per linear foot.

B. Storm Sediment Filter.

1. Shall be one of the following.
 - a. Sandbags.
 - 1) Woven, polypropylene fabric sewn together with double stitching.
 - 2) Overall sandbag size shall be at least 12 x 24 inches.
 - 3) Bags shall be filled $\frac{1}{2}$ full with sand.
 - b. Drop-in Sediment Trap.
 - 1) Geotextile Fabric unit that inserts into the inlet.
 - a) Shall be:
 1. Dandy Sack by Dandy Products, Inc.
 2. Siltsack by ACF Environmental.
 3. or equal.

C. Rock for Vehicle Tracking Pad.

1. Clean 1 to 3 inch crushed rock.

D. Fiber Roll

- a. Fiber rolls shall consist of hay or straw free of noxious weeds, or wood excelsior that has been compressed and stuffed into degradable netting.
- b. The roll diameter shall be a minimum of six inches.
- c. All weighted fiber rolls shall contain a weighted core with a minimum weight of eight pounds per foot.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Examine site and identify existing features that contribute to erosion resistance; maintain such existing features to greatest extent possible.

3.02 PREPARATION

- A. Schedule work so that soil surfaces are left exposed for the minimum amount of time.
- B. The Contractor shall follow all requirements of the current North Dakota Department of Environmental Quality & Environmental Division of Water Quality regulations.
- C. The Contractor shall develop a Storm Water Pollution Prevention Plan as required by the ND Department of Environmental Quality.

3.03 SCOPE OF PREVENTIVE MEASURES

- A. Vehicle Tracking Pad at Construction Entrances: Traffic-bearing aggregate surface.
 - 1. Width: As required; 20 feet, minimum.
 - 2. Length: 50 feet, minimum.
 - 3. Provide at each construction entrance from public right-of-way.
 - 4. Where necessary to prevent tracking of mud onto right-of-way, provide wheel washing area out of direct traffic lane, with drain into sediment trap or basin.
- B. Natural vegetation shall be retained whenever feasible.
- C. Land grading and excavating shall be kept at a minimum to reduce the possibility of creating runoff and erosion problems which require extensive control measures.
- D. Land exposure shall be minimized in terms of area and time.
- E. Silt Fence.
 - 1. Provide along the perimeter edge of soil stockpiles located on the Owner's property.
 - 2. Provide at locations shown on the Plans.
- F. Storm Sediment Filters.
 - 1. Place immediately after new storm sewer inlets are installed and immediately before land is disturbed adjacent to existing storm sewer inlets.

3.04 INSTALLATION

- A. Vehicle Tracking Pad.
 - 1. The rock area shall be a minimum of 6 inches deep, extend the full width of the ingress/egress area and be at least 50 ft long; however, longer entrances may be required to adequately clean tires.
 - 2. Geotextile fabric may be used to prevent migration of mud from the underlying soil into the rock.
- B. Storm Sediment Filters.
 - 1. Sandbags.
 - a. Place around inlet providing a minimum of 12 inch horizontal clearance.
 - b. Place a minimum of 3 bags in height with staggered joints.
 - 2. Drop-in Sediment Trap.
 - a. Place as recommended by the manufacturer.
- C. Silt Fences:
 - 1. Store and handle fabric in accordance with ASTM D 4873.
 - 2. Install with top of fabric at nominal height and embedment indicated on drawings.
 - 3. Do not splice fabric width; minimize splices in fabric length; splice at post only, overlapping at least 18 inches, with extra post.
 - 4. Fasten fabric to steel posts using "U" shaped clips.

3.05 MAINTENANCE

- A. Inspect preventative measures weekly, within 24 hours after the end of any storm that produces 0.5 inches or more rainfall at the project site, and daily during prolonged rainfall.
 - 1. All inspections and maintenance conducted during construction shall be recorded in writing and retained in accordance with the storm water permit.
- B. All removed tree material shall become the property of the Contractor and shall be disposed of off-site in Contractor furnished disposal area.
- C. All stumps and roots shall be removed to a minimum of 3 feet below grade.
- D. Backfill excavation with suitable on-site soil materials or engineered fill compacted to a minimum of 95% of Standard Proctor Density, ASTM D698.
- E. Silt Fences:
 - 1. Promptly replace fabric that deteriorates unless need for fence has passed.
 - 2. Remove silt deposits that exceed one-third of the height of the fence.
 - 3. Repair fences that are undercut by runoff or otherwise damaged, whether by runoff of other causes.

3.06 CLEAN UP

- A. Remove temporary measures after permanent measures have been installed, unless permitted to remain by Engineer.
- B. Where removal of temporary measures would have exposed soil, shape surface to an acceptance grade and finish to match adjacent ground surfaces.

END OF SECTION

DIVISION 2 – SITE WORK
SECTION 02510 – SUPERPAVE BITUMINOUS PAVEMENT

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. The construction of one or more pavement courses of bituminous-aggregate mixture on the approved prepared foundation, base course or existing surface in accordance with the specifications and in conformity with the lines, grades, and thicknesses and typical cross sections shown on the plans or established by the Engineer.

- B. Related Section include, but are not limited to:
 - 1. Section 01025 – Measurement and Payment.
 - 2. Section 01300 – Submittals.
 - 3. Section 01400 – Quality Control.
 - 4. Section 02076 – Pavement Removal.
 - 5. Section 02110 – Site Clearing.
 - 6. Section 02207 – Aggregate Materials.
 - 7. Section 02212 – Restoration of Disturbed Areas.
 - 8. Section 02231 – Aggregate Base and Surface Course.
 - 9. Section 02241 – Cement Stabilized Base.
 - 10. Section 02511 – Tack Coat.
 - 11. Section 02520 – Concrete Pavement.

1.02 REFERENCES

- A. ASTM D3665 – Standard Practice for Random Sampling of Construction Materials.

- B. ASTM D4791 – Standard Test Method for Flat Particles, Elongated Particles, or Flat and Elongated Particles in Coarse Aggregate.

- C. ASTM D5821 – Standard Test Method for Determining the Percentage of Fractured Particles in Coarse Aggregate.

- D. The Asphalt Institute – SP-2 Superpave Mix Design Manual

- E. The Asphalt Institute – MS-2 Mix Design Methods for Asphalt Concrete and Other Hot Mix Types.

- F. The Asphalt Institute – MS-3 Asphalt Plant Manual.

- G. The Asphalt Institute – MS-8 Asphalt Paving Manual.

- H. The Asphalt Institute – MS-19 Basic Asphalt Emulsion Manual.

- I. North Dakota Department of Transportation (NDDOT) Standard Specifications for Road Construction and Bridge Construction, Latest Edition.
- J. AASHTO M320 (ASTM D 6373)– Standard Specification for Performance-Graded Asphalt Binder.
- K. AASHTO MP2 (TAI SP-2) – Specification for Superpave Volumetric Mix Design.
- L. AASHTO T96 (ASTM C 131) – Standard Method of Test for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
- M. AASHTO T104 (ASTM C 88) – Standard Method of Test for Soundness of Aggregate by Use of Sodium Sulfate or Magnesium Sulfate.
- N. AASHTO T166 (ASTM D2726) – Bulk Specific Gravity of Compacted Bituminous Mixtures Using Saturated Surface-Dry Specimens.
- O. AASHTO TP4 (ASTM 6925)- Standard Method for Preparing and Determining the Density of Hot Mix Asphalt (HMA) Specimens by Means of the Superpave Gyrotory Compactor.
- P. AASHTO T176 (ASTM D2419) – Standard Method of Test for Plastic Fines in Graded Aggregates and Soils by Use of the Sand Equivalent Test.
- Q. AASHTO T304 (ASTM C 1252) – Standard Method of Test for Uncompacted Void Content of Fine Aggregate.

1.03 SUBMITTALS FOR REVIEW

- A. Section 01300 – Submittals: Procedures for submittals.
- B. Product Data: Furnish materials properties data on aggregates, asphalt cement, bituminous mixtures, asphalt binder, and other materials required for the mix in accordance with Sections 01300 and 01400 at least 7 days prior to beginning paving operations. Engineer must approve job mix formula prior to its use on Project.

1.04 PERFORMANCE REQUIREMENTS AND QUALITY ASSURANCE

- A. When referenced, perform Work in accordance with the North Dakota Department of Transportation Standard Specifications for Road and Bridge Construction, latest edition.
- B. Obtain all materials from same source throughout project unless approved by the Engineer.
- C. Paving: Designed for H20 classification.
- D. Mixing Plant and Mixing Plant Operations: Conform to the North Dakota Department of Transportation Standard Specifications for Road and Bridge

Construction, latest edition and The Asphalt Institute (TAI) MS-3 Asphalt Plant Manual.

- E. Paved surfaces shall be warranted against any materials and/or workmanship defects for a period of twelve months from placement.
- F. The mix design and development of the Job Mix Formula shall be generated by a laboratory accredited by the AASHTO Materials Reference Laboratory (AMRL) at the contractor's expense.

1.05 REGULATORY AND ENVIRONMENTAL REQUIREMENTS

- A. Do not place asphalt when ambient air temperature (in the shade and away from artificial heat) or base surface temperature is less than 40 degrees F or when surface is wet, dirty, or frozen.
- B. No work will be permitted in the spring until the frost has disappeared and the subgrade is stable so as to support the equipment without rutting, shoving, pumping, or other displacement.
- C. Conform to applicable code for paving work on public property.
- D. Conform to Section 01500. Minimize interference with traffic.
- E. Conform to the North Dakota Department of Health Clean Air Standards and Stormwater Runoff Standards.
- F. Dispose of all waste material or reject material by approved methods.

PART 2 PRODUCTS

2.01 GENERAL

- A. Asphalt Cement:
 - 1. Asphalt cement shall be performance graded asphalt cement meeting the requirements of AASHTO MP1 and as shown on the plans. Asphalt cement for construction shall be PG 58-28.
- B. Aggregate for Mix:
 - 1. Shall conform to the requirements of Section 430.03.B Table 430-01 of the NDDOT Standard Specifications.
- C. Aggregate Base Course: Refer to section 02231
- D. Tack: Refer to Section 02511.

2.02 MIX DESIGN

- A. Contractor shall develop the Superpave asphalt mixture in accordance with SP-2, to meet the requirements of this Specification. Prior to the production of any Superpave asphalt mixture, submit the proposed mix design with supporting test data indicating compliance with all Superpave mix design criteria. The Contractor shall utilize an AMRL accredited testing firm for the development of the mix design, testing for the performance of the asphalt cement, gradation of the aggregate mix, and requirements of the L.A. Abrasion. The Engineer shall approve the job mix formula submitted by the Contractor.
- B. Traffic Levels:
 - 1. The type of bituminous mixture for this project shall be designed based on the traffic level of less than one (1) Million Equivalent Single Axle Loads (ESAL's).
- C. Layer Thickness: The lift thickness should be three times the nominal maximum size of the aggregate.
- D. Volumetric Criteria: Use an air void content of the mixture at design of 4.0 percent at the design number of gyrations (N_{design}). F. VMA Criteria: Meet the requirements of the following table for voids in the mineral aggregate (VMA) of the mixture at the design number of gyrations.

VMA Criteria		
Type Mix	Minimum VMA (%) (Fine Mix)	Minimum VMA (%) (Coarse Mix)
SP-9.5	15.0	14.5
SP-12.5	14.0	13.5
SP-19.0	13.0	12.5

- E. VFA Criteria: Meet the requirements of the following table for voids filled with asphalt (VFA) of the mixture at the design number of gyrations.

VFA Criteria	
Traffic Level	Design VFA (%)
< 1 Million ESAL's	65-78 (Wear Course) 70-83 (Non-Wear Course)

- F. Job Mix Formula (JMF) Production Limits: After the proposed mix design has been submitted to and accepted by the Engineer, a JMF will have been established for the project. The JMF supplied to the project shall fall within the tolerances for the mix design parameters listed below in relation to the approved mix design.

Voids in Mineral Aggregate (VMA):	- 0.3 percent
Production Air Voids:	± 1.0 percent
Asphalt Binder Content:	- 0.4 percent
Aggregate Passing 1-inch Sieve:	± 7.0 percent
Aggregate Passing 3/4-inch Sieve:	± 7.0 percent
Aggregate Passing 1/2-inch Sieve:	± 7.0 percent

Aggregate Passing 3/8-inch Sieve:	± 7.0 percent
Aggregate Passing No. 4 Sieve:	± 7.0 percent
Aggregate Passing No. 8 Sieve:	± 6.0 percent
Aggregate Passing No. 200 Sieve:	± 6.0 percent

- G. In addition to the above tolerances all bituminous mixtures delivered to the site shall have moisture content not greater than 0.5 percent.

PART 3 EXECUTION

3.01 INSPECTION

- A. For new construction, reconstruction, or full depth repair, verify that compacted subgrade is dry, stable, compacted to specified density, and to proper elevations and grade slopes. Do not begin asphalt-paving construction without Engineer's authorization.
- B. For overlay and wear course construction, verify that the existing bituminous mat is clean, dry, stable, at proper temperature, and to proper elevations and grade slopes. Do not begin asphalt-paving construction without Engineer's authorization.
- C. Each course shall be compacted and cooled to such a degree that it will not be displaced or otherwise damaged before another course may be placed thereon.
- D. Verify the provisions of Section 01500 have been satisfied.

3.02 PREPARATION

- A. Notify Engineer and Owner at least 72 hours in advance of temporary disruptions of traffic along route of construction.
- B. Saw cut and tack all joints between new and existing pavement.
- C. Removal and Salvage of Bituminous Surface:
Remove existing asphalt pavement as shown on the Drawings and in accordance with Section 02076 and NDDOT Section 202.
- D. Provide temporary granular base for pavement areas removed. Temporary granular base installed at Contractor's expense.
- E. Perform finish grading of subgrade and granular base to required elevation.
- F. When it becomes impractical to correct irregularities on an existing surface with a single lift, leveling course or the pavement course, the surface shall be brought to uniform section with additional bituminous mix. This mix shall be thoroughly tamped or rolled and shall be of the same mixture as specified for the next course. Where the existing surface is broken or unstable, the material shall be removed, disposed of, and replaced with the same mixture as specified for the next course. Spot leveling courses shall not be laid in lifts exceeding 2" in depth.

- G. Verify castings are properly adjusted after paving operations have been completed.
- H. Any castings which are not 3/16" below the top of the finished surface shall be adjusted by Contractor.

3.03 ASPHALT PAVEMENT CONSTRUCTION

- A. All mixtures shall be spread and finished with a self-propelled, bituminous paver, to the required grade and cross section, leaving the mixture uniformly dense, smooth, and free from irregularities.
- B. The speed of the bituminous paver shall be controlled to place the mixture uniformly and continuously without tearing or gouging. The speed shall not exceed the Manufacturer's recommendation, and shall be coordinated with the output of the plant to provide for a smooth, continuous operation, minimizing starting and stopping.
- C. Compact pavement by rolling to specified density as follows:
 - 1. Compaction shall consist of initial or breakdown rolling, intermediate rolling, and final or finish rolling with rollers meeting all requirements of NDDOT Standards Specifications Section 151.02 and which are approved by the Engineer.
 - 2. Breakdown rolling shall consist of one or more complete coverages with a vibratory steel wheel roller or a rubber tired roller.
 - 3. Breakdown rolling shall be followed by intermediate rolling with either a rubber tired roller or a vibratory steel wheel roller and shall be continued until the surface is tightly bound and shows no displacement under the roller.
 - 4. Intermediate rolling shall be completed before the mat temperature falls below 185 degrees F.
 - 5. Final rolling shall be performed with a static steel wheel roller and shall continue until roller marks are eliminated. Contractor may be required to modify rolling sequence to best suit the construction conditions.
 - 6. Do not displace or extrude pavement from position. Hand compact in areas inaccessible to rolling equipment.
- D. Uniformly blend pavement surface into elevations at curbs, valve box castings, and other critical points of contact. Place pavement so that the pavement is 3/16 inches higher than the edge of the structure after the pavement has been compacted.
- E. Do not allow drainage to be impeded or casting covers to become difficult to remove.
- F. All transverse and longitudinal joints, high or low areas, and surface irregularities, shall be leveled, filled, or raked prior to compaction. Any loose material dropped on previously compacted lanes shall be removed immediately.
- G. Ensure joints made during paving operations are straight, clean, vertical, and free of broken or loose material. Joints shall be tacked and constructed with

adequate bond on abutting surfaces. Construction joints in successive courses shall be placed so that joints do not fall on the same vertical plane.

- H. The sequence of rolling operations and the selection of type and number of rollers shall be commensurate with production, and shall be adequate to obtain the specified density before the mat temperature falls below 185 degrees F.
- I. Install all bituminous pavement 3.5-inches and greater in thickness in a minimum of two lifts. Maximum thickness of a base course lift shall be 3.5-inches.
- J. Ensure surface of completed asphalt pavement is true to lines, profiles, and elevations indicated and matches existing grade.
- K. The surfaces of previously placed layers shall be swept and a tack coat applied before spreading the next layer.
- L. The overall thickness shown on the Drawings shall be the minimum finished, in-place, compacted thickness of bituminous pavement.
- M. Protect newly paved surfaces from traffic and mechanical damage until surface has cooled to 140°F.
- N. Any low or high defective areas shall be corrected immediately at the contractor's expense. Corrective Work shall include patching, cutting out the surface and replacing with fresh, bituminous mixture, or by milling the surface.
- O. Clean up paving area.
- P. Ensure manhole covers are clean of all asphalt material and tack coat and returned to the condition they were prior to asphalt paving activities.

3.04 PROCESS CONTROL

- A. Section 01400 – Quality Control: Field inspection and testing.
- B. Perform field and laboratory testing by an independent testing laboratory appointed and paid for by the Contractor.
- C. At the start of mix production, samples of all aggregate stockpiles shall be randomly collected for each aggregate used in the production mixture. The production aggregates shall be tested for the consensus properties and gradations presented in Section 2.01.B and shall conform to the JMF tolerances listed in 2.02.H. Any change in aggregate source will not be allowed without written notification of the Engineer and the submittal of a new JMF.
- D. Notify testing laboratory to perform density tests when testing is to be performed during construction.
- E. If, during progress of Work, tests indicate that compacted materials do not meet specified requirements, remove defective Work, replace, and retest. Contractor to bear all costs associated with defective pavement Work.

- F. Pavement Density Determination:
1. Divide the days production into equal lots as shown in the following table:

Daily Production	Lot Determination
TON	Lots
270-545	1
546-910	2
911-1,455	3
1,456-3,275	4
3,276-4,545	5
4,546	6

- G. The Engineer may require additional density lots be established to isolate area affected by factors that may affect the normal compaction operations.
1. Obtain two cores in each lot. Core samples will be taken from random locations selected by the Engineer.
- H. Density determination shall be made by the end of the next working day after placement and compaction or as directed by the Engineer. If multiple layers are placed in a single day, cores shall be sawn and separated for each layer by sawing, tested, and reported by the end of next working day unless directed otherwise by the Engineer.
- I. The Contractor shall cut pavement samples from the completed work with power equipment and restore the surface by the end of the next working day with new, well compacted mixture without additional compensation.
- J. Cores shall be cut using 4-inch minimum inner diameter coring device. All samples shall be marked with the lot number and core number.
- K. Determination of the bulk specific gravity (G_{mb}) of the cores shall be in accordance with AASHTO T-166.
- L. The percent density of each lot shall be expressed as a percent of maximum specific gravity (G_{mm}) based on individual lot. Percent density can be obtained by dividing the average G_{mb} for the lot by the G_{mm} multiplied by 100.
1. The G_{mm} value used to calculate the percentage density for the lot shall be the average value obtained from the theoretical maximum specific gravity results from the production tests taken during that day of paving. If only one or two G_{mm} values were obtained that day, moving average value (at that test point) shall be used. If three or more G_{mm} values are obtained that day, average of those tests alone shall be used.
- M. The density requirements are listed below:
1. Wear Course – at least 92 percent.
 2. Non-Wear Course – at least 92 percent.
- N. Perform gradation analysis of aggregate once per day as construction progresses or as required by the Engineer.

- O. Perform voids in mineral aggregate (VMA) analysis in accordance with TAI MS-2 and TAI SP-2; minimum frequency of one test per day as construction progresses.

3.05 TOLERANCES

- A. Flatness: Maximum variation of 3/16 inch measured with 10-foot straight edge.
- B. Scheduled Compacted Thickness: Within 1/4 inch of specified thickness.
- C. Variation from true elevation: Within 1/2 inch.
- D. Transverse slope of surface course shall not vary from the slope shown on plans.
- E. Asphalt cement content within 0.5 percent of approved mix design as determined by asphalt ignition testing.

3.06 SCHEDULE

- A. BITUMINOUS PAVEMENT:
 - 1. Locations as shown on Plan Drawings. Minimum compacted thickness as shown on Typical Pavement Section.

END OF SECTION

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DIVISION 2 - SITE WORK
SECTION 02511 – TACK COAT

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes:
 - 1. Tack coat applied to existing pavement and to all previously installed pavement courses prior to the placement of a subsequent pavement course.

- B. Related Sections include, but are not limited to:
 - 1. Section 01300 – Submittals.
 - 2. Section 01400 – Quality Control.
 - 3. Section 01600 – Materials and Equipment.
 - 4. Section 02076 – Pavement Removal.
 - 5. Section 02212 – Restoration of Disturbed Areas.
 - 6. Section 02510 – Superpave Bituminous Pavement.

1.02 REFERENCES

- A. Reference Standards include, but are not limited to:
 - 1. North Dakota Department of Transportation Standard Specifications for Road and Bridge Construction, latest Edition.
 - 2. Asphalt Institute Manual Series No. 19.
 - 3. ASTM D2397 – Standard Specification for Cationic Emulsified Asphalt.
 - 4. ASTM D977 – Standard Specification for Emulsified Asphalt
 - 5. National Asphalt Pavement Association Quality Improvement Publication 128

1.03 PERFORMANCE REQUIREMENTS

- A. Ensure a sufficient bond between the surface being paved over and the overlying asphaltic course being placed.

1.04 REGULATORY REQUIREMENTS

- A. Conform to North Dakota State Department of Health Clean Air Standards and surface water runoff standards.
- B. Conform to the Manufacturer’s Material Safety Data Sheet (MSDS) for storage and handling of emulsion products.

1.05 ENVIRONMENTAL REQUIREMENTS

- A. Protect the general public from coming in contact with sprayed oil.
- B. Do not spray asphalt tack coat if weather conditions call for rain before the emulsion can cure.

PART 2 PRODUCTS

2.01 MATERIALS

- A. SS1H or CSS1H Emulsion meeting the appropriate requirements of ASTM for the specific grade of emulsion in conformance with Section 818. Non-tracking tack products may also be used as approved by the Engineer.
- B. Water should be clean and free of impurities, either in solution or colloidal suspension. The presence of ions, both positive and negative, must be carefully monitored.
- C. Emulsifying agents must be checked for compatibility with the water and the asphalt cement being used.
- D. Storage and handling of the emulsion should be performed in accordance with MS-19.
- E. All conventional asphalt emulsions shall be diluted with water at a 50:50 ratio. Polymer modified and non-tracking emulsions shall not be diluted. Dilution of the emulsion product should be performed at the emulsion terminal or in a tank at the asphalt plant. Emulsions should not be diluted in the distributor at the project site.
- F. Do not allow asphalt emulsion to freeze.

2.02 EQUIPMENT

- A. Tack distributor shall be designed, equipped, maintained, and operated so that tack material is applied at the specified rate per square yard with uniform pressure over the required width application.
- B. The distributor shall be equipped with an onboard computer that determines the relationship between the distributor travel speed and pump speed to ensure a consistent application rate.
- C. An accurate and calibrated thermometer with a range covering the specified application temperature for tack material shall be mounted at approximately center height of the tank with the stem extending into the tack material.
- D. The distributor shall have a full circulating system with a spray bar, adjustable laterally and vertically. The spray bar shall be maintained at a constant height above the pavement under variable load conditions.
- E. The distributor shall have full circulation spray bars with lateral and vertical adjustments.
- F. Ensure that all nozzles are of the same size and type to ensure uniform application of emulsion.
- G. Ensure that all nozzles are at the same angle to ensure uniform application of emulsion.

- H. The distributor shall be checked and calibrated. A certificate of the calibration shall be posted in the driver's compartment stating that the distributing system is in good working condition and when used with the charts and instructions furnished by the manufacturer will give the required results. The certificate shall bear the date of calibration and signature of the calibrating agency.
- I. Use pumps with proper clearances for handling to avoid binding and seizing. Avoid repeated pump cycling or frequent pumping.
- J. DO NOT mix different classes, grades or types of emulsified asphalt in storage tanks, transports or distributors. Make sure tanks are totally clean before changing to another class, grade or type.
- K. Pump from bottom of tank.
- L. Do not overheat asphalt emulsion.

PART 3 EXECUTION

3.01 APPLICATION OF TACK COAT

- A. Maintain proper distributor spray bar height and spray nozzle angle for proper coverage.
- B. Maintain proper distributor speed.
- C. Sweep and clean surfaces to be tack coated prior to application. Provide motorized brooms with a positive means of controlling vertical pressure and with the capability to clean the road surface prior to spraying the bituminous material.
- D. Do not apply more tack coating than can be covered by the same day's operation. Perform operations only during daylight hours and not during foggy weather.
- E. Do not apply tack coating or fog seal when ambient air temperature is consistently below 40 degrees F or when surface is wet.
- F. Do not over-spread tack coating. If "fat spots" develop, spread out excess emulsion by pneumatic tire rolling before placing pavement.
- G. Allow enough time for tack coat to "break" before placing pavement.
- H. Apply tack coat as directed in Section 401 of the North Dakota State Highway Department Standard Specifications for Road and Bridge Construction, latest Edition and NAPA's Best Practices for Emulsion Tack Coats. Hand spray wands and crack-sealing buckets are not acceptable methods of applying tack coat emulsion except on the vertical face of an adjoining lift of pavement.
- I. Apply bituminous tack coat to existing bituminous pavement and to the surface of each lift or course constructed, other than the final course. Apply in a uniform rate with no missed areas permitted.

- J. The bituminous tack coat shall be applied at a uniform rate of not less than:
 - 1. 0.10 gallons per square yard, for undiluted asphalt emulsion (as supplied from the emulsion terminal); application rate shall be adjusted if necessary to attain bond between courses.
 - 2. 0.20 gallons per square yard, for diluted asphalt emulsion (with water added at the terminal or plant emulsion tank).
- K. The temperature of emulsion shall be between 70 and 160 degrees F at the time of application.
- L. Apply immediately prior to the placement of the next bituminous course or lift. Do not allow public traffic on tack coated areas. The tack coat shall be applied in a manner that offers the least inconvenience to traveling public.
- M. Apply the tack coat on the same day as the proposed surfacing is to be performed. Where emulsified asphalt is specified, dilute one part of water to one part of emulsion and apply the mixture at two times the undiluted rate of application. Allow water to evaporate completely before beginning paving operations. At request of Contractor, Engineer may approve a change in the dilution ratio of the water-emulsion mixture. Sampling and Testing of the emulsion product shall be done at the discretion of the Engineer.
- N. Demonstrate a uniform application of asphalt emulsion producing 100 percent coverage of the surface after curing, as approved by the Engineer. Stop operations if the application demonstration does not meet the coverage requirements.

END OF SECTION

DIVISION 2 – SITEWORK

SECTION 02520 - CONCRETE PAVEMENT

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes:
 - 1. Portland cement concrete pavement.
 - 2. Concrete sidewalks, driveways, and curbs and gutters.
 - 3. Reinforcement.
 - 4. Joints and Joint Sealer.
 - 5. Surface Finish.
 - 6. Curing.
 - 7. Construction requirements.
 - 8. Materials.

- B. Related Sections include, but are not limited to:
 - 1. Section 01010 – Summary of Work.
 - 2. Section 01300 – Submittals.
 - 3. Section 01400 – Quality Control.
 - 4. Section 01500 – Construction Facilities and Temporary Controls.
 - 5. Section 01600 – Material and Equipment
 - 6. Section 01700 – Contract Closeout.
 - 7. Section 02076 – Pavement Removal
 - 8. Section 02205 – Soil Materials.
 - 9. Section 02207 – Aggregate Materials.
 - 10. Section 02211 – Site Grading.
 - 11. Section 02212 – Restoration of Disturbed Areas.
 - 12. Section 02231 – Aggregate Base Course.

1.02 REFERENCES

- A. References include, but are not limited to:
 - 1. Standard Construction Specifications of the City of Grand Forks, North Dakota, latest edition.
 - 2. North Dakota Department of Transportation Standard Specifications for Road and Bridge Construction, latest edition.
 - 3. American Association of State Highway Transportation Officials (AASHTO).
 - 4. ACI 301 – Specifications for Structural Concrete Buildings.
 - 5. ACI 304 – Recommended Practice for Measuring, Mixing, Transporting and Placing Concrete.
 - 6. ACI 305R – Recommended Practice for Hot Weather Concreting.
 - 7. ACI 306R – Recommended Practice for Cold Weather Concreting.
 - 8. ASTM A494 – Chemical Admixtures for Concrete.
 - 9. ASTM A497 – Welded Deformed Steel Wire Fabric for Concrete Reinforcement.
 - 10. ASTM A615 – Deformed and Plain Billet-Steel for Concrete Reinforcement.

11. ASTM C33 – Concrete Aggregates.
12. ASTM C94 – Ready Mix Concrete.
13. ASTM C150 – Portland Cement.
14. ASTM C260 – Air-Entraining Admixtures for Concrete.
15. ASTM C309 – Liquid Membrane-Forming Compounds for Curing Concrete.
16. ASTM C494 – Chemical Admixtures for Concrete.
17. ASTM D1751 – Performed Expansion Joint Fillers for Concrete Paving and Structural Construction.

1.03 SUBMITTALS FOR REVIEW

- A. See Section 01300 – Submittals: Procedures for Submittals.
- B. Product Data: Furnish data on aggregates, Portland cement, air-entraining agent, admixtures and other materials and on plant mix design in accordance with Sections 01300 and 01400 at least 7 days prior to beginning paving operations. Engineer must approve mix formula prior to its use on Project.
- C. Samples for Verifications: For each type of exposed color, pattern, or texture indicated.

1.04 PERFORMANCE REQUIREMENTS AND QUALITY ASSURANCE

- A. Perform Work in accordance with the Standard Construction Specification of Grand Forks, North Dakota, latest edition and the Contract Documents, including but not limited to Divisions II and III, Articles 23.01, 25.04, 25.06, and 33.01.
- B. Perform Work in accordance with the North Dakota Department of Transportation Standard Specifications for Road and Bridge Construction, latest edition.
- C. Batch Plant and Mixing Operations: Conform to North Dakota Department of Transportation Standard Specifications for Road and Bridge Construction, latest edition; ACI 304; and the Standard Construction Specifications of Grand Forks, North Dakota.
- D. Obtain all materials from same source throughout Project.

1.05 REGULATORY AND ENVIRONMENTAL REQUIREMENTS

- A. Conform to applicable standards for paving Work on public and private property.
- B. Perform concrete paving Work in accordance with ACI 301.
- C. Conform to Section 01500 – Construction Facilities and Temporary Controls. Minimize interference with traffic.
- D. Perform concrete paving Work during extreme temperature conditions in accordance with ACI 305R for Hot Weather Concreting and ACI 306R for Cold Weather Concreting.

- E. Perform Work when ambient air temperature is rising and above 35 degrees F (measured in the shade and away from artificial heat). Discontinue Work when ambient air temperature is falling and reaches 40 degrees F (measured in the shade and away from artificial heat). Submit details of Contractor's means of cold weather, frost protection for newly deposited concrete to Engineer for approval.
- F. Do not place concrete when base or foundation is wet or frozen or when atmospheric conditions exist that would cause abnormal shrinking and checking of the pavement.

PART 2 PRODUCTS

2.01 FORM MATERIALS

- A. Forms shall be of such cross-section and strength, and so secured as to resist the pressure of the concrete when placed, impacted, and by vibration of any equipment, which they support, without spring or settlement.
- B. Except for metal forms, use new material, as needed. Previously used forms may be reused during the progress of the work, provided they are completely cleaned, reconditioned, recoated for each use, and capable of producing formwork of the required quality.
- C. For exposed concrete surfaces, provide forms that will give an aesthetically pleasing look when completed.

2.02 REINFORCEMENT

- A. All reinforcing materials and accessories shall be new, no exceptions.
- B. Reinforcing Steel: ASTM A615, 60 ksi yield grade billet steel deformed bars; uncoated finish.

2.03 CONCRETE MATERIALS

- A. Portland Cement: Conform to ASTM C150, Type I, II, or III Portland cement, gray color.
- B. Fine and Coarse Mix Aggregates: Conform to ASTM C33.
 - 1. Fine Aggregate: (Refer to Section 02231).
 - 2. Coarse Aggregate: Gradation 67 (Refer to Section 02231).
- C. Water: Potable, not detrimental to concrete.
- D. Air Entrainment: ASTM C260.
- E. Chemical Admixture: Conforming to ASTM C494: non-chloride accelerating admixtures shall be used.

- F. Color Pigment: ASTM C 979/C 979M, synthetic mineral-oxide pigments or colored water-reducing admixtures; color stable, free of carbon black, nonfading, and resistant to lime and other alkalis.
- G. Other admixtures only with the written approval of Engineer.

2.04 ACCESSORIES

- A. Joint Sealers: Polyurethane elastomeric sealant for filling joints. Acceptable products Sikaflex 2C NS/NL or approved equivalent.
- B. Concrete Curing Materials: Shall conform to the following standards:
 - 1. Cotton mats for curing concrete; AASHTO M73
 - 2. Burlap cloth made from jute or kenaf: AASHTO M182.
 - 3. Waterproof paper for curing concrete: AASHTO M139.
 - 4. Liquid membrane forming compounds for curing concrete: AASHTO M148.
 - 5. White polyethylene sheeting (film) for curing concrete: AASHTO M171.
- C. Form Coating Materials: Shall be light commercial oil or other suitable substance that will prevent adherence of the concrete to the forms and will not reduce the strength of the concrete. In addition, the materials used for treating forms that will be in contact with concrete surfaces that are exposed to view in the finished work shall be a substance that will not appreciably affect the color of the concrete.

2.05 CONCRETE MIX - BY PERFORMANCE CRITERIA

- A. Mix concrete in accordance with ACI 304. Deliver concrete in accordance with ASTM C94.
- B. Provide concrete to the following criteria:
 - 1. Concrete Mix obtaining a minimum 28-day compressive strength of 4,500 psi compressive strength and 620 psi flexural strength with macrofiber, and minimum 7-day and 28-day moduli of rupture (AASHTO T97) of 550 and 600 psi, respectively.
 - 2. Maximum water/cement ratio of 0.42.
 - 3. Air content between 5 and 7 percent.
 - 4. Maximum slump of 3-inches.
 - 5. Minimum cement content of 564 lbs./cubic yard.
 - 6. Type C Fly Ash meeting ASTM C618 may be used to replace cement on a 1:1 ratio, up to a maximum of 30 percent by weight.

2.06 EQUIPMENT

- A. Equipment and tools necessary for handling materials and performing all parts of the Work shall be sufficient as to design, capacity, and mechanical condition. The equipment shall be at the job site sufficiently before the start of construction operations.

2.07 SOURCE QUALITY CONTROL AND TESTS

- A. Section 01400 - Quality Control: Provide concrete mix design and testing and analysis of aggregate material.
- B. Contractor shall submit samples, obtain aggregate gradation analyses, and submit for Engineer's approval. Minimum frequency for aggregate gradation analyses shall be one test per 1,000 tons of concrete mix produced or fraction thereof.
- C. Coarse Aggregate Material – Testing and Analysis: Perform in accordance with ASTM C136.
- D. Fine Aggregate Material – Testing and Analysis: Perform in accordance with ASTM C136.
- E. If tests indicate materials do not meet specified requirements, change material or material source and retest.
- F. Provide materials of each type from the same source throughout the Work.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions and that compacted subgrade is dry, stable, proper temperature, and compacted to specified density per Section 02211 and Section 02231. Verify subgrade elevations are correct and at proper grade to receive concrete paving. Subgrade shall be prepared as shown on the Drawings.
- B. Submit subgrade test results prior to placing concrete pavement.
- C. Verify Work of others affected has been completed and will not be adversely affected by paving operations. Verify that elevations of manhole and valve box castings in street or sidewalk are correct. Verify that curb depressions for sidewalks and driveways have been accommodated. Verify that drainage pattern matches storm water intake locations.

3.02 PREPARATION

- A. Moisten base to minimize absorption of water from fresh concrete.
- B. Adjust valve boxes, curb stops, manhole castings, and other utility structures to grade; coat manhole, catch basin, or other frames with oil to prevent bond with concrete pavement.
- C. Notify Engineer minimum 24 hours prior to commencement of concrete delivery and placement.

3.03 FORM MATERIALS

- A. Comply with ACI 301.
- B. Curb and gutter shape shall conform to the dimensions shown on the Drawings.
- C. Concrete curb shall be recessed for handicap ramps where sidewalks cross the street.
- D. Use approved flexible forms on all curves where the radius is less than 20 times the length of the form.
- E. In the event of rain, forms shall be removed and reset as may be necessary to comply with above requirements.
- F. Clean forms prior to placement. Place and secure forms to correct size, location, dimension, profile, and gradient for sidewalk, driveway, and roadway paving thickness shown on the Drawings and for curbs and gutters.
- G. Forms shall have a height equal to the edge thickness of the sidewalk or pavement slab. Assemble formwork to fully support loading exerted by concrete placement and finishing operations without deflection, displacement, or settlement and to permit easy stripping and dismantling without damaging concrete. Forms shall be well oiled on the contact faces. Use light commercial oil or other suitable substance that will prevent adherence of the concrete to the forms and will not reduce the strength of the concrete.
- H. Provide formwork sufficiently tight to prevent leakage of cement paste during concrete placement. Solidly butt joints and provide backup material at joints as required, to prevent leakage.
- I. Place no concrete until Engineer has approved subgrade and forms. Forms for paving shall be set to the proper alignment and grade for a distance equal to at least 3 hours paving time prior to Engineer approval.
- J. Moisten forms and subgrade immediately before placing concrete.
- K. Do not disturb or remove forms until the concrete has hardened sufficiently to permit removal with complete safety or unless otherwise approved by Engineer. Remove forms only during daylight hours and in a manner that avoids damage to pavement and curbs.

3.04 REINFORCING

- A. Steel Reinforcement:
 - 1. Comply with ACI 301 and placement shown on the Drawings. Reinforcement shall be clean and free of rust scale, shall be of the type, style, and dimensions shown on the Drawings.
 - 2. Place reinforcement as shown on Drawings within a tolerance of plus or minus ½ inch.

- B. Macrofiber Reinforcement:
1. Concrete pavement shall be reinforced with macrofiber at a dosage rate recommended by the product manufacturer. See the following table:

<u>Company</u>	<u>Brand Name</u>	<u>Dosage Rate (lbs/CY)</u>
ABC Polymer Industries P.O. Box 580 Helena, AL 35080 Phone: (205) 620-9882 www.abcpolymerindustries.com	TUF-MAX DOT	4.5
BASF Corporation (as manufactured by FabPro Poly.) 23700 Chagin Boulevard Cleveland, OH 44122 Phone: (216) 839-7500 www.masterbuilders.com	MASTERFIBER MAC MATRIX	4
THE EUCLID CHEMICAL CO. 19218 Redwood Road Cleveland, OH 44110-2799 Phone: (800) 321-7628 www.euclidchemical.com	TUF-STRAND SF	5
FORTA CORP. (as manufactured by Bridon Cordage) 100 Forta Drive Grave City, PA 16127 Phone: (800) 245-0306 www.forta-ferro.com	FORTA-FERRO ONE	4
GENERAL RESOURCE TECH. (as manufactured by FabPro Poly.) 2978 Center Court Egan, MH 55121-1257 Phone: (800) 324-8154 www.grtinc.com	ADVANTAGE STRUCTURAL FIBER	4
GCP APPLIED TECHNOLOGIES (as manufactured by FabPro Poly.) 62 Whittemore Drive Cambridge, MA 02140-1692 Phone: (617) 498-2639 www.graceconstruction.com	STRUX 90/40	4
PROPEX 1110 Market Street, Suite 300 Chattanooga, TN 37402 Phone: (423) 553-2815 www.propexglobal.com	FIBERMESH 650	5

3.05 PLACING CONCRETE

A. Preparation:

1. Place no concrete until subgrade preparation, forms, and reinforcement have been inspected and approved and until elevations of castings have been verified.
2. Before placing concrete, thoroughly clean forms, wash out with water, and make tight. Sweep and wash all adjacent sidewalks next to the pour, so as to eliminate contamination from remaining debris.
3. Concrete in streets, sidewalks, parking lot, etc. are to be of the thickness as indicated on the Drawings.
4. Deposit concrete in a manner to form a continuous, full-width mass requiring a minimum of rehandling and/or redistribution and to a sufficient depth to provide excess for finishing operations.
5. Do not dump or discharge concrete on or against a joint, reinforcement, insert, embedded part, or other assembly in a manner causing displacement or damage of the assembly.
6. Before new concrete is deposited upon or against concrete that has taken its initial set or has hardened, remove all encrustations from forms and reinforcement.

B. Method of Placing.

1. Do not place concrete outside of regular working hours, unless Engineer has been notified properly and is present.
2. Do not permit concrete to drop freely more than 6 feet. The concrete shall be placed in forms by means of a chute or hand shoveling.
3. Deposit concrete so that the surface is kept level throughout, a minimum being permitted to flow from one position to another, and place as rapidly as practicable after mixing.
4. Do not use in this Work any concrete not placed within 30 minutes after leaving the mixer.
5. If concrete placement is suspended for 30 minutes or less, cover the unfinished forward face of placed concrete with wet burlap until placement operations resume. When operations resume, break down forward face of placed concrete and thoroughly merge with fresh concrete. Continue consolidations and finishing operations on placed concrete throughout suspension period.
6. Do not break or interrupt successive pours such that cold joints occur. If the suspension of concrete placement exceeds 30 minutes, a standard head joint shall be constructed; provided, however, that no header joint will be permitted within a distance of 10 feet from any adjacent transverse joint.

C. Consolidating

1. Consolidate concrete by an approved mechanical vibrator using a uniform rate of forward progress as soon as possible after placement of concrete on subgrade. Vibrate only once thoroughly and uniformly consolidate concrete throughout its entire depth and width without damaging or displacing joint assemblies and reinforcing. Segregation of concrete or undesirable water gain in the upper pavement zone due to excessive vibration will not be permitted. Suspend vibration whenever the forward

progress of the machine is interrupted. Hand-held vibratory equipment is not approved unless Contractor demonstrates that adequate manpower is dedicated to consolidation operations and Engineer approves Contractor's plan and manpower commitment in writing. Engineer may require the use of hand-held vibrators along the edge of existing pavement and curb. Suspend concrete paving if vibratory equipment failure occurs.

2. Thoroughly work concrete around reinforcements, and embedded fixtures, and into corners of forms during placing operations.

3.06 JOINTS

- A. Intervals, type, and dimensions shown on Drawings; firmly support rebar off subgrade with chairs. Where jointing plan is not shown, prepare and furnish jointing plan for review and approval of Engineer.
- B. Construct joints straight and at right angles to pavement surface. Where practical, all joints shall align with like joints in adjoining work. Use joints to outline all panels in sidewalks, making panels square insofar as possible. Maximum joint spacing in feet shall be 1.5 times pavement thickness in inches. Maximum length of panel shall be 1.5 times width.
- C. When placing concrete adjacent to existing working joints, Contractor shall use jointing techniques that will prevent random cracking of new pavement surfaces. Techniques may include soft sawing, placing pre-molded strips, or other approved methods.
- D. After the curing period, joints to be dried and sand cleaned prior to installation of joint material; seal with hot pour or silicone material meeting requirements of the City of Grand Forks "Standard Construction Specifications;" slightly underfill joints by approximately 1/8 inch and remove excess seal material immediately.
- E. Transverse joints: at right angles to pavement and north/south Parking Lot centerline:
 1. Match existing transverse joints.
 2. Saw cut 3/16 inch contraction joints to a depth of ¼ slab depth at optimum time after finishing to prevent formation of uncontrolled cracks due to contraction of slab;
 3. Provide construction joints as shown on Drawings and when concrete placement is suspended more than 30 minutes; no transverse construction joints shall be allowed between normal contraction joint locations; Contractor shall lay out joint locations to ensure that construction joints do not occur at prohibited locations.
- F. Longitudinal joints: parallel to pavement centerline and north/south Parking Lot centerline.
 1. Match existing longitudinal joints.
 2. Placed as shown on Drawings; saw cut 3/16 inch contraction joints to a depth of ¼ slab depth at optimum time after finishing to prevent formation of uncontrolled cracks due to contraction of slab.

3. Construct longitudinal construction joints, if required, as shown on Drawings. The key shall be constructed by placing a deformed metal plate against the form when the first lane adjacent to the joint is placed. Remove this metal plate with the form. When placing the second slab, no concrete shall be left to overhang the lip formed on the first slab by the edging tool. Before placing the second slab, the entire edge of the first slab shall be sprayed with concrete form oil to completely break the bond between adjacent slabs.
- G. Isolation joints: use to separate thickened edge sidewalk from parking lot and adjacent curb and gutter. Joint shall be full depth of pavement and dimensions shown in Drawings; when extending full width of 5-foot wide or wider pavement, increase depth 2-inches.
 1. Sidewalk isolation joints; 5/8-inch wide and full slab thickness; premolded or poured material.

3.07 FINISHING

- A. When irregularities are discovered, they shall be corrected by adding or removing concrete. The pavement surface shall have no depression in which water will stand.
- B. Ensure that paving grade has a minimum slope of 0.4 percent.
- C. Street Pavement: Finish and texture street pavement transverse to pavement centerline so that finished elevations match existing street surfaces.
- D. Brooms shall be clean and free of dry or hardened mortar.
- E. Finishing Schedules:
 1. Streets and Parking Lot: Surface shall be left slightly rough, with a uniformly tined finish. Streets shall be true to line and grade for existing concrete pavement street sections.
 2. Driveways and aprons: Light broom texture parallel to centerline of street and curb and gutter, true to line and grade. The surface shall be slightly rough but uniform.
 3. Sidewalks: Floated smooth and immediately after the water sheen disappears, broom lightly perpendicular to centerline followed by troweling joint edges. Use a clean broom at least 24 inches long and having three rows of bass, bassine, or coire fibers. Broom fibers shall be free of dry or hardened mortar from previous use. After final floating, apply the following finish:
 - a. Medium-to-Fine-Textured Broom Finish: Finish for non-decorative concrete. Draw a soft-bristle broom across float-finished concrete surface, perpendicular to line of traffic, to provide a uniform, fine-line texture.
 - b. Medium-to-Coarse Textured Broom Finish: Finish for non-colored and colored scored concrete. Provide a coarse finish by striating float-finished concrete surface 1/16" to 1/8" deep with a stiff-bristled broom, perpendicular to line of traffic.
 4. Curb and gutters: light broom.

- F. Finishing Tolerances:
1. The true plane of the surface shall not vary more than 1/4 of an inch in 10 feet, as determined by a 10 foot straightedge placed anywhere on the slab in any direction.
 2. Produce an initial surface which is relatively free from defects, but which still may show some trowel marks.
 3. Provide a finished surface essentially free from trowel marks, uniform in texture and appearance, and in a plane of tolerance specified.

3.08 CURING AND PROTECTION

- A. Immediately after placement, protect concrete from premature curing, sun, wind, excessively hot or cold temperatures, travel, and mechanical injury. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.
- B. When removal of formwork occurs before concrete has totally cured, concrete shall be protected from premature drying by covering with polyethylene sheeting.
- C. Cure all horizontal surfaces with wet cure or polyethylene film.
- D. Cure concrete by covering all exposed surfaces immediately after finishing for at least 30 hours with curing paper or plastic curing blanket or by application of a liquid-membrane curing-compound.
- E. When liquid membrane curing compound is used, apply at a rate of at least one gallon per 150 square feet in two equal applications 30 minutes apart. Protect joints to be sealed from entry of curing compound.
- F. The Contractor shall insure that the concrete has developed the necessary strength before forms are removed. Apply curing compound to exposed concrete after removal of forms.
- G. Promptly repair damaged curing compounds, paper, or blankets during the 30-hour curing period.
- H. Prevent the temperature of deposited concrete from falling below 50 degrees F. until at least 30 hours of curing has taken place. Engineer may, at his/her discretion, extend this curing time for cold weather operations.
- I. Power equipment shall not operate on a pavement slab until it has attained a modulus of rupture flexural strength of 550 psi. Engineer's written approval shall be required prior to equipment access onto pavement. In the event of damage to concrete resulting from the equipment or operations, suspend operation and correct damage. Contractor shall be responsible for any damage to pavement caused by his equipment or operations, regardless of Engineer's approval.
- J. New pavement shall not be opened for traffic until the joints have been sealed. New pavement may be opened to use by the general public vehicles when the concrete has attained a modulus of rupture flexural strength of 550 psi, provided

pavement is in condition for safe use. Vehicular access limitations at colder temperatures will be extended at the Engineer's discretion; consult Engineer before allowing vehicle access.

- K. Clean up paving area.

3.09 DEFECTIVE CONCRETE

- A. The following concrete will be deemed to be defective, poor in quality standards, and shall be removed and replaced promptly from the job site at no additional expense to the Owner.
 - 1. All concrete which is not formed as indicated, is not true to intended alignment, is not plumb or level where as intended, is not true to intended grades and levels;
 - 2. Has voids, honeycombs, or spalling that have been cut, resurfaced, or filled, unless with the approval of the Engineer;
 - 3. Has uncontrolled cracks greater than 1/32 inch in width.
 - 4. Has sawdust, shaving, wood, dirt, rocks, or other embedded debris;
 - 5. The flow line surface of gutters not finished and shaped as necessary to eliminate low spots and entrapment of water;
 - 6. The top surface of the curbs, gutters, and curb radius shall be free from humps, sags, and other irregularities, shall be constructed to the elevations and widths shown in the Drawings and shall have edge alignment as straight as practicable on tangent sections and of uniform curvature on curved sections;
 - 7. Or does not conform fully to provisions of the contract documents.
- B. Repairs and Replacements:
 - 1. Where defective concrete is found after removal of the forms, cut it out, if necessary, and make the surfaces match adjacent surfaces.

3.10 FIELD QUALITY CONTROL

- A. Section 01400 – Quality Control: Field inspection and laboratory testing.
 - 1. Perform field and laboratory testing by an independent testing laboratory appointed and paid for by the Contractor.
- B. Perform one (1) field slump, one (1) air entrainment, two (2) 7-day and two (2) 28-day cylinder compression tests, and two (2) each 7-day and 28-day beam modulus of rupture tests for standard concrete in accordance with ACI 301 on the following schedule. Minimum testing frequency shall be the greater number of tests determined by the following criteria: 1) Once per day of paving operation, 2) Once per city block of paving or fraction thereof, or 3) Once per 75 cubic yards or fraction thereof. When ambient temperatures are below 45 degrees, one additional test cylinder shall be molded, cured on site under the same conditions as concrete it represents, and subsequently tested for 28-day compressive strength. Notify testing laboratory to perform tests when testing is to be performed during construction. Do not proceed with additional work until 7-day modulus of rupture results have been verified.
- C. Provide computer generated batch tickets showing the weight of each component in the concrete mixture and the batching time with each batch of

concrete delivered to the project. Contractor shall collect the batch ticket from each load delivered and shall deliver the batch tickets to the Engineer at the end of each day.

- D. Maintain records of placed concrete items. Record date, location of pour, quantity, air temperature (3 times daily), and test samples taken.
- E. If, during progress of Work, tests indicate that concrete paving materials do not meet specified requirements, remove defective Work, replace and retest. Contractor to bare all costs associated with defective pavement work.

3.11 WORKMANSHIP AND TOLERANCES

- A. Flatness: Maximum variation of measured with a 10-foot straight edge shall be $\frac{1}{4}$ inch for pavement slabs and $\frac{1}{8}$ inch for sidewalks.
- B. Scheduled thickness: Within $\frac{1}{4}$ inch of specified thickness.
- C. Variation from true elevation: Within $\frac{1}{4}$ inch.
- D. Transverse slope of surface course shall not vary from the slope shown on Drawings by more than plus or minus $\frac{1}{4}$ inch in 12 feet.

3.12 SCHEDULE

- A. Sidewalks and Pedestrian Ways: 6-inches thick, or as shown in typical sections.
- B. Street and parking lot pavement: As shown in typical sections.
- C. Curb and Gutter: As shown in details.
- D. Patches and Repairs: Match existing concrete thickness.

END OF SECTION

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DIVISION 2 - SITEWORK
SECTION 02521 – DETECTABLE WARNING SURFACE TILES

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Furnishing and installing cast in place/detectable warning surface tile.
- B. Related Work:
 - 1. Section 01010 – Summary of Work.
 - 2. Section 01025 – Measurement and Payment.
 - 3. Section 01300 – Submittals.
 - 4. Section 01400 – Quality Control.
 - 5. Section 01500 – Construction Facilities and Temporary Controls
 - 6. Section 02520 – Concrete Pavement.

1.02 SUBMITTALS

- A. Submit under provisions of Section 01300.
- B. Product Data: Submit manufacturer's literature describing products, installation procedures and routine maintenance.
- C. Shop drawings are required for products specified showing fabrication details; composite structural system; plans of tile placement including joints, and material to be used as well as outlining installation materials and procedure.
- D. Material Test Reports: Submit test reports from qualified independent testing laboratory indicating that materials proposed for use are in compliance with requirements and meet the properties indicated. All test reports shall be conducted on a cast-in-place tactile tile system as certified by a qualified independent testing laboratory.
- E. Maintenance Instructions: Submit copies of manufacturer's specified maintenance practices for each type of tactile tile and accessory as required.

1.03 QUALITY ASSURANCE

- A. Provide cast-in-place tactile tiles and accessories as produced by a single manufacturer.
- B. Installer's Qualifications: Engage an experienced Installer certified in writing by tactile manufacturer as qualified for installation, who has successfully completed tile installations similar in material, design, and extent to that indicated for Project.

- C. Americans with Disabilities Act (ADA): Provide tactile warning surfaces which comply with the detectable warnings on walking surfaces section of the Americans with Disabilities Act (Title 49 CFR TRANSPORTATION, Part 37.9 STANDARDS FOR ACCESSIBLE TRANSPORTATION FACILITIES, Appendix A, Section 4.29.2 DETECTABLE WARNINGS ON WALKING SURFACES.

1.04 DELIVERY, STORAGE AND HANDLING

- A. Tiles shall be suitably packaged or crated to prevent damage in shipment or handling. Finished surfaces shall be protected by sturdy wrappings and tile type shall be identified by part number.
- B. Tiles shall be delivered to location at building site for storage prior to installation.

1.05 SITE CONDITIONS

- A. Environmental Conditions and Protection: Maintain minimum temperature of 40 degrees F in spaces to receive tactile tiles for at least 48 hours prior to installations, during installation, and for not less than 48 hours after installation. Store tactile tile material in spaces where they will be installed for at least 48 hours before beginning installation. Subsequently, maintain minimum temperature of 40 degrees F in areas where work is completed.
- B. The use of water for work, cleaning or dust control, etc. shall be contained and controlled and shall not be allowed to come into contact with the passengers or public. Provide barricades or screens to protect passengers or public.
- C. Disposal of any liquids or other materials of possible contamination shall be made in accordance with federal state and local laws and ordinances.
- D. Cleaning materials shall have code acceptable low VOC solvent content and low flammability if used on the site.

1.06 EXTRA STOCK

- A. Deliver extra stock to storage area designated by Engineer. Furnish new materials from same manufactured lot as materials installed and enclose in protective packaging with appropriate identification for cast-in-place tactile tiles. Furnish not less than two (2) percent of the supplied materials for each type, color, and pattern installed.

1.07 GUARANTEE

- A. Cast-in-place tactile tiles shall be guaranteed in writing for a period of five (5) years from date of final completion. The guarantee includes defective work, breakage, deformation, and loosening of tiles.

PART 2 PRODUCTS

2.01 MATERIAL

A. Vitrified Polymer Composite (VPC) cast-in-place tiles shall be an epoxy polymer composition with an ultra violet stabilized coating employing aluminum oxide particles in the truncated domes. The tile shall incorporate an in-line dome pattern of truncated domes 0.2 inches in height, 0.9 inches diameter at the base, and 0.4 inches diameter at top of dome spaced 2.35 inches nominal as measured on a diagonal and 1.70 inches nominal as measured side by side. For wheelchair safety the field area shall consist of a non-slip surface with a minimum of 40 - 90 degrees raised points 0.045 inches high, per square inch.

1. Dimensions: Tiles shall be held within the following dimensions and tolerances:

Nominal Tile Size	
Length and Width: (inches)	12 x 48
Depth (inches)	1.400 ± 5%
Face Thickness (inches)	0.1875 ± 5%
Warpage of Edge (percent)	± 0.5

2. Water Absorption of Tile when tested by ASTM-D 570 not to exceed 0.35 percent.
3. Slip Resistance of Tile when tested by ASTM-C 1028 the combined wet/dry static co-efficient of friction not to be less than 0.80 on top of domes and field area.
4. Compressive Strength of tile when tested by ASTM-D 695-91 not to be less than 18,000 psi.
5. Tensile Strength of Tile when tested by ASTM-D 638-91 not to be less than 10,000 psi.
6. Flexural Strength of Tile when tested by ASTM - C293-94 not to be less than 24,000 psi.
7. Chemical Stain Resistance of Tile when tested by ASTM-D 543-87 to withstand without discoloration or staining – 1 percent hydrochloric acid, urine, calcium chloride, stamp pad ink, gum and red aerosol paint.
8. Abrasive Wear of Tile when tested by BYK - Gardner Tester ASTM-D 2486* with reciprocating linear motion of 37± cycles per minute over a 10 inches travel. The abrasive medium, a 40 grit Norton Metallite sand paper, to be fixed and leveled to a holder. The combined mass of the sled, weight and wood block to be 3.2 lb. Average wear depth shall not exceed 0.030 after 1000 abrasion cycles measured on the top surface of the dome representing the average of three measurement locations per sample.
9. Fire Resistance: When tested to ASTM E84 flame spread be less than 25.
10. Gardner Impact to geometry "GE" of the standard when tested by ASTM-D 5420-93 to have a mean failure energy expressed as a function of specimen thickness of not less than 450 in. lbf/in. A failure is noted if a hairline fracture is visible in the specimen.
11. Accelerated Weathering of Tile when tested by ASTM-G26-95 for 2000

hours shall exhibit the following result - no deterioration, fading or chalking of surface of tile.

- B. Vitrified Polymer Composite (VPC) Cast-In-Place Tiles embedded in concrete shall meet or exceed the following test criteria:
 - 1. Accelerated Aging and Freeze Thaw Test of Tile when tested to ASTM-D 1037 shall show no evidence of cracking, delamination, warpage, checking, blistering, color change, loosening of tiles or other defects.
 - 2. Salt and Spray Performance of Tile and Adhesive System when tested to ASTM-B 117 not to show any deterioration or other defects after 100 hours of exposure. G. Embedment flange spacing shall be 3.0 inches minimum to 3.1 inches maximum center to center spacing as illustrated on product drawing.
- C. Embedment flange spacing shall be 3.0 inches minimum to 3.1 inches maximum center to center spacing as illustrated on product drawing.
- D. Color: Yellow conforming to Federal Color No. 33538. Color shall be homogeneous throughout the tile.

2.02 MANUFACTURERS

- A. Acceptable Manufacturers:
 - 1. Armor-Tile manufactured by Engineered Plastics Inc. (800-682-2525)
 - 2. Approved Equal.

PART 3 EXECUTION

3.01 INSTALLATION

- A. During tile installation procedures, ensure adequate safety guidelines are in place and that they are in accordance with the applicable industry and government standards.
- B. Contractor shall furnish and place tile in accordance with manufacturer's recommendations and instructions.
- C. The concrete shall be poured and finished true and smooth to the required dimensions and slope prior to the tile placement.
- D. Immediately after tile placement, the tile elevation is to be checked to adjacent concrete. The tile elevation and slope should be set consistent with contract drawings to permit water drainage.

3.02 CLEANING AND PROTECTING

- A. Protect placed tile until it has set completely.
- B. Protect tiles against damage during construction period to comply with tactile tile manufacturer's specification.

- C. Protect tiles against damage from rolling loads following installation by covering with plywood or hardwood.
- D. Clean tactile tiles not more than four days prior to date scheduled for inspection intended to establish date of substantial completion in each area of project. Clean tactile tile by method specified by tactile tile manufacturer.

END OF SECTION

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DIVISION 2 - SITE WORK
SECTION 02535 CURB AND GUTTER

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes:
 - 1. Construction of Air-Entrained Portland cement concrete curb and gutter.
 - 2. Removal of old curb and gutter.

- B. Related Sections include, but are not limited to:
 - 1. Section 01010 – Summary of Work.
 - 2. Section 01025 – Measurement and Payment.
 - 3. Section 01300 – Submittals
 - 4. Section 01400 – Quality Control.
 - 5. Section 01500 – Construction Facilities and Temporary Controls.
 - 6. Section 01600 – Material and Equipment.
 - 7. Section 01700 – Contract Closeout.
 - 8. Section 02076 – Pavement Removal.
 - 9. Section 02205 – Soil Materials
 - 10. Section 02207 – Aggregate Materials.
 - 11. Section 02211 – Restoration of Disturbed Areas.
 - 12. Section 02510 – Superpave Bituminous Pavement.
 - 13. Section 02520 – Concrete Pavement.

- C. References include, but are not limited to:
 - 1. “Standard Specifications for Road and Bridge Construction” by North Dakota Department of Transportation (latest edition).
 - 2. ACI 304 - Recommended Practice for Measuring, Mixing, Transporting, and Placing Concrete.
 - 3. ASTM C33 - Concrete Aggregates.
 - 4. ASTM C94 - Ready Mix Concrete.
 - 5. ASTM C150 Type 1 and C175 Type 1A - Portland Cement.
 - 6. ASTM C260 - Air-Entraining Admixtures for Concrete.
 - 7. ASTM C309 - Liquid Membrane-Forming Compounds for Curing Concrete.
 - 8. ASTM C494 - Chemical Admixtures for Concrete.
 - 9. ACI 301 – Standard Specification for Structural Concrete.
 - 10. ASTM C143 – Determination of Slump.
 - 11. “Design and Control of Concrete Mixtures”, Portland Cement Association (latest edition).

1.02 SUBMITTALS

- A. Submit mix design under provisions of Section 01300.

- B. Indicate dowel sizes, spacing, locations and quantities of expansion joint, dowels, and scored joints.

1.03 QUALITY ASSURANCE

- A. Perform Work in accordance with all listed references.
- B. Acquire cement and aggregate from same source for all Work.
- C. Record elevations of existing curb and gutter prior to removing existing curb and gutter.

1.04 TESTS

- A. Testing and analysis of concrete will be performed under provisions of Section 01400.
- B. Submit proposed mix design of concrete to Engineer for review 7 days prior to commencement of Work.
- C. Tests of cement and aggregates will be performed within two weeks prior to construction to ensure conformance with specified requirements.
- D. Slump tests, air tests, and test samples will be ordered at the discretion of the Engineer and paid in full by the Contractor.

PART 2 PRODUCTS

2.01 MATERIALS:

- A. Cement, aggregates, admixtures, related products, and mix designs per Specification Section 02520.

2.02 EQUIPMENT

- A. Curb and gutter shall be constructed using a slip-form machine or fixed forms.
- B. Fixed forms shall be full depth and constructed of rigid or stiff materials.
- C. Forms shall conform to ACI-301.

PART 3 EXECUTION

3.01 CONCRETE REMOVAL

- A. Existing concrete shall be removed to the extent and lines authorized by the Engineer.
- B. Curbing and curb and gutter shall be removed to an existing control joint or to a full depth edge sawn by the Contractor.

- C. The Contractor shall provide a disposal area or haul the concrete to the landfill and pay the required disposal fees.

3.02 GUIDELINE

- A. Set the guideline to follow the top of line of the curb.
- B. Attach the indicator to provide a constant comparison between the top of the curb and the guideline.

3.03 BASE

- A. A base aggregate shall be placed to the required section and uniformly compacted.
- B. Aggregate base shall be per Specification Section 02207.
- C. The subgrade shall be excavated or filled to the depth and width that permits the installation and bracing of form work.
- D. All soft and yielding material shall be removed and replaced with acceptable material. Compaction shall be 95% dry density as determined by the Standard Proctor Method.
- E. Unless otherwise called for in the plans or special provisions, fill material shall consist of select backfill.
- F. The subgrade shall be shaped and trimmed to the depth necessary and compacted with mechanical tampers to produce a firm and even surface. Hand tamping of the subgrade shall not be permitted.

3.04 FORMS

- A. Brace forms sufficiently to maintain position during pour.
- B. Use metal templates cut to the section shown on the curb and gutter detail.
- C. On small radius curves such as driveways and street intersections, the Contractor may use masonite or equal, metal or ½ inch dimension lumber.
- D. All form work must be satisfactory to the Engineer.

3.05 JOINTS

- A. Place ¾-inch prepared expansion joints through the curb and gutters at locations of expansion and contraction joints in pavement, at the end of radius returns at street intersections and driveways and around curb inlet blockouts.

- B. Maximum spacing between joints shall be 150 ft.

3.06 MIXING, PLACING AND FINISHING

- A. All construction requirements of North Dakota Department of Transportation Section 748 shall be met.
- B. Place concrete in forms to required depth.
- C. Consolidate thoroughly by vibration.
- D. Do not permit rock pockets in the form.
- E. The exposed surfaces shall be floated with a moistened wood float until all irregularities have been removed.
- F. The final surface finish shall be obtained by uniformly brooming the surface.
- G. Side forms shall be left in place until the concrete has hardened enough for form removal without damaging the concrete.
- H. The top and face curbs shall be checked with a 10-foot straightedge and all variations greater than $\frac{1}{4}$ inch in 10 feet shall be corrected before the final finish. If the curb cannot be corrected, out-of-tolerance sections shall be replaced at the Contractor's expense.
- I. When the temperature is below 40° F., or when there is a probability that such temperature will occur during the 24 hour period after placing, special provisions shall be taken. Except as otherwise specified, mixing, placing, and protection shall be in accordance with the latest edition of the Portland Cement Association manual entitled "Design and Control of Concrete Mixtures".

Frozen concrete shall be immediately removed upon direction of the Engineer, and replaced with new work at no expense to the Owners.

In order to maintain the temperature specified, the Work shall be entirely enclosed with tarpaulins, polyethylene plastic sheets, commercial insulating blanket or bat insulation, and all fuel and suitable heating equipment and the necessary labor and supervision shall be furnished. Unvented heaters shall not be used. Only commercial insulating blanket or bat insulation will be permitted as a covering without addition of heat. Full responsibility for the protection of the Work shall be under this section.

During freezing weather, temperature records shall be kept by the Contractor and furnished to the Engineer daily, showing the temperature at four hour intervals of the outside air, of the air in the coldest part of the enclosure near the concrete, of the concrete as it is placed, and of the concrete in place at such points as the Engineer may direct. A 2% or less solution of calcium chloride may be added to the concrete mix.

- J. When hot weather conditions exist that would seriously impair the quality and strength of the concrete, the concrete as it is placed in accordance with the latest edition of the Portland Cement Association Manual entitled "Design and Control of Concrete Mixtures" except as otherwise specified herein. During hot weather conditions, the temperatures of the concrete immediately before it is placed in the forms shall be between 50° F., and 90° F.

3.07 CURING

- A. All concrete work shall be carefully protected from sun, wind, storms and travel until thoroughly set, and the Contractor will be held responsible and must make good at his own expense any damage from any cause until approved and accepted by the Engineer.
- B. As soon as the concrete has hardened sufficiently to prevent damage, the finished surface shall be covered and sprinkled with water and kept wet at least 3 days or a chemical curing agent shall be used and applied to all exposed surfaces in accordance with the manufacturer's specifications.

3.08 BACKFILLING

- A. After the concrete has set sufficiently, the spaces in front and back of the curbing shall be filled and compacted.

3.09 FIELD QUALITY CONTROL

- A. Testing for curb and gutter
 - 1. Per Specification Section 02520.

END OF SECTION

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DIVISION 2 - SITE WORK
SECTION 02607 - PRECAST CONCRETE STRUCTURES

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes:
1. Modular precast concrete manhole sections with tongue-and-groove joints, precast cover and base slabs, frame and cover.
 2. Modular precast concrete lift station barrel sections with tongue-and-groove joints, precast cover and base slabs.
 3. Modular precast concrete valve vault rectangular box sections with tongue-and-groove joints, precast cover and base slabs.
- B. Related sections include, but are not limited to:
1. Section 01025 – Measurement and Payment.
 2. Section 01300 – Submittals.
 3. Section 02222 – Excavating.
 4. Section 02223 – Backfilling.
 5. Section 02710 – Sanitary Sewer System.
 6. Section 02722 – Storm Sewer.
 7. Section 02923 – Landscape Grading.
 8. Section 02936 – Hydroseeding.

1.02 REFERENCES

- A. References include, but are not limited to:
1. ASTM A48 - Standard Specification for Gray Iron Castings.
 2. ASTM A496 - Deformed Steel Wire for Concrete Reinforcement.
 3. ASTM A185 - Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete.
 4. ASTM A615 - Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.
 5. ASTM C478 - Precast Reinforced Concrete Manhole Sections.
 6. ASTM C361 - Standard Specification for Reinforced Concrete Low-Head Pressure Pipe.
 7. ASTM C443 - Standard Specification for Joints for Circular Concrete Sewer and Culvert Pipe, Using Rubber Gaskets.
 8. ASTM C990 – Standard Specification for Joints for Concrete Pipe, Manholes, and Precast Box Sections Using Preformed Flexible Joint Sealants.
 9. ASTM C923 - Resilient Connectors between Reinforced Concrete Manhole Structures and Pipes.
 10. Federal Specification SS-S-00210 - Pre-formed Plastic Sealing Compound.

1.03 SUBMITTALS FOR REVIEW

- A. Section 01300 – Submittals.

- B. Shop Drawings: Indicate structure types, diameters or dimensions, locations, elevations, piping, and conduit, sizes and elevations of penetrations.
- C. Product Data: Provide manhole covers, component construction, features, configuration, and dimensions.

1.04 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with a minimum of three years experience.

1.05 ENVIRONMENTAL REQUIREMENTS

- A. Maintain materials and surrounding air temperature to minimum 50° F prior to, during, and 48 hours after completion of grout Work.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Sanitary Manholes: Standard Barrel Sections, Base slabs, Cone sections, Cover slabs, and Top Sections: Reinforced precast concrete as specified in accordance with ASTM C478 able to withstand H-20 load requirements. Manhole sewer pipe connectors shall be cast-in gasket. Joints: Use Rubber O-ring gasket type flexible joints ASTM C443. Provide external joint seal on all manhole section joints. External joint seal shall be a 12 inch wide heavy bitumastic coating, Infi-Shield Seal Wrap, by Sealing Systems Inc., or equal.
- B. Provide monolithic bases with cast-in gasket pipe penetrations for all new sanitary sewer manholes with inverts and entrance angles as shown on Drawings.
- C. Reinforcement: Reinforce with deformed billet-steel conforming to ASTM A615 or deformed welded wire fabric conforming to ASTM A496 and ASTM A497 for the anticipated loading conditions.
- D. Precast concrete adjusting rings for manholes will be in accordance with ASTM C478.
- E. Precast 8" concrete adjusting rings, with cast in place manhole step, for manholes will be in accordance with ASTM C478.
- F. Non-shrink grout.
- G. Manhole Steps: Rubber coated steel as manufactured by M.A. Industries Inc. or Engineer approved equal. Comply with all applicable OSHA regulations. Formed integral with manhole sections.
- H. Chimney Seal & Extensions: External chimney seal manufactured by Cretex Specialty Products, or approved equal.

- I. Approved Manufacturers:
 - 1. Cretex Concrete Products West, Inc. or approved equivalent.

2.02 CONFIGURATION

- A. Circular Construction:
 - 1. Bottom and mid-sections; concentric barrel, lipped male/female joints.
 - 2. Top section; eccentric cone, lipped male/female joints.
- B. Rectangular Construction:
 - 1. All sections; square barrel, lipped male/female joints.
- C. Clear Inside Dimensions: As indicated on the Drawings.
- D. Design Depth: As indicated on the Drawings.
- E. Clear Manhole Casting Opening: 24- inch diameter.
- F. Manhole Steps: MA industries; PS.1.DI or equal. Maximum spacing between rungs of 16 inches.
- G. Manhole Casting and Frame: ASTM A48, Class 35B Gray (cast) Iron construction machined flat bearing surface, removable lid.
 - 1. Sanitary Sewer: Manufacturer and Products
 - a. Neenah Model R – 1733 with self-sealing lid.
 - b. East Jordan Iron Works Model 1205Z with 1205-A6S lid.
 - c. Approved equivalent.
- H. Adjusting Rings: Set manhole to limit the number of rings to a maximum of three 2-inch thick, 24-inch diameter adjustment rings between manhole and casting top section.
- I. Precast 8" concrete adjusting rings with cast in place step are to be used for any adjustment of 8" or greater.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify items provided by other sections of Work are properly sized and located.
- B. Verify that built-in items are in proper location, and ready for roughing into Work.
- C. Verify excavation for manholes is correct.
- D. Inspect manholes upon delivery. Reject any cracked or otherwise visibly defective units.

3.02 PREPARATION

- A. Coordinate placement of inlet and outlet pipe or duct sleeves required by other sections.

3.03 PLACING MANHOLE SECTIONS

- A. Excavate to proper elevation to accommodate installation and compaction of 8 inches of granular fill. No wedging or blocking under precast bases is permitted.
- B. Place manhole sections plumb and level, trim to correct elevations, anchor to base-pad. In no case shall the manhole invert be lower than that of the effluent pipe.
- C. Cut and fit for pipe and conduit sleeves.
- D. The connecting pipe for the installation with resilient connectors shall:
 - 1. Be plain-end, square cut spigots.
 - 2. Protrude not more than 1 inch inside the manhole wall.
 - 3. Be provided with a clear distance of at least 1 inch from the end of each connecting pipe and around the pipe when the concrete invert fill is installed.
 - 4. The boxout shall be filled with mastic filler material, completely filling the space beneath the pipe and extending to at least the spring line.
 - 5. The filler material shall provide a smooth, uniform surface between the inside diameter of the pipe and the manhole invert.
- E. Grout lifting holes neatly to the curvature of the barrel with masonry cement. Trowel smooth. Contour as required.
- F. Install preformed plastic sealing compound or water stop as required between joints of manhole sections to insure leak proof manhole.
- G. Set cover frames and covers level without tipping, to correct elevations.
- H. Coordinate with other sections of work to provide correct size, shape, and location.
- I. Sanitary Manhole: Construct concrete bench and channel.

END OF SECTION

DIVISION 2 - SITE WORK
SECTION 02620 – MANHOLE CASTING AND GATE VALVE BOX ADJUSTMENT

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes:
 - 1. Adjusting of manhole castings to grade.
 - 2. Adjusting of gate valve boxes to grade.

- B. Related Sections include, but are not limited to:
 - 1. Section 01010 - Summary of Work.
 - 2. Section 01025 – Measurement and Payment.
 - 3. Section 01300 - Submittals.
 - 4. Section 01400 - Quality Control.
 - 5. Section 01600 - Material and Equipment.

1.02 REFERENCES

- A. Reference Standards include:
 - 1. AWWA C509 - Resilient-Seated Gate Valves, 3 through 12 NPS, for Water and Sewage Systems.

1.03 SUBMITTALS FOR REVIEW

- A. See Section 01300 - Submittals: Procedures for submittals.

- B. Product Data: Provide data on materials in accordance with Section 01300 for casting rings and gate valve boxes and risers.

- C. Manufacturer's Instructions: For valves boxes and risers, furnish in accordance with Sections 01600 and 01700 manufacturer's printed instruction for delivery, handling, storage, assembly, installation, adjustment, special tool requirements, and maintenance requirements.

1.04 SUBMITTALS FOR CLOSEOUT

- A. Section 01700: Procedures for submittals.

- B. In accordance with Sections 01600 and 01700 provide all special tools required for valve boxes and risers.

- C. In accordance with Section 01700, provide records of measured depths of valve boxes.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Remove and Replace Manhole Casting:
 - 1. Adjustments may be made with 2 inch thick precast adjusting rings whenever possible. For fine adjustments of less than 2 inches, steel shims shall be used to temporarily support the casting. In any case, the castings shall be laid in a full bed of mortar.
 - 2. Care shall be taken to adjust the manhole castings to the proper grade so the final riding surface is smooth and free of bumps and that it conforms to the grade of the adjoining pavement.

- B. Remove and Replace Gate Valves:
 - 1. In case of reconstruct, provide two-piece adjustable valve box, riser, cover marked "Water", T-wrench of sufficient length (one wrench for each five valves installed), and polyethylene encasement conforming to ANSI/AWWA C105/A21.5 for buried valves.
 - 2. Approved manufacturers:
 - a. American Flow Control
 - b. Mueller Company
 - c. Waterous Valve Company
 - d. A.P. Smith Valve Company
 - e. M & H Valve Company
 - f. American-Darling Valve
 - g. Clow Valve Company
 - h. Or approved equal

- C. Adjust Manhole Casting:
 - 1. Provide steel or cast iron adjusting ring to bring casting to new surface elevation.
 - 2. Approved manufacturers:
 - a. Neenah
 - b. Or approved equal

- D. Adjust Gate Valve Box:
 - 1. Provide steel or cast iron adjusting ring to bring gate valve box to new surface elevation.
 - 2. Approved manufacturers:
 - a. Neenah
 - b. Or approved equal

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions under provisions of Section 01039.

3.02 REMOVE AND REPLACE MANHOLE CASTING

- A. Remove existing pavement per Section 02076.
- B. The 2 inch thick precast adjusting rings and cone section shall be cleaned to assure a flat seating surface and the rings installed in alignment with no noticeable offsets.
- C. Where adjustment cannot be made by ring extension, the Contractor shall remove the pavement around the casting; remove the casting; excavate around the manhole, remove a portion of it as necessary and rebuild the structure to meet the new grade elevation. Pavement removal shall be kept to the minimum amount required to facilitate the adjustment.
- D. When adjustment is made by adding or removing leveling bricks, all joints in the bricks shall be filled with mortar and the casting seated in mortar on the top brick course.
- E. After the manhole has been adjusted to grade, and the structure made watertight by plastering with mortar cement, all voids around the structure shall be backfilled and compacted as specified in Section 02223. The casting shall then be secured in place with a tapered layer of asphalt.

3.03 REMOVE AND REPLACE GATE VALVE BOXES

- A. Remove existing pavement per Section 02076.
- B. Remove and replace gate valve boxes and risers shown on Drawings and as indicated in the field in a manner and schedule that minimizes disruption of water distribution service and traffic.
- C. Removing gate valve boxes includes furnishing and installing extensions as needed and adjusting the existing casting.
- D. Adjust and reconstruct new gate valves boxes and risers to the final grade. Care shall be taken to adjust the valve box to the proper grade so the final riding surface is smooth and free of bumps and that it conforms to the grade of the adjoining pavement.
- E. If the Engineer determines that a gate valve box and/or the riser that needs to be adjusted is damaged beyond repair by the Contractor's operations while adjusting to grade, all new materials must be provided at no extra cost to the Owner.
- G. Reconstructing gate valve boxes and risers includes furnishing and placing all new sleeves, castings, and other materials above the existing valve.
- H. Excavate trench per Section 02222.
- I. Dispose of, or at Contractor's option for salvage, all damaged gate valve boxes and risers off-site and in accordance with all applicable laws and regulations.

- J. Coordinate the scheduling of service disruptions and connection operations with the Owner so as to least interfere with existing water system service.

3.04 FIELD QUALITY CONTROL

- A. Section 01400 - Quality Assurance: Field inspection and testing.

END OF SECTION

DIVISION 2 – SITEWORK
SECTION 02622 – DETECTOR TAPE AND TRACER WIRE

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes:
 - 1. Detector tape.
 - 2. Tracer Wire.
 - 3. Tracer Wire Access Box.

- B. Related Sections include, but are not limited to:
 - 1. Section 01025 – Measurement and Payment.
 - 2. Section 01300 – Submittals.
 - 3. Section 02223 – Backfilling.
 - 4. Section 02660 – Water Distribution System.

1.02 SUBMITTALS

- A. Submit manufacturer's data on materials furnished indicating compliance with the specifications.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Detector Tape:
 - 1. "Terra Tape" as manufactured by REEF Industries, Inc., or approved equal.
 - 2. Size: 3".
 - 3. Detector Tape Schedule and Warning Notice:

<u>Pipeline</u>	<u>Warning Notice</u>	<u>Color</u>
Potable Water Main	Caution Water Line Buried Below	Blue
Sanitary Sewer Main	Caution Sewer Line Buried Below	Green

- B. Tracer Wire System:
 - 1. Designed for Direct Bury.
 - 2. Conductor:
 - a. Wire Gauge:
 - 1) Open Cut: 12 AWG copper clad steel.
 - 2) Directional Drilled: 8 AWG copper clad steel.
 - b. Wire Strength:
 - 1) Open Cut: High strength wire with minimum break load strength of 452 pounds.
 - 2) Directional Drilled: Extra high strength wire with minimum break load strength of 2,785 pounds.
 - c. All wire shall be spark tested at 7500 VAC and have a continuity check of less than 2 ohms resistance between surface access points.

3. Insulation:
 - a. High Density Polyethylene (HDPE) or High Molecular Weight Polyethylene (HMWPE) designed for direct bury.
 - b. Minimum insulation thickness: 0.045 inch
 - c. Color shall be per APWA color code:
 - 1) Potable Water – Blue
4. Splices and or Connectors:
 - a. Capable of handling from 2 to 4 wires per connector
 - b. Designated as “water-proof”. PVC adhesives or sealing compounds are not acceptable.
 - c. Splice Kit/Connector Manufactures:
 - 1) Copperhead Industries, LLC.
 - 2) 3M Company DBR Connectors.
 - 3) Or equal
5. Grounding:
 - a. Wire shall be grounded at all dead ends and stubs.
 - b. Ground wire by connecting to a magnesium grounding anode rod, minimum 1 pound.
6. Tracer Wire System Manufactures:
 - a. Kris Tech Wire Co. Inc.
 - b. Approved Equivalent.
7. Tracer Wire Access Box:
 - a. Tracer wires shall terminate at each end at ground level.
 - b. Access point shall be made of polypropylene material and include a section of PVC conduit that will extend a min. of three (3) feet below grade.
 - c. Tracer wires shall be routed through PVC conduit and stripped and attached to stainless steel screws mounted to the inside of the access point.
 - d. Access points shall be color to meet APWA standards for Potable Water.
 - e. All access points shall be connected to a 1.5-pound magnesium ground rod with 12 AWG ground rod wire. Ground rod to be buried.
 - f. Tracer wire access point:
 - 1) Shall be placed at intervals not exceeding 500 feet.
 - 2) Located directly adjacent to fire hydrants or as indicated by the Owner and Engineer.
 - 3) Tracer wire access point shall be Cobra Access Point manufactured by Copperhead Industries or Approved Equivalent.
 - 4) Ground rod shall be ANO-12 Ground Rod manufactured by Copperhead Industries or Approved Equivalent.

PART 3 EXECUTION

3.01 INSTALLATION – DETECTOR TAPE

- A. Install the detector tape 48" below finished grade directly above and parallel with transmission water and sewer pipe.

- B. At each manhole, bring the detector tape up to the manhole to a point approximately 24 inches below finished grade.

3.02 INSTALLATION – TRACER WIRE

- A. Tracer wire shall be installed along with all water main pipelines as described below:
- B. The tracer wire shall be extended with the water main pipeline. The wire shall be installed along the top of the pipe and shall be securely anchored to the pipe every 4 feet horizontally with an adhesive tape. The tracer wire shall be brought to the surface at each hydrant and shall terminate at a connection point on the main but shall not exceed 500 feet between connection points.
- C. At locations where the water pipeline is not being replaced entirely, the Contractor will splice the new wire to the existing tracer wire at the point of reconnection. In instances where a water pipeline is not being replaced entirely and the existing tracer wire is not encountered, the Contractor shall coil approximately five feet of wire at the reconnection location(s) to facilitate a future splice.
- D. All tracer wire connections shall be a continuous single wire.
- E. Tracer wire, access points, and accessories shall be incidental to the pipe installation costs.

3.03 TESTING

- A. All tracer wire shall be tested using low frequency (512 Hz) tracing equipment, witnessed by the Owner and Engineer.
 - 1. Continuity testing in lieu of actual line tracing shall not be accepted.

END OF SECTION

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DIVISION 2 - SITE WORK
SECTION 02660 WATER DISTRIBUTION SYSTEM

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes:
1. Underground water main pipe, fittings, valves, fire hydrants, polyethylene encasement, bedding, appurtenances, and installation.
 2. Water service lead tubing, appurtenances and installation.
 3. Removal and salvage of existing water mains and appurtenances.
 4. Water main pressure testing.
 5. Temporary water service.
- B. Related Sections include, but are not limited to:
1. Section 01011 – Summary of Project.
 2. Section 01300 – Submittals.
 3. Section 01400 – Quality Control.
 4. Section 01600 – Material and Equipment.
 5. Section 01700 – Contract Closeout.
 6. Section 02205 – Soil Materials.
 7. Section 02207 – Aggregate Materials.
 8. Section 02212 – Restoration of Disturbed Areas.
 9. Section 02222 – Excavation.
 10. Section 02223 – Backfilling.
 11. Section 02225 – Trenching.
 12. Section 02675 – Disinfection.
 13. Section 02704 – Pipeline Pressure and Leakage Testing.

1.02 UNIT PRICE - MEASUREMENT AND PAYMENT

- A. Refer to Section 01025.

1.03 REFERENCES

- A. Reference Standards include, but are not limited to:
1. ANSI/AWWA C104/A21.4 - Cement-Mortar Lining for Gray-Iron and Ductile-Iron Pipe and Fittings for Water.
 2. ANSI/AWWA C105/A21.5 - Polyethylene Encasement for Gray and Ductile Cast-Iron Piping for Water and Other Liquids.
 3. ANSI/AWWA C110/A21.10 - Gray-Iron and Ductile-Iron Fittings, 3-Inch through 48-Inch, for Water and Other Liquids.
 4. ANSI/AWWA C111/A21.11 - Rubber Gasket Joints for Gray-Iron and Ductile-Iron Pressure Pipe and Fittings.
 5. ANSI/AWWA C 115/A21.15 - Flanged Ductile-Iron Pipe with Ductile-Iron or Gray-Iron Threaded Flanges.
 6. ANSI/AWWA C150/A21.50 - American National Standard for Thickness Design of Ductile-Iron Pipe.
 7. ANSI/AWWA C151/A21.51 - Ductile-Iron Pipe, Centrifugally Cast in Metal Molds or Sand-Lined Molds for Water or Other Liquids.

8. ANSI/AWWA C153/A21.53 - Ductile-Iron Compact Fittings, 3-Inch through 12-Inch, for Water and Other Liquids.
9. AWWA C502 - Dry Barrel Fire Hydrants.
10. AWWA C509 - Resilient-Seated Gate Valves, 3 through 12 NPS, for Water and Sewage Systems.
11. AWWA C550 - Standard for Protective Epoxy Interior Coating for Valves and Hydrants.
12. AWWA C600 - Installation of Ductile-Iron Water Mains and Their Appurtenances.
13. AWWA C605 - Underground Installation of PVC Pressure Pipe and Fittings.
14. AWWA C800 - Standard for Underground Service Line, Valves, and Fittings.
15. AWWA C900 - Polyvinyl Chloride (PVC) Pressure Pipe, 4 In. through 12 In., for Water.
16. AWWA C905 - Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings, 14 In. through 48 In., for Water Transmission and Distribution.
17. ASTM B88 - Seamless Copper Water Pipe
18. ASTM D1784 - Rigid Poly (Vinyl Chloride) Compounds and Chlorinated Poly (Vinyl Chloride) Compounds.
19. ASTM D1785 - Poly (Vinyl Chloride) Plastic Pipe, Schedules 40, 80, and 120.
20. ASTM D2241 - Poly (Vinyl Chloride) (PVC) Plastic Pipe (SDR-PR).
21. ASTM D2466 - Poly (Vinyl Chloride) (PVC) Plastic Pipe fittings, Schedule 80.
22. ASTM D3139 - Joints for Plastic Pressure Pipes using Flexible Elastomeric Seals.
23. UL 246 - Hydrants for Fire-Protection Service.
24. NSF Standard No. 14, 60, and 61 - National Sanitation Foundation.
25. WW-T-779c - Federal Specifications.
26. ASTM F477 – Elastomeric Seals for Joining Plastic Pipe.
27. ASTM D2000 – Classification for Rubber Products.

1.04 SUBMITTALS FOR REVIEW

- A. See Section 01300 - Submittals: Procedures for submittals.
- B. Product Data: Provide data on materials in accordance with Section 01300 for all piping, fittings, valves, fire hydrants, corporation stops, curb stops, tapping sleeves, tapping saddles, transition couplings, pipe adapters, service saddles, and specialties.
- C. Manufacturer's Instructions: For valves, hydrants, and specialties, furnish in accordance with Sections 01600 and 01700 manufacturer's printed instruction for delivery, handling, storage, assembly, installation, adjustment, special tool requirements, and maintenance requirements.

1.05 SUBMITTALS FOR CLOSEOUT

- A. Section 01700: Procedures for submittals.

- B. In accordance with Sections 01600 and 01700 provide all special tools required for valves, hydrants, and specialties.
- C. In accordance with Section 01700, provide records of measured depths of water mains, service leads, valves, connections, transition couplings, adapters, thrust blocking; measured horizontal and vertical locations of underground utilities and appurtenances referenced to permanent surface improvements; measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work; field changes of dimension and detail. Contractor shall note the size and type of the existing utility infrastructure at connection points for record drawing purposes.

1.06 QUALITY ASSURANCE

- A. Valves: Provide manufacturer's name, valve size, and pressure rating marked on valve body.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, protect, and handle products to and at site under provisions of Section 01600.
- B. Deliver and store valves and fire hydrants in shipping containers with labeling in place.
- C. Tag each fire hydrant and valve to correspond with the stationing shown on the Drawings.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Water Pipe:
 - 1. Polyvinyl Chloride (PVC) Pipe:
 - a. AWWA C900 for pipe sizes 12 inches and smaller in diameter, standard dimension ratio (DR) of 18 for Class 235 psig rating, Rieber Gaskets required.
 - 2. Restrained Joint PVC Pipe:
 - a. Manufactured of PVC resin conforming to ASTM D1784, Type 1, Grade 1 (Class 12454-B). All pipe must bear the National Sanitation Foundation (NSF) seal of approval for potable water. ASTM D2241 for 2.0" through 12.0" with Standard Dimension Ratio (DR) shall be DR-21 for 200-psig pressure rating unless indicated otherwise on drawings. Pipe shall be joined using non-metallic couplings to form an integral system for maximum reliability and interchangeability. High-strength, flexible thermoplastic splines shall be inserted into mating, precision machined grooves in the pipe and coupling to provide full 360° restraint with evenly distributed loading. Couplings shall be

designed for use at or above the pressure class of the pipe with which they are utilized, and shall incorporate twin elastomeric sealing gaskets meeting the requirements of ASTM F - 477 or Nitrile (NBR) ASTM D – 2000 where shown on the Drawings. Joints shall be designed to meet the zero leakage test requirements of ASTM D 3139.

1) Approved Manufacturer:

- a. Certaineed
- b. Approved Equal.

3. Ductile Iron Fittings:

- a. Pipe (all sizes): Mechanical Joint, SSB, ductile iron Class 350 fittings.
- b. Push-on or mechanical rubber gasket joints conforming to the compression gasket ring requirements of ANSI/AWWA C111/A21.11 and ASTM D3139, and as shown on Drawings.
- c. Transition gaskets shall be supplied for installation of Standard Ductile Iron Fittings from IPS pipe size to C-900 (Fittings) size.
- d. Cement line pipe fittings in accordance with ANSI/AWWA C104/A21.4.
- e. Buried and submerged ductile iron pipe fittings shall have an epoxy exterior coating.
- f. Encase buried ductile iron pipe fittings with polyethylene conforming to ANSI/AWWA C105/A21.5.
- g. Provide stainless steel nuts, bolts, and glands.
- h. Provide Megalug or similar restraint devices on all fittings.

4. Water Service Leads – Polyethylene (PE) Pipe:

- a. All service leads shall be of 1 inch, unless otherwise specified in the drawings.
- b. AWWA C901-20, PE 3408.
- c. Standard Dimension Ratio (SDR): SDR-11.
- d. Ductile Iron Pipe Size dimensional system.
- e. Rated for minimum working pressure: 200 psi.
- f. Bearing the National Sanitation Foundation (NSF) seal of approval for potable water.

B. Gate Valves:

1. Minimum working pressure of 200 psi for 4-inch to 12-inch valves and 150 psi for 16-inch and 20-inch valves.
2. Valve body and rubber-encapsulated wedge constructed of ductile iron or cast iron.
3. Resilient seat gate, bubbletight closure design.
4. Meet or exceed the ANSI/AWWA C515 standards.
5. Bronze stem and stem nut.
6. Epoxy-coated interior and exterior.
7. Equipped with non-rising stem with 2-inch square operating nut, open left (counter clockwise) rotation.
8. Provide adjustable valve box (Division III, Article 36.07 of the GFSCS), riser, cover marked "Water", T-wrench of sufficient length (2 total wrenches), and polyethylene encasement conforming to ANSI/AWWA

C105/A21.5 for buried valves. Include Valve Box Adaptor to center and hold the box securely on the valve.

9. Mechanical joints for gate valves and include Megalug or other similar restraint.
10. Provide gaskets and stainless steel nuts and bolts.
11. Approved manufacturers:
 - a. American Flow Control
 - b. Approved Equivalent

C. Curb Stop Valves:

1. Minneapolis Pattern curb, brass construction, straight-through flow ball valve design, fluorocarbon coated ball, Buna N seats, inlet and outlet openings same size as the valve.
2. Open counter clockwise rotation.
3. Provide with adjustable curb box, lid marked "Water", and brass plug.
4. Provide with curb box extension rod and extension rod centering ring.
5. Provide curb box key wrench, two (2) each of proper size and length.
6. Meet or exceed the ANSI/AWWA C800 standards, with drip-tight shutoff in closed position, 150 psig.
7. Provide transition fittings necessary to make connections to existing service line.
8. Approved manufacturers:
 - a. A.Y. McDonald Manufacturing Company
 - b. Approved Equivalent

D. Corporation Stops:

1. Brass construction, inlet and outlet openings same size as the valve connect to water main by use of tapped saddle fittings.
2. AWWA ball valve type.
3. Insta-tite or compression connections.
4. Meet or exceed the ANSI/AWWA C800 standards, 150 psig.
5. Approved manufacturers:
 - a. A.Y. McDonald Manufacturing Company
 - b. Mueller Company
 - c. The Ford Meter Box Company
 - d. Approved Equivalent

E. Service and Tapping Saddles:

1. All stainless steel tapped outlet, band clamps, nuts, bolts, and washers.
2. Heavy gauge type 304 stainless steel shell construction, passivated welds, double bolt type with minimum band width of 6 inches, and rubber "O"-ring gasket pad meeting ASTM D2000.
3. Meet or exceed the ANSI/AWWA C800 standards, 200 psig.
4. Approved manufacturers:
 - a. Romac Industries, Inc.
 - b. Dresser Industries
 - c. The Ford Meter Box Company
 - d. Approved Equivalent

5. All services connecting to polyethylene pipe shall be made with polyethylene electrofusion tapping tees as manufactured by Central Plastics Company or approved equivalent.

F. Tapping Sleeve:

1. Stainless steel full wrap around body.
2. All stainless steel tapped outlet, nuts, bolts, washers.
3. Gasket to provide seal around full circumference of pipe.
4. Approved manufacturers:
 - a. Romac Industries, Inc.
 - b. The Ford Meter Box Company
 - c. Or approved equal

G. Fire Hydrants:

1. Dry barrel type manufactured in accordance with ANSI/AWWA C502 and UL 246 with breakaway traffic flange such that automatic, positive shut-off of the hydrant is maintained if the hydrant is damaged.
2. Rated for minimum working pressure of 150 psig.
3. Equipped with a main valve, which opens against water system pressure. Main valve shall be bronze seated and valve seat shall have a minimum 5-inch diameter opening and thread into a non-clog bronze drain ring.
4. Removable internal hydrant parts through the hydrant barrel without need for excavation.
5. Hydrant extensions: Fabricate in multiples of 6-inches with rod and coupling to increase barrel length.
6. Provide two 2-1/2 inch hose nozzle connections and one 5 inch (steamer) pumper nozzle connection; pumper nozzle sized to Owner's standard.
7. Counter clockwise opening rotation; hydrant operating nut for main hydrant valve.
8. All underground bolts to be type 304 stainless steel.
9. Owner's standard nozzle threads and operating nuts.
10. Provide 6-inch diameter push-on pipe joint connection and hydrant lead piping unless shown otherwise on Drawings or necessitated by field conditions.
11. 6-inch gate valve on hydrant lead is specified separately in this section.
12. Connect hydrants to hydrant lead piping, provide thrust restraint blocks, and mechanical restraints and adapters.
13. Provide two hydrant operating wrenches upon the completion of the project.
14. Finish: Primer and two coats of enamel of color required by Owner. Repair finish damaged in shipping, handling, and installation.
15. Approved manufacturers:
 - a. Pacer by Waterous Company
 - b. Approved equivalent
16. Contractor to provide one Waterous hydrant valve seat wrench upon the completion of the project.
17. All hydrants installed on the project shall be manufactured the same year as the bid date (or newer).
18. Hydrant markers shall be installed on each new fire hydrant, as approved by the Engineer.

- H. Transition Couplings:
 - 1. Long pattern, sleeve type, ductile iron couplings, meeting the requirements of ANSI/AWWA C110/A21.10 and rated for 250 psig.
 - 2. Epoxy or nylon coated inside and out.
 - 3. Where pipes of dissimilar metal are joined, ensure dielectric insulation to prevent galvanic corrosion.
 - 4. Install with stainless steel bolts.
 - 5. Provide polyethylene encasement.
 - 6. Approved manufacturers:
 - a. Power Seal
 - b. Ford
 - c. Romac
 - d. Total Piping Solutions
 - e. Approved Equivalent

- I. Restrained Couplings:
 - 1. Approved Manufacturers:
 - a. EBAA Iron, Megalug Series 1100.
 - b. Approved Equivalent

- J. Fittings:
 - a. All fittings shall be Restrained Ductile Iron – ASTM A536.
 - b. Compact per AWWA C153.
 - c. Ends: Restrained Mechanical Joint.
 - d. Use all stainless steel bolts, nuts, and washers.
 - e. Encase with polyethylene per ANSI/AWWA C105/A21.5.

- K. Reaction Backing (Thrust Blocks):
 - 1. Conform to details shown on Drawings for bends, tees, fire hydrants, dead end plug, and service tap connections.
 - 2. Cast in place concrete per Section 03001 for pipe, fittings, and plugs unless specifically shown otherwise on Drawings.
 - 3. Pre-mix concrete sack for service tap connections as shown on Drawings.

- L. Bedding and Backfilling:
 - 1. Schedule: As specified in Section 02225 and detailed on Drawings.
 - 2. Materials: As specified in Section 02205 for backfill and Section 02207 for PVC Pipe Bedding.

- M. All products coming into contact with water intended for use in a public water system shall meet ANSI/NSF Standards 60 and 61. A product will be considered as meeting this standard if so certified by NSF, UL, or other organizations accredited by ANSI to test and certify such products.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify existing conditions under provisions of Section 01039.

- B. Verify that building service connection and municipal utility water main size, location, and invert elevations are as indicated.
- C. Refer to the TEMPORARY WATER SERVICE section of this specification for the execution of temporary water.

3.02 PREPARATION AND STORAGE

- A. Store pipe on-site on flat surface so barrel is evenly supported. Do not stack higher than 6 feet. Cover pipe with opaque material for extended storage. Keep ends of stored pipe covered until installation.
- B. Remove scale and dirt on inside and outside of pipe, fittings, valves, and appurtenances before assembly. Inspect pipe and other materials for damage before installation.

3.03 REMOVAL OF EXISTING WATER MAIN PIPE AND APPURTENANCES

- A. Remove existing pavement per Section 02076.
- B. Excavate trench per Section 02225.
- C. Remove water main pipe, fittings, valves, hydrants, service leads, concrete vaults, abandoned utilities, other associated appurtenances, and debris shown on Drawings or encountered along the route of the new water main in a manner and schedule that minimizes disruption of water distribution service and traffic.
- D. Dispose of all replaced distribution system and service connection materials off-site and in accordance with all applicable laws and regulations.
- E. Portions of existing distribution system include leaded joint construction and existence of lead shall not relieve Contractor of his obligation to comply with all applicable environmental, health, and safety regulations.
 - 1. When leaded joints are encountered at existing service lead pipe shutoff valves or curb stops, remove and replace all such leaded joints, on both the upstream and downstream side of valve, with approved connectors which contain no lead.
 - 2. When in the course of excavating existing water main along the construction route, if distribution system valves are uncovered **that were not scheduled for replacement**, inspect the joints on exposed valves for leakage and for possible lead joint construction. If leakage or suspected lead joint construction are observed, notify Engineer and Owner immediately. Course of action will be determined by Owner and Engineer.
 - 3. All water mains, service leads, and appurtenances scheduled for removal and replacement as shown on the Drawings are the Contractor's responsibility for disposal.
- F. Notify Engineer and Owner at least 7 days in advance of temporary disruptions of water service at locations along route of construction. Coordinate the scheduling

of service disruptions and connection operations with the Owner so as to least interfere with existing water system service.

3.04 BEDDING

- A. Excavate pipe trench in accordance with Section 02225 for Work of this Section. Hand trim excavation for accurate placement of pipe to elevations indicated.
- B. Form and place concrete for pipe thrust restraints at any change of pipe direction, tee, plug, or hydrant. Place concrete to permit full access to pipe and pipe accessories. Comply with details on Drawings for bends, tees, fire hydrants, and service tap connections.
- C. Place Pipe Bedding material per Section 02225 and the details on the Drawings.
- D. Place backfill per Section 02225 and the details on the Drawings.

3.05 INSTALLATION - PIPE, VALVES, HYDRANTS, AND APPURTENANCES

- A. Install all pipe and appurtenances in strict accordance with manufacturer's recommendations.
- B. Install water main, service leads, and appurtenances so as to avoid existing utilities. Maintain separation from sewer pipes as specified in SEWER CROSSING REQUIREMENTS of this section.
- C. All foreign material or dirt shall be removed from the inside of the pipe before it is lowered into its position in the trench and it shall be kept clean by approved means during and after laying.
- D. Cut pipe in a neat and workmanlike manner without damaging the pipe.
- E. Trench preparation shall proceed in advance of pipe installation only so far as can be backfilled the same day, or as permitted by the Section 02225, or 01015.
- F. Excavate and backfill excavations, bore pits, and trenches in accordance with Section 02225. All trenches, excavations, and boring pits shall be sheathed and braced, as necessary, so as to provide a safe place for workmen. Comply with all applicable OSHA safety requirements relating to trenching, boring operations, confined spaces, and other aspects of this type of construction.
- G. Keep trenches free from surface and ground water until pipe jointing is complete.
- H. Locate curb stop valves, gate valves, and hydrants a uniform distance from property line, utility easement line, back of curb, or other applicable line, when so required by municipal code or policy, or so directed by Engineer.
- I. All hydrants, valves, and fittings shall be set on cast in place or precast concrete blocks in order to prevent the weight from being transmitted to the pipe. All valves 12" and larger shall be anchored to cast in place concrete thrust blocks per Drawings to anchor the valve against thrust when closed. Before concrete is placed around valves, hydrants, and other appurtenances, the appurtenance and

pipe shall be wrapped with polyethylene to completely isolate the concrete from the water main construction.

- J. Form and place concrete for thrust blocking at each bend, tee, change of direction, plug, or hydrant. Thrust blocks shall bear on undisturbed trench wall.
- K. When pipe laying is not in progress, the open end(s) of the pipe and fittings shall be plugged. The temporary plug shall be the same size and type used to make a permanent closure to insure a watertight plug and absolute cleanliness inside the pipe.
- L. Install valve and curb stop boxes plumb and directly over valve.
- M. Adjust gate valve and curb stop boxes as shown on Drawings. Set boxes to allow equal movement both above and below finish grade. When in street, set valve boxes ½ inch below finish street grade. See Drawings for curb stop valve details at grade.
- N. Reconnect downstream end of the curb stop and gate valves to existing services with appropriate connectors and couplers. Comply with connections and couplings shown on Drawings unless otherwise approved by Engineer.
- O. Pipe and Service Lead Installation:
 - 1. Contractor shall acquire a water tapping permit for tapping any existing water main. The fee for the permit shall be waived. Contractor may choose to hire the City Water Department to make the tap.
 - 2. Install water main and water service leads at a minimum depth of cover of 8-1/2 feet. Construct to lines, grades, and dimensions shown on Drawings. Install 4" insulation over top of any utility services that have less than the minimum depth of cover specified.
 - 3. Remove and relay any pipe disturbed from its required grade or alignment.
 - 4. Install pipe to allow for expansion and contraction without stressing pipe.
 - 5. Install pipe such that maximum deflections from straight line or grade do not exceed manufacturer's specifications. Install bend fittings where maximum deflections are exceeded.
 - 6. Locate water service leads and curb stops with the property owner when such locations are not shown on the Drawings.
 - 7. Install access fittings to permit disinfection of water system performed under Section 02675.
 - 8. Connect new water supply and/or distribution mains to existing water supply and/or distribution mains wherever necessary. Provide adequate adapters and couplers for connections of different pipe types and sizes.
- P. Hydrant Installation:
 - 1. Clean hydrant interiors before installation.
 - 2. Tighten stuffing boxes and inspect hydrants in opened and closed positions to ensure all parts are in working condition.
 - 3. Locate top nut elevation of hydrant as shown on the Drawings. Contractor can either provide hydrants meeting the required elevations or provide hydrants with hydrant extensions (incidental to the hydrant) such

that the required elevations are met. If extensions are used, Contractor shall be required to install them as directed by the City Water Department.

4. All hydrants shall stand plumb and have their nozzles parallel with or at right angles to the curb with the pumper nozzle pointing normal to the curb.
 5. Pour thrust block from back of fire hydrants to undisturbed trench wall. Use bridle rods and rod collars of not less than $\frac{3}{4}$ inch stock protected by a coat of acid-resistant paint when, in the opinion of the Engineer, the character of the soil is such that the hydrant cannot be securely wedged.
 6. Place not less than 7 cubic feet of Class 2 aggregate around the base of new hydrants to insure drainage.
 7. Contractor shall install hydrants so that break-away coupling is 4" above final grade, +/- 2".
- Q. Encase all metallic pipe, fittings, valves, fire hydrants, service saddles, couplings, connectors, and other appurtenances in polyethylene sheeting or tubing in accordance with AWWA C105.
- R. Inspection: Do not cover pipe, fittings, valves, couplings, or hydrant barrels until all bedding, joints, and polyethylene wrap have been inspected.
- S. Contractor shall be responsible for cleaning and restoring to full operation all property owner's internal water system components (i.e. flow meter, backflow preventer, fire protection, sprinkler line, etc.) if, as a result of connecting to existing service lead, internal operation is adversely affected.
- T. Replace any pipe, fittings, or appurtenances found defective after installation has been completed.
- U. Where shown on Drawings, water main shall be installed by the cased bore and push method. The use of water as an aid in boring shall not be allowed.

3.06 DISINFECTION OF WATER SYSTEM

- A. Flush and disinfect system in accordance with Section 02675.

3.07 FIELD QUALITY CONTROL

- A. Section 01400 - Quality Assurance: Field inspection and testing.

3.08 SEWER CROSSING REQUIREMENTS

- A. Water mains shall be laid at least 10 feet horizontally from any existing or proposed gravity sanitary or storm sewer, septic tank, or subsoil treatment system. The distance shall be measured edge to edge.
- B. Water mains crossing sewers shall be laid to provide a minimum vertical distance of 18 inches between the outside of the water main and the outside of the sewer. This shall be the case where the water main is either above or below the sewer with preference to the water main located above the sewer.

- C. At crossings, one full length of water pipe shall be located so both joints will be as far from the sewer as possible. Special structural support for the water and sewer pipes may be required.
- D. Water main and the sewer shall be laid in a separate trenches or water main shall be laid to one side of common trench on a bench of undisturbed soil at least 18 inches higher the top of the sewer. Preference to the water main and sewer in separate trenches.
- E. Where new water main crosses an existing sewer:
 - 1. Center a full standard pipe length of water main over (or under) sewer if crossing is within 3 feet above sewer or below sewer.
 - 2. No additional protection required if water main is at least 3 feet above sewer.
- F. Provide thoroughly compacted backfill between pipes where a new pipe crosses a new or existing pipe for adequate support.

3.09 DATA FOR AS-BUILT RECORDS

- A. In accordance with Section 01700, provide records of measured depths of water mains, service leads, valves, fittings, connections, transition couplings, adapters, thrust blocking; measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements; measured locations of internal utilities and appurtenances concealed in construction, referenced to visible and accessible features of the Work; field changes of dimension and detail.

3.10 TEMPORARY WATER SERVICE

- A. Notify Engineer and Owner at least 7 days in advance of the time that service disruptions and connections are scheduled. Notify all users 48 hours prior to interruption of service. Coordinate the scheduling of service disruptions and connection operations with the Owner so as to least interfere with existing water service system.
- B. Provide a licensed master plumber, who will be responsible for the proper installation of the temporary water service system and is in charge of such Work per the requirements of the North Dakota State Plumbing Board.
- C. Provide all materials, hoses, and labor for installation of temporary water service connections where temporary service disruptions are required during construction and where service will be interrupted for more than 4 hours.
- D. Disinfect and flush temporary water materials and hoses prior to the installation of the temporary water service system. Refer to section 02675 for disinfection and flushing procedures.
- E. Provide backflow preventive devices (RPZ) on temporary water supply.

- F. Maintain the following 40 psi flow rates for service connections:
 - 1. 1 gallon per minute for 1 inch or smaller services.
 - 2. 4 gallons per minute for 2 inch services.
 - 3. 100 gallons per minute for 4 inch services.
 - 4. 150 gallons per minute for 6 inch services.
 - 5. 200 gallons per minute for 8 inch services.
- G. Properly protect temporary hoses crossing streets and sidewalks.
- H. Place temporary hosing in locations that do not interfere with traffic.
- I. Clearly mark temporary hosing with flags, cones, barricades, etc. to prevent injury to pedestrians.
- J. Coordinate fire protection needs with Owner, property owners, and Fire Department for 4-inch or larger services.

END OF SECTION

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DIVISION 2 - SITE WORK
SECTION 02675 CLEANING AND DISINFECTION OF WATER SYSTEM

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes:
 - 1. Cleaning and disinfection of potable water system.
 - 2. Testing and reporting results.

- B. Related Sections included, but are not limited to:
 - 1. Section 01300 - Submittals.
 - 2. Section 01400 - Quality Control.
 - 3. Section 01700 - Contract Closeout.
 - 4. Section 02660 – Water Distribution System.
 - 5. Section 02704 - Pipeline Pressure and Leakage Testing.

1.02 REFERENCES

- A. Reference Standards include:
 - 1. AWWA B300 - Standard for Hypochlorites.
 - 2. AWWA B301 - Standard for Liquid Chlorine.
 - 3. AWWA C651 - Standards for Disinfecting Water Mains.
 - 4. AWWA C652 – Standards for Disinfection of Water Storage Facilities
 - 5. AWWA C653 – Standards for Disinfection of Water Treatment Plants.
 - 6. Federal Specifications BB-C-12a, O-C-114a, and O-C-602b.

1.03 DEFINITIONS

- A. Disinfectant Residual means the quantity of disinfectant in the treated water.

- B. PPM means parts per million.

1.04 SUBMITTALS FOR REVIEW

- A. Section 01300 - Submittals: Procedures for submittals.

- B. Test Reports: Indicate results comparative to specified requirements.

- C. Section 01400: BAC-T Test Results. (Testing costs shall be incidental).

- D. Disinfection Plan: Not less than 7 days prior to starting any disinfection work, the Contractor shall submit to the Engineer a detailed cleaning and disinfection plan. The plan shall cover the method and procedure proposed, to include coordination, the time and sequence of operations, the limits of the pipeline to be cleaned and disinfected, the location of temporary bulkheads, equipment to be used, the manner of filling and flushing of lines, the neutralization and disposal of wasted water, and all other methods and procedures to be followed in performing the required cleaning and disinfection Work.

1.05 PROJECT RECORD DOCUMENTS

- A. Submit under provisions of Section 01300 - Submittals and Section 01700 - Contract Closeout.
- B. Disinfection report:
 - 1. Type and form of disinfectant used.
 - 2. Date and time of disinfectant injection start and time of completion.
 - 3. Test locations.
 - 4. Initial and final disinfectant residuals (quantity in treated water) in ppm for each outlet tested.
 - 5. Date and time of flushing start and completion.
 - 6. Disinfectant residual after flushing in ppm for each outlet tested.
- C. Bacteriological report:
 - 1. Date issued, project name, and testing laboratory name, address, and telephone number.
 - 2. Time and date of water sample collection.
 - 3. Name of person collecting samples.
 - 4. Test locations.
 - 5. Initial and final disinfectant residuals in ppm for each outlet tested.
 - 6. Coliform bacteria test results for each outlet tested.

1.06 QUALITY ASSURANCE

- A. Perform Work in accordance with AWWA C651 for disinfecting of water lines, AWWA C652 for disinfection of water storage facilities, and AWWA C653 for disinfection of water treatment plants.
- B. Regulatory Agency Requirements: Comply with the North Dakota Department of Health requirements.
- C. Temporary bulkheads shall be provided during cleaning and disinfection so that the flushing and disinfection work is not applied to existing water lines or to any portion of new lines installed under this Contract that has been put into service.
- D. The cleaning and disinfection work shall be conducted prior to connection to the existing water lines or to any portion that has been put into service of new lines installed under this Contract. Unless otherwise approved, hydrostatic testing shall be completed prior to final cleaning and disinfection.
- E. Testing Laboratory: Contractor shall obtain sampling bottles from a North Dakota approved laboratory and perform sampling per project requirements and sampling protocol. Contractor shall coordinate sampling and testing schedule with the North Dakota approved laboratory. Contractor shall be pay all testing fees and lab costs.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Protect against damage and contamination.

- B. Maintain caution labels on hazardous materials.
- C. Maintain storage room dry and with temperatures as uniform as possible between 60 and 80 degrees F.
- D. Provide necessary signs, barricades, and notices to prevent any person from accidentally consuming water or disturbing system being treated.

PART 2 PRODUCTS

2.01 DISINFECTION CHEMICALS

- A. AWWA B300, Hypochlorite: Shall conform to Federal Specification O-C-114a, Type II, Grade B, or Federal Specification O-C-602b.
- B. AWWA B301, Liquid Chlorine: Shall conform to Federal Specification BB-C-120a.

PART 3 EXECUTION

3.01 DISINFECTION PLAN

- A. Submit a detailed cleaning and disinfection plan to the Engineer, not less than 7 days prior to starting any disinfection work.
- B. The Plan shall cover the method and procedure proposed, to include coordination, the time and sequence of operations, the limits of the pipeline to be cleaned and disinfected, the location of temporary bulkheads, equipment to be used, the manner of filling and flushing the lines, the neutralization and disposal of wastewater, and all other procedures and methods to be followed in performing the required cleaning and disinfection Work.
- C. The Contractor shall provide all necessary piping connections, temporary valves, sampling taps, pumps, disinfectant, neutralization agents, chlorine residual test apparatus, and all other items of equipment or facilities required to complete the disinfection Work.

3.02 PREPARATION

- A. Verify that piping system has been cleaned, inspected, pressure tested, and flushed. The line shall be cleaned by flushing the line at the maximum velocity.
- B. Perform water main and associated appurtenances disinfection activity before returning permanent water service to said Work area. Coordinate with Engineer and Owner.

3.03 DISINFECTION OF WATER SYSTEMS

- A. Provide and attach required tools, equipment, and materials to perform the Work of this Section. Disinfectant material shall be introduced into the water system through a corporation cock installed in the top of the pipe.

- B. Inject treatment disinfectant into piping system to produce at least 50 ppm retained for 24 hours or 200 ppm retained for 3 hours.
- C. As chlorinated water flows past fittings and valves, related valves and hydrants shall be operated so as to disinfect appurtenances and pipe branches.
- D. If disinfectant residual is less than the acceptable limit, repeat system treatment.
- E. Flush, circulate, and clean until the chlorine residual is lowered to approximately 1.0 ppm; use system water supply.
- F. Upon making service lead connections, flush or inform property owner or tenant to flush water through associated service system for a period sufficient to fully turn-over the water service system. Provide bacteriological tests.
- G. Any sections of water main and service leads that cannot be chlorinated in the fashion stated in this section and the final service lead tie-in points shall be swabbed with a chlorine solution prior to installation.
- H. Heavily chlorinated water should not remain in prolonged contact (maximum of 48 hours) with the water main pipe and should not be discharged into the trench.
- I. Properly dispose of heavily chlorinated water supply in an environmentally acceptable manner with permission of the Engineer.

3.04 FIELD QUALITY CONTROL

- A. Section 01400 - Quality Control: Field inspection and testing.
- B. Samples for bacteriological analysis shall be collected in sterile bottles obtained from an acceptable laboratory.
- C. It is not recommended that samples be collected from hoses or fire hydrants.
- D. Samples shall be collected by the Contractor or testing laboratory in the presence of the Engineer.
- E. Taps are to be provided so at least one set of samples may be collected from every 1,200 feet of the new water main.
- F. Two or more successive test samples, taken at least 24 hours apart, indicating bacteriological satisfactory water shall be obtained before any system is placed into operation.
- G. The testing laboratory shall test for coliforms and e-coli using the "Colilert" or other Engineer approved equivalent test. The "Colilert" test is a pass/fail test that does not quantify the amount of bacteria. Any presence of coliforms or e-coli shall qualify as a failed test.

- H. If initial disinfection fails to produce satisfactory bacteriological results, the new main may be reflashed and shall be resampled. If check samples also fail to produce acceptable results, the main shall be rechlorinated until satisfactory results are obtained.
- I. All testing costs shall be paid for by Contractor.
- J. Water mains and appurtenances must be completely installed, flushed, disinfected, and satisfactory bacteriological sample results received prior to permanent connections being made to the active distribution system. Sanitary construction practices must be followed during installation of the final connection, so that there is no contamination of the new or existing water main.
- K. Bacteriological samples need to be analyzed by a ND state certified lab.

END OF SECTION

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DIVISION 2 - SITEWORK
SECTION 02704 - PIPELINE PRESSURE AND LEAKAGE TESTING

PART 1 **GENERAL**

1.01 SUMMARY

- A. Section Includes:
 - 1. Field hydrostatic pressure and leakage testing of water and sewer mains and associated appurtenances.

- B. Related Sections included, but not limited to:
 - 1. Section 01300 – Submittals.
 - 2. Section 01400 – Quality Control.
 - 3. Section 01700 – Contract Closeout.
 - 4. Section 02660 – Water Distribution System.
 - 5. Section 02675 – Cleaning and Disinfection of Water System.
 - 6. Section 02710 – Sanitary Sewer System.

1.02 REFERENCES

- A. Reference Standards include:
 - 1. AWWA C600 – Installation of Ductile-Iron Water Mains and Their Appurtenances.
 - 2. AWWA C605 - Underground Installation of PVC Pressure Pipe and Fittings.
 - 3. AWWA C900 - Polyvinyl Chloride (PVC) Pressure Pipe, 4 In. through 12 In., for Water.

1.03 SUBMITTALS FOR INFORMATION

- A. Section 01300 - Submittals: Procedures.

- B. Testing Schedule and Procedure - A testing schedule and test procedure shall be submitted to the Engineer for review and acceptance not less than 21 days prior to commencement of testing work. The schedule shall indicate the proposed time and sequence of testing of the pipeline. The testing procedure shall establish the limits of the pipeline to be tested, the position of all valves during testing, the location of temporary bulkheads, disposal of test water, and all other methods and procedures to be followed in performing the required testing work.

1.04 QUALITY ASSURANCE AND SPECIAL REQUIREMENTS

- A. During testing of the water line, all valves shall be in the open position.

- B. Temporary bulkheads shall be provided during testing so that the test pressures are not applied to existing or new valves and hydrants, or to existing water lines or to any portion that has been put into service of new lines installed under this Contract.

- C. The tests shall be conducted before connections are made to existing water lines or to any portion that has been put into service or new water lines installed under this Contract.
- D. Upon completion of testing, connections made to existing water lines or to any portion that has been put into service of new water lines installed under this Contract shall be visually inspected for leakage after placing the water line into service and before backfilling the connection.

PART 2 PRODUCTS

2.01 TEST EQUIPMENT

- A. All necessary piping connections between the line to be tested and the water source, together with pumping equipment, water meter, pressure gauges, backflow protection, and other equipment, materials, and facilities required to perform the specified tests, shall be provided. All flanges, valves, bulkheads, bracing, blocking, and other sectionalizing devices shall be provided. All temporary sectionalizing devices shall be removed upon completion of testing. Vents shall be provided in test bulkheads where necessary to expel air from the line to be tested.
- B. Test pressures to be applied by means of a force pump sized to provide and maintain the required pressure without interruption during the test.
- C. Water meters and pressure gauges shall be accurately calibrated and shall be subjected to review and acceptance by the Engineer.

PART 3 EXECUTION

3.01 PREPARATION

- A. When filling the line with water, care shall be taken to ensure that all air release valves and other venting devices are properly installed in the open position. Hand-operated vent valves shall not be closed until water flows in an uninterrupted stream from each valve. Care shall be taken to ensure that the rate at which the line is filled with water does not exceed the venting capacity of the installed air vent valves and devices.

3.02 EXFILTRATION AND INFILTRATION HYDROSTATIC TESTING

- A. Contractor shall perform hydrostatic testing on any new sanitary sewer system installation, meeting the following requirements (as instructed by the Engineer):
 1. The leakage, exfiltration, or infiltration shall not exceed 100 gallons per inch of pipe diameter per mile per day for any section of the system.
 2. The hydrostatic test shall be performed with a minimum positive head of 0.2 feet.
 3. All costs for hydrostatic testing shall be incidental to the pipe installation.

3.03 HYDROSTATIC TESTING

- A. Minimum test pressure: 150 psi
- B. Test duration: 2 hours
- C. Criteria: No drop in pressure is allowed.
- D. Gauge shall be liquid filled, labeled in 1 lb or 2 lb increments.
- E. All water mains, services, dead ends, and hydrant leads shall be included in the test.
- F. Test will be monitored by representative of City Engineer or City Water Department.

3.04 GRAVITY PIPE

- A. Deflection tests shall be performed on all flexible pipe. The test shall be conducted after the final backfill has been in place at least 30 days to permit stabilization of the soil-pipe system.
- B. No pipe shall exceed a deflection of 5 percent. If deflection exceeds 5 percent, replacement or correction shall be accomplished in accordance with requirements in the approved specifications.
- C. The rigid ball or mandrel used for the deflection test shall have a diameter not less than 95 percent of the base inside diameter or average inside diameter of the pipe depending on which is specified in the ASTM Specification, including the appendix, to which the pipe is manufactured. The test shall be performed without mechanical pulling devices.

3.05 LEAKAGE TESTING

- A. No leakage will be accepted by the City of New Town. Any leakage found shall be corrected by the Contractor.
- B. Following completion of pressure testing and acceptance by the engineer, the pipeline shall be subjected to a leakage test. The duration of the leakage test shall be 2 hours.

- C. The hydrostatic pressure maintained during leakage test shall be equal to the pressure specified for pressure testing of the pipeline and shall be maintained within plus or minus 5 psi during the entire time that leakage measurements are being performed.
- D. Measurements of leakage shall not be attempted until all trapped air has been vented and a constant test pressure has been established. After the pressure has stabilized, line leakage shall be measured by means of a suitable water meter installed in the pressure supply piping on the pipeline side of the force pump.
- E. The term "leakage", as used herein, shall be the total amount of water, which must be introduced into the line during the leakage test to maintain the test pressure.
- F. All joints in piping shall be watertight and free from visible leaks during the leakage test. Each leak which is discovered within the correction period stipulated in the General Conditions shall be repaired by and at the expense of the Contractor regardless of any amount that the total line leakage rate, during the leakage test, may have been below the specified allowable leakage rate.
- G. If the leakage test indicates a line leakage rate exceeding the allowable, the Contractor shall locate and repair leaking joints and other defective items to the extent required to reduce the line leakage to an acceptable amount.

END OF SECTION

DIVISION 2 – SITE WORK
SECTION 02710 – SANITARY SEWER SYSTEM

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes:
 - 1. Pipeline Materials.
 - 2. Accessories.
 - 3. Bedding Materials.

- B. Related Sections include:
 - 1. Section 01300 – Submittals.
 - 2. Section 02205 – Soil Materials.
 - 3. Section 02207 – Aggregate Materials.
 - 4. Section 02222 – Excavating.
 - 5. Section 02223 – Backfilling.
 - 6. Section 02225 – Trenching.
 - 7. Section 02607 – Precast Concrete Structures
 - 8. Section 02660 – Water Distribution System

1.02 REFERENCES

- A. Reference Standards include:
 - 1. ASTM D3034 Standard Specification for Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings
 - 2. ASTM F1336 Standard Specification for Poly(Vinyl Chloride) (PVC) Gasketed Sewer Fittings
 - 3. ASTM D1784 Standard Specification for Rigid Poly(Vinyl Chloride) (PVC) Compounds and Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds.

1.03 SUBMITTALS FOR REVIEW

- A. Section 01300 – Submittals.

- B. Product Data: Provide data on pipe materials, gaskets, joint design, pipe fittings, valves and accessories per AWWA C150.

- C. Manufacturer's Instructions: Furnish in accordance with Sections 01600 and 01700 manufacturer's printed instruction for delivery, handling, storage, assembly, installation, adjustment, special tool requirements, and maintenance requirements.

PART 2 PRODUCTS

2.01 PIPE MATERIALS

- A. Direct Buried Gravity Pipe:
 - 1. Polyvinyl Chloride (PVC) Pipe:
 - a. All gravity sewer 4-inch through 18-inch shall have a standard dimension ratio (SDR) of SDR-35 and shall be gasketed joint.
 - b. Shall conform to the requirements of ASTM D3034 in accordance with ASTM D1784.
 - c. Gaskets shall be manufactured in accordance with ASTM F 477 or ASTM F 913. Gaskets shall be firmly seated in fitting in order to ensure proper installation and to prevent dislocation or misalignment during system assembly. Gasket joints must comply with ASTM D 3212 Internal Pressure Test (exfiltration) and Vacuum Test (infiltration) at 5 degrees of gasket joint deflection.
 - 2. Polyvinyl Chloride (PVC) Pipe Fittings (4" through 18" sewer services)
 - a. Fittings shall be injection molded gasketed SDR 35 sewer fittings shall be manufactured in accordance with ASTM D 3034, ASTM F1336.
 - b. Fittings be injection molded from virgin PVC compound having a cell classification of 12454 or 13343 in accordance with, and certified by the National Sanitation Foundation (NSF), to meet ASTM D 1784.
 - c. Gaskets shall be manufactured in accordance with ASTM F 477 or ASTM F 913. Gaskets shall be firmly seated in fitting in order to ensure proper installation and to prevent dislocation or misalignment during system assembly. Gasket joints must comply with ASTM D 3212 Internal Pressure Test (exfiltration) and Vacuum Test (infiltration) at 5 degrees of gasket joint deflection.
 - d. Where available, reducing branches on injection molded 8", 10", and 12" service wyes shall be minimum DR18 wall thickness in the reducing branch body and reducing branch hub below the gasket race.
 - e. Gasketed SDR 35 sewer fittings shall be certified by the National Sanitation Foundation (NSF) and meet ASTM D 3034.

2.02 ACCESSORIES

- A. Transition Couplings:
 - 1. All sewer lateral transitions will be made with Fernco Strong Back RC Series Repair Couplings unless directed otherwise by engineer.
 - 2. Approved Manufactures.
 - a. Fernco
 - b. Maxadaptor
 - c. Approved Equal.

- B. Reducers
 - 1. All sewer lateral transitions that are reduced in pipe size diameter shall be made with PVC eccentric reducers.
 - 2. Reducers shall only be installed between new PVC pipe.
 - 3. Refer to sanitary sewer lateral connection details in the Drawings.

- C. Wye Branches
 - 1. All sanitary sewer services shall be connected to the sewer main with a wye branch. Saddles are not authorized.
 - 2. Wyes shall be of the same material, strength, and joint as the new sewer main pipe.
 - 3. Location: In general, wye branches shall be installed on the main sewer pipe opposite each lot or property to which a service may be extended. Service locations shown in the drawings are for reference only and the Contractor shall field locate.

2.03 BEDDING MATERIALS

- A. Aggregate Bedding: As shown on Drawings and as specified in Section 02207 and Section 02225.

- B. Backfill Material: As specified in Section 02205 and Section 02225 and shown on Drawings.

PART 3 EXECUTION

3.01 PREPARATION AND STORAGE

- A. Remove large stones or other hard matter that could damage pipe or impede consistent backfilling or compaction.

- B. Store pipe on-site on flat surface so barrel is evenly supported. Do not stack higher than 4 feet.

- C. Remove any scale or dirt from pipe and other materials.

- D. Inspect for damage to pipe and other materials.

- E. Store materials in a non-degrading environment in a manner acceptable to Engineer.

3.02 BEDDING

- A. Excavate for pipe installation as required with Section 02222 and Section 02225 for work of this section. Hand trim excavation for accurate placement of pipe to elevations indicated.

- B. Place bedding material at trench bottom in accordance with Section 02223, level materials in continuous layers not exceeding 6 inches compacted depth, compact to 90 percent of ASTM D698 Standard Proctor Density.

- C. Maintain moisture content of bedding material at optimum or above to plus or minus 2 percent to attain required compaction density.

3.03 INSTALLATION - PIPE, VALVES, AND APPURTENANCES

- A. The existing sanitary sewer pipe will be in operation during the installation of the new pipe. Contractor to provide any necessary means and methods for dewatering in order to install new pipe in a safe manner meeting all the specification requirements and preventing sewer backups.
- B. The type, kind, and class of pipe to be used shall be as shown in the Drawings. All pipes shall be laid and to the required line and grades.
- C. Install all pipe and appurtenances in strict accordance with manufacturer's recommendations.
- D. All foreign material or dirt shall be removed from the inside of the pipe before it is lowered into its position in the trench and it shall be kept clean by approved means during and after laying.
- E. Pipe materials shall be handled carefully. Damage to protective coatings, linings, and joint fittings shall be cause for rejection of the materials. Prior to installation each pipe section, fitting, or valve shall be thoroughly inspected by the CONTRACTOR to detect damage or defects. CONTRACTOR shall inform ENGINEER of such damage or defects. Any defective, damaged, or gravity piping which has had its grade or joint disturbed after layer shall be replaced.
- F. Cut pipe in a neat and workmanlike manner without damaging the pipe. Cutting of pipe for connections or pipe run lengths or inserting of fittings and valves shall be done in accordance with pipe manufacturer recommendations. Rough edges shall be removed and where rubber gasket joints are used, the outer edge shall be beveled by grinding or filing to produce a smooth fit.
- G. Trench preparation shall proceed in advance of pipe installation only so far as can be backfilled the same day, or as permitted by the Owners specifications.
- H. Excavate, and backfill excavations and trenches in accordance with Section 02225.
- I. Keep trenches free from surface and ground water until pipe jointing is complete.
- J. Securely close open ends of pipe and fittings when Work is not in progress.
- K. Pipe Installation:
 - 1. Install piping to lines, grades, and dimensions shown on Drawings.
 - 2. New sanitary sewer services shall be connected to existing services with **Fernco Strong Back Couplings** and shall be water tight. All reducers shall be **PVC eccentric reducers** and installed between **new PVC pipes**.
- L. Prior to pipe placement the bedding conditions shall be such as to provide uniform and continuous support for the pipe. For belled pipe, bell holes shall be

excavated as necessary to make the joint connections and provide proper support. Pipe shall not be laid in water or unsuitable bedding conditions. See Section 02225 for bedding requirements.

- M. Piping shall be carefully lowered into laying position by the use of suitable restraining devices. The pipe shall not be dropped or dumped into the trench. All foreign matter or dirt shall be removed from the inside of the pipe and fittings before they are placed into position. Pipe joints shall be kept clean prior to and during installation. The joint surface shall be inspected prior to placement to ensure that there is no foreign matter, coating blisters, projections, rough edges, or damaged gaskets that may impact the integrity of the joint connection.
- N. As each length of pipe is placed in laying position the pipe shall be secured in place with approved backfill material and the appropriate compaction as specified in Section 02225.
- O. Bell and spigot piping shall be laid with the bell ends facing upgrade and the laying shall start at the downgrade end and proceed upgrade, unless otherwise permitted by the ENGINEER.
- P. When pipe laying is not in progress the open ends shall be closed by watertight plugs or other approved means. In the presence of water, the pipe end shall remain sealed until the trench has been properly drained or dewatered.
- Q. At connections to existing piping, Contractor shall remove all dirt and debris that is allowed to enter the existing lines.
- R. Replace any pipe, fittings, or appurtenances found defective after installation has been completed.
- S. Cleanouts shall be installed in service lines that exceed 100 feet in length. Cleanouts shall be spaced no greater than 100 feet apart, including the riser pipe.
- T. The cleanout wye shall be encased in concrete.
- U. Where the cleanout is extended to grade, a 10" gate valve box section with lid shall be installed to protect the cleanout. Gate valve box lid shall be marked "Sewer".

3.04 INSPECTION

- A. Do not cover pipe until joints have been inspected.
- B. Backfill above bedding and pipe in accordance with Section 02223 and Section 02225.

3.05 TESTING GRAVITY LINES

- A. Contractor shall provide temporary diversion pumping as required for internal inspection.

- B. Testing shall be performed by the CONTRACTOR without any direct compensation being made therefore, and the CONTRACTOR shall provide necessary equipment and materials, including plugs and standpipes as required.
- C. Test Failure and Remedy
1. In the event of test failure on any test section, testing shall be continued until all leakage has been detected and corrected to meet the requirements. Repair work shall be subject to approval of the ENGINEER. Introduction of sealant substances by means of the test water will not be permitted.
 2. Unsatisfactory repairs or test results may result in an order to remove and replace pipe as the ENGINEER considers necessary for test conformance. All repair and replacement work shall be at the CONTRACTOR's expense.
- D. Deflection Test
1. Deflection tests shall be performed on all plastic gravity lines. The test shall be conducted after the trench has been backfilled to the desired finished grade and has been in place for 30 days.
 2. The deflection test shall be performed by pulling a rigid ball or nine-point mandrel (Mn/DOT Technical Memorandum 98-24-B-01 or latest revision) through the pipe without the aid of mechanical pulling devices. The ball or mandrel shall have a minimum diameter equal to 95% of the actual inside diameter of the pipe. The maximum allowable deflection shall not exceed five percent of the pipe's internal diameter. The line will be considered acceptable if the mandrel can progress through the line without binding. The time of the test, method of testing, and the equipment to be used for the test shall be subject to the approval of the ENGINEER.
 3. All testing shall be performed by the CONTRACTOR at CONTRACTOR'S expense without any direct compensation being made therefore, and CONTRACTOR shall furnish necessary equipment and materials required.
 4. In the event of test failure on any test section, the section shall be replaced, with repair work subject to approval of the ENGINEER. The replaced section shall be retested for leakage and deflection in conformance with the specifications contained herein. Repairs, replacement, and retesting shall be at the CONTRACTOR'S expense.
- E. Low Pressure Air Testing
1. If the contractor is installing a new sanitary sewer system, as instructed by the Engineer, upon completion of the sewer, before individual services are connected to the pipe line, and after the line has been backfilled and cleaned, the Contractor shall furnish all necessary equipment and personnel to conduct a low pressure air test on all gravity plastic pipe sewer lines sized 30 inches in diameter or less. The test shall be conducted in the presence of the project representative between two manholes and in succession and in accordance with ASTM F-1417, as modified herein. The Contractor shall notify the representative a minimum of 48 hours prior to testing. All costs for performing the test shall be included in the price of the installed pipe.
 2. The sewer pipe section under test shall be clean at the time of testing, but

the pipe may be wetted. Pneumatic plugs each having a length greater than the diameter of the pipe being tested shall be used to plug the pipe ends at manholes. One plug shall have the air supply hose and the return air pressure hose. The air supply hose, connected from the compressor to the plug, shall have a throttling valve, bleeding valve, and shut off valve for control. The air pressure tap shall have a sensitive pressure gauge, 1 to 10 psi range, protected by a gauge cock and a pressure relief valve set a 10 psi. The gauge must be in 0.1 pound increments. The testing gauge shall be located at ground level, out of and away from the manhole. Air shall be slowly introduced into the plugged line until the internal air pressure reaches 4.0 psig greater than the average back pressure of any ground water pressure that may submerge the pipe. At least two minutes shall be allowed for the air temperature to stabilize before readings are taken and the timing started, during which time the air supply shall be regulated to maintain the pressure between 3.5 and 4.0 psig. After the stabilization period the air supply shall be shut off and timing begun.

3. The sewer section under test will be accepted as having passed the low pressure air test if it does not lose air at a rate to cause the pressure to drop more than 0.5 psig in less time than $\frac{1}{2}$ minute per inch diameter of the pipe tested. If the pipe fails to meet the requirements of the test, the Contractor shall, at his sole expense, determine the source of leakage and repair/replace defective material and/or workmanship, after which, the low pressure air test and deflection test, if applicable, shall be performed again.
4. To determine the air pressure to be added for the average ground water above the pipeline, the ground water height in feet above the pipeline shall be divided by 2.31, and that incremental pressure added to the gauge pressure.
5. If the air pressure required to run the test exceeds 8.3 psig, the Contractor shall lower the groundwater to acceptable levels by means of dewatering (incidental) and perform the test.

F. Televising

1. All gravity lines shall be televised and the video reports submitted to the OWNER for review. Video reports can be submitted on DVD's, USB jump drives, or external hard drives. All lines must be flushed and cleaned prior to acceptance, following NASSCO PACP/MACP specifications.

3.06 POTABLE WATER SEPARATION

- A. See section 02660 and details for requirements.

END OF SECTION

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DIVISION 2 - SITEWORK
SECTION 02722 - STORM SEWER

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes
 - 1. Storm sewer piping, fittings and accessories, and bedding.
 - 2. Catch basins, paved area drainage, and site surface drainage.

- B. Related sections included, but are not limited to:
 - 1. Section 01025 – Measurement and Payment.
 - 2. Section 01300 – Submittals.
 - 3. Section 01400 – Quality Control.
 - 4. Section 01700 – Contract Closeout.
 - 5. Section 02207 – Aggregate materials.
 - 6. Section 02222 – Excavating.
 - 7. Section 02223 – Backfilling.
 - 8. Section 02225 – Trenching.
 - 9. Section 02510 – Superpave Bituminous Pavement.
 - 10. Section 02520 – Concrete Pavement.
 - 11. Section 02607 – Precast Concrete Structures.

1.02 REFERENCES

- A. Reference sections include, but are not limited to:
 - 1. AASHTO M36 – Standard Specification for Corrugated Steel Pipe, Metallic-Coated, for Sewers and Drains.
 - 2. AASHTO M206 – Reinforced Concrete Storm Drain Pipe.
 - 3. AASHTO M218 – Standard Specification for Steel Sheet, Zinc-Coated (Galvanized), for Corrugated Steel Pipe.
 - 4. ASTM A48 – Standard Specification for Gray Iron Castings
 - 5. ASTM A123 – Standard Specification for Zinc (Hot-Dip Galvanized) Coating on Iron and Steel Products.
 - 6. ASTM A760 – Standard Specification for Corrugated Steel Pipe, Metallic-Coated for Sewers and Drains.
 - 7. ASTM A1011 – Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength.
 - 8. ASTM C14 – Concrete Sewer, Storm Drain, and Culvert Pipe.
 - 9. ASTM C76 – Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe.
 - 10. ASTM C506 – Reinforced Concrete Arch Culvert, Storm Drain, and Sewer Pipe.

1.03 SUBMITTALS FOR REVIEW

- A. Section 01300 – Submittals.
- B. Shop Drawings: Indicate locations, elevations, piping, dimensions, and elevations of penetrations.
- C. Product Data: Provide data indicating pipe and pipe accessories.

1.04 SUBMITTALS FOR INFORMATION

- A. Section 01300 – Submittals.
- B. Manufacturer's Installation Instructions: Indicate special procedures required to install Products specified.
- C. Manufacturer's Certificate: Certify that Products meet or exceed specified requirements.

1.05 SUBMITTALS AT PROJECT CLOSEOUT

- A. Section 01700 - Contract Closeout.
- B. Accurately record actual locations of pipe runs, connections, catch basins, and invert elevations.
- C. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

1.06 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum three years experience.

1.07 REGULATORY REQUIREMENTS

- A. Conform to applicable code for materials and installation of the Work of this section.

1.08 ENVIRONMENTAL REQUIREMENTS

- A. Maintain materials and surrounding air temperature at 50°F (10°C) minimum prior to, during, and 48 hours after installation of masonry Work.

1.09 COORDINATION

- A. Coordinate Work under provisions of Section 01039.

PART 2 PRODUCTS

2.01 STORM SEWER PIPE MATERIALS

- A. All reinforced concrete pipe furnished and installed shall conform to ASTM designation C76, Class III, Wall B. Joint type shall be tongue-and-groove. Allowable pipe lengths shall not exceed eight (8) feet and each section of pipe shall be clearly marked with the following information:
 - (1) The pipe class.
 - (2) The date of manufacture.
 - (3) The name or trademark of the manufacturer.
- B. If deemed necessary by the Engineer, the Contractor shall furnish “three-edge-bearing” tests as specified under ASTM C497 on the pipe furnished. The testing shall be done in the presence of the Engineer.
- C. All reinforced concrete arch pipe shall conform to ASTM designation C506. Allowable pipe lengths shall not exceed eight (8) feet and each section of pipe shall be clearly marked with the same information as called for under Paragraph 2.01 of this Section.
- D. If deemed necessary by the Engineer, the Contractor shall furnish the testing called for under Paragraph 2.01 of this Section.
- E. Corrugated steel pipe (CSP) used in the Slotted Drain Inlets shall meet the requirements of AASHTO M36/ASTM 760. The Pipe shall be galvanized steel per AASHTO M 218.
- F. Corrugated Polyethylene Pipe shall be considered an acceptable alternative to reinforced concrete storm sewer pipe. Corrugated Polyethylene Pipe shall meet the requirements of AASHTO M294, Type S.

2.02 PRECAST CONCRETE STRUCTURES

- A. As specified in Section 02607.

2.03 FRAME AND CASTINGS

- A. Curb inlet castings shall consist of the following, or Engineer approved equivalent:
 - 1. Single: Neenah Model R-3295 with L-style Grate.
 - 2. Double: Neenah Model R-3295-2 with L-style Grate.
- B. Storm sewer manhole castings shall consist of the following, or Engineer approved equivalent:
 - 1. Neenah Model R-3350
 - 2. Neenah Model R-3065-L
 - 3. Neenah Model R-3238

4. Neenah Model R-1733 with self-sealing lid.
 5. "Storm" stamping on lid.
 6. Approved equivalent.
- C. Slotted Drain Inlet
1. The inlet shall be commercially fabricated with the grate and steel pipe an integral unit.
 2. The grate shall be fillet welded with a minimum weld 1" long to the CSP on each side of the grate at every other corrugation.
 3. The grates shall be manufactured from ASTM A1011, Grade 36 steel. The spacers and bearing bars (sides) shall be 3/16" material +/-0.008".
 4. Minimum tensile strength for an in-place spacer pulled perpendicular to the bearing bar shall be 15,000 lbs.
 5. The grate shall be galvanized in accordance with ASTM A 123 except with a 2 oz. galvanized coating, total both sides.
 6. Acceptable Manufactures:
 - a. Contech Construction Products.
 - b. Approved Equal.
- D. All inlets, frames, and grates shall be machined to a uniform quality. Metal used in the manufacture of frames and grates shall conform to ASTM-A48 Class 35B Gray (cast) iron. All frames and grates shall fit together in a satisfactory manner to prevent rocking and rattling.
- E. Each inlet shall be furnished with three standard 2-inch adjusting rings.

2.04 FLARED END SECTIONS

- A. Same material as pipe molded or formed to suit pipe size and end design.

2.05 ACCESSORIES

- A. Fittings: Same material as pipe molded or formed to suit pipe size and end design.
- B. Connectors: Per manufactures recommendations to complete installation of Work.
- C. Pipe Connections: Reinforced concrete pipe penetrations shall be sealed with non-shrink masonry cement premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents; capable of developing minimum compressive strength of 2,400 psi in 48 hours and 7,000 psi in 28 days.

2.06 BEDDING AND COVER MATERIALS

- A. Pipe Bedding: Aggregate Type A4 as specified in Section 02207. The pipe is bedded in compacted granular material placed up to a height equal to one-half the outside diameter of the pipe. The depth of the granular bedding below the pipe is a minimum of 4" for 27" diameter and smaller pipe, 6" for 66" diameter

pipe and larger, and 4" for intermediate sizes. The initial fill material should be densely compacted up to a height of 12" over the top of the pipe.

- B. Cover: Fill Type S1 or S2, as specified in Section 02205 and shown on the Drawings, compacted per Section 02223.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that trench cut and excavation base is ready to receive Work and excavations, dimensions, and elevations are as indicated on Drawings.

3.02 PREPARATION

- A. Hand trim excavations to required elevations. Correct over excavation as specified in Section 02223.
- B. Remove large stones or other hard matter which could damage piping or impede consistent backfilling or compaction.

3.03 BEDDING

- A. Excavate pipe trench in accordance with Section 02225 for Work of this Section. Hand trim excavation for accurate placement of pipe to elevations indicated.
- B. Place bedding in bottom of trench and compact per Paragraph 2.06 of this Section and Section 02223. Maintain optimum moisture content of bedding material to attain required compaction density.

3.04 INSTALLATION – PIPE

- A. Install pipe, fittings, and accessories in accordance with ASTM C12 and manufacturer's instructions. Seal joints watertight.
- B. Lay pipe to slope gradients noted on Drawings
- C. Install bedding at sides to mid-height. Compact as specified in Section 02223.
 - 1. For Corrugated Steel Pipe (CSP) used in the Slotted Drain Inlets install Flowable Fill to height shown on drawings.
- D. Refer to Section 02225 for trenching requirements. Do not displace or damage pipe when compacting.

3.05 INSTALLATION – PRECAST CONCRETE STRUCTURES

- A. As specified in Section 02607.

3.06 INSTALLATION – INLETS

- A. Place precast sections plumb and level, trim to correct elevations, anchor to base pad.
- B. Cut and fit for pipe conduit openings.
- C. Grout base of shaft sections as shown on Drawings. Trowel smooth. Contour as required.
- D. Install preformed plastic sealing compound or water stop as required between section joints to assure leak proof installation.
- E. Grout lifting holes neatly to the curvature of barrel with masonry cement. Trowel smooth.
- F. Set frames and grates level without tipping, to correct elevations.
- G. Coordinate with other sections of Work to provide correct size, shape, and location.

3.07 FIELD QUALITY CONTROL

- A. Section 01400 – Quality Assurance.
- B. Request inspection prior to and immediately after placing bedding.
- C. Compaction testing:
 - 1. Perform in accordance with AASHTO T180.
 - 2. If tests indicate Work does not meet specified requirements, remove Work, replace and retest. Refer to Section 02223.
 - 3. Frequency of Tests: as specified in Section 02223.

3.08 PROTECTION

- A. Protect finished Work under provisions of Section 01500.
- B. Protect pipe and aggregate cover from damage or displacement until backfilling operation is in progress.

END OF SECTION

DIVISION 2 - SITEWORK
SECTION 02848 – TRAFFIC CONTROL

PART 1 **GENERAL**

1.01 SUMMARY

- A. Section Includes:
 - 1. Traffic Control Devices.
 - 2. Construction Signing.

- B. Related Sections:
 - 1. Section 01010 – Summary of Work.
 - 2. Section 01300 – Submittals.
 - 3. Section 02076 – Pavement Removal.
 - 4. Section 02222 – Excavating.
 - 5. Section 02510 – Superpave Bituminous Pavement
 - 6. Section 02520 – Concrete Pavement

1.02 REFERENCES

- A. Manual on Uniform Traffic Control Devices (MUTCD), latest edition.

- B. North Dakota Department of Transportation Standard Specifications for Road and Bridge Construction, latest edition.

1.03 SUBMITTALS

- A. Shop drawings on all signs, delineators and barricades illustrating types of signs, messages, and mounting.

- B. Sign and barricade poles and bases.

- C. Provide traffic control plan under Section 01300 and coordination under Section 01039.

PART 2 **PRODUCTS**

2.01 SIGNS, SIGNALS, BARRICADES, AND DEVICES

- A. Conform to NDDOT Standard Specifications for Road and Bridge Construction, Section 704.

- B. Conform to MUTCD requirements.

PART 3 EXECUTION

3.01 GENERAL

- A. All work shall conform to NDDOT Standard Construction Specifications.
- B. A minimum of one week prior to implementation of traffic control measures, Contractor shall contact the Owner and Engineer to provide advance notice.
- C. The Contractor shall furnish, install, and maintain all required traffic control devices, and shall provide watchpersons as necessary to protect the work and to ensure public and workers' safety. All required control devices shall be available for installation when needed and shall be maintained, relocated, covered, or removed as necessary.
- D. When the project documents do not cover a specific traffic control situation, the Contractor shall submit a Maintenance of Traffic Plan to the Engineer and the City for approval. Contractor is responsible for all costs associated with properly controlling traffic.
- E. Notify the Engineer and the City in writing of all restrictions and upcoming maintenance of traffic changes on a weekly basis.

3.02 CONSTRUCTION PARKING CONTROL

- A. Control vehicular parking to prevent interference with public traffic and parking, access by emergency vehicles and Owner's operations.
- B. Monitor parking of construction personnel's vehicles.
- C. Prevent parking in non-designated areas.

3.03 TRAFFIC SIGNS, BARRICADES, SIGNALS, AND OTHER DEVICES

- A. Contractor signs and barricades shall be constructed and placed at the Site as approved by the Engineer. At each section of Work under construction, where the character or condition of the Work creates a hazard to traffic, the Contractor shall provide, furnish, erect, and maintain adequate barricades, signs, and warnings during the course of construction as may be required or as directed by the Engineer.
- B. Relocate as Work progresses, to maintain effective traffic control.
- C. Provide, at no additional cost to the Owner, additional signs, barricades, and signals as may be required for the safety of the public.
- D. The above provisions shall not in any way relieve the Contractor of any of its legal responsibilities or liabilities for the safety of the public.
- E. When work zone signs interfere with permanent signs, the work zone signs shall be relocated to locations that afford the best results.

3.04 MAINTENANCE OF TRAFFIC

- A. Under no circumstances shall the Contractor be allowed to restrict access to private properties unless approved by the Engineer.
- B. Should a given street require temporary closure, contractor shall obtain written approval from City and provide all special provisions required for traffic control.
- C. Should a given street require No Parking, it shall be the responsibility of the Contractor to inform the public of No Parking a minimum of one day ahead of time.

3.05 MAINTENANCE OF TRAFFIC CONTROL DEVICES

- A. A traffic control supervisor shall be provided on this project. The traffic control supervisor shall be responsible for making sure all construction signs are in place each day including weekends, replacing any signs that are damaged, and replacing or resetting traffic control devices as necessary.

3.06 REMOVAL

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

END OF SECTION

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DIVISION 2 - SITE WORK
SECTION 02923 – LANDSCAPE GRADING

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes:
 - 1. Subsoil preparation.
 - 2. Final grading of topsoil for finish landscaping.

- B. Related Sections include, but are not limited to:
 - 1. Section 01400 - Quality Control.
 - 2. Section 02205 - Soil Materials.
 - 3. Section 02211 - Restoration of Disturbed Areas.
 - 4. Section 02222 – Excavating.
 - 5. Section 02223 – Backfilling.
 - 6. Section 02936 – Hydroseeding.

PART 2 PRODUCTS

2.01 MATERIAL

- A. Topsoil: As specified in Section 02205, Type S4.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify excavation backfilling has been inspected prior to final grading.
- B. Verify substrate base has been contoured and compacted accordingly.

3.02 PREPARATION OF SUBSOIL

- A. Eliminate uneven areas and low spots.
- B. Maintain lines, levels, profiles, and contours. Make changes in grade gradual. Blend slopes into level areas.
- C. Remove debris, undesirable plants and their roots, weeds, branches, stones, and foreign materials in excess of ½ inch in size. Do not bury foreign material beneath areas to be hydro-seeded. Remove contaminated subsoil.
- D. Scarify surface to a depth of 3 inches where topsoil is scheduled. Scarify in areas where equipment used for hauling and spreading topsoil has compacted subsoil.

3.03 PLACING TOPSOIL

- A. Spread, level, and lightly compact topsoil in areas where hydroseeding and restoration is required, to a minimum nominal depth of 6 inches.
- B. Rake until smooth and level.
- C. Place topsoil during dry weather and on dry unfrozen subgrade.
- D. Fine grade topsoil to eliminate rough or low areas to ensure positive drainage. Maintain profiles and contour of subgrade.
- E. Remove roots, weeds, rocks, and foreign material from topsoil while spreading.
- F. Manually spread topsoil close to curb, sidewalk, utilities, manholes, gate valve risers, etc. to prevent damage.
- G. Lightly compact placed topsoil.
- H. Remove surplus subsoil and topsoil from site.
- I. Leave stockpile area and site clean and raked, ready to receive landscaping.

3.04 TOLERANCES

- A. Top of Topsoil: plus or minus 1-inch.

3.05 PROTECTION

- A. Protect landscaping and other features remaining as final Work.
- B. Protect existing structures, fences, sidewalks, utilities, paving, and curbs.

3.06 SCHEDULE

- A. Behind Back of Curb, to include all disturbed ditch, berm, and lawn areas, provide 6 inches minimum of salvaged or imported topsoil prior to hydroseeding. Cost of topsoil replacement shall be included in bid item for "Hydroseeding".

END OF SECTION

DIVISION 2 – SITE WORK
SECTION 02936 – HYDROSEEDING

PART 1 GENERAL

1.01 SUMMARY

- A. Section includes:
 - 1. Hydro-Mulch grass seeding requirements.
 - 2. Maintenance.

- B. Related Sections include, but are not limited to:
 - 1. Section 01025 – Measurement and Payment.
 - 2. Section 01400 – Quality Control.
 - 3. Section 01600 – Material and Equipment.
 - 4. Section 01700 – Final Closeout.
 - 5. Section 02205 – Soil Materials: Topsoil material.
 - 6. Section 02923 – Landscaping Grading.

1.02 REFERENCES

- A. Reference Standards include, but are not limited to:
 - 1. North Dakota Department of Transportation Standard Specifications for Road and Bridge Construction, latest edition.

1.03 DEFINITIONS

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

1.04 SUBMITTALS AT PROJECT CLOSEOUT

- A. Section 01700 – Contract Closeout: Procedures for submittals.

- B. Maintenance Data: Include maintenance instructions, cutting method and maximum grass height; types, application frequency, and recommended coverage of fertilizer.

1.05 QUALITY ASSURANCE

- A. Provide seed mixture in containers showing percentage of seed mix, year of production, net weight, date of packaging and location of packaging.

1.06 REGULATORY REQUIREMENTS

- A. Comply with regulatory agencies for herbicide composition.

- B. Provide certificate of compliance from authority having jurisdiction indicating approval of seed mixture.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. See Section 01600 - Material and Equipment: Transport, handle, store, and protect products.
- B. Deliver grass seed mixture in sealed containers, open or damaged packaging is not acceptable.
- C. Deliver fertilizer in waterproof bags, labeled according to state law and bearing weight, chemical analysis, name of manufacturer, and warranty of the producer.

PART 2 PRODUCTS

2.01 SEED MIXTURE

- A. Seed Mixture:

Type of Seed	Percentage by Weight	Rate of Seeding (lb/acre)
Bluegrass, Kentucky - Elite	25	62.5
Bluegrass, Kentucky - Improved	25	62.5
Bluegrass, Kentucky - Low Maintenance	25	62.5
Red fescue, creeping	8	20
Rye-grass, perennial	17	42.5
Totals	100	250

- B. Seed delivered in tagged and labeled bags showing percentage of purity and germination. Seed shall have a minimum 80 percent germination rate and maximum inert matter and other seeds of 4 percent. Maximum weed seed shall be 0.5 percent.
- C. Seed shall be tested within six months prior to date of seeding and conform to latest seed laws of the State of North Dakota.
- D. Origin of native grasses shall be limited to: North Dakota, South Dakota, Western Minnesota, Northern Nebraska, and Eastern Montana.

2.02 FERTILIZER

- A. The fertilizer shall be a mixture of 20-20-0 and urea formaldehyde (36-0-0).
- B. Fertilizer shall be free flowing and suitable for application with mechanical equipment, delivered in sealed containers, fully labeled, and bearing the name, trade name or trademark and warranty of the producer.

2.03 MULCH

- A. Mulch shall consist of a wood cellulose fiber that has not been treated with any germination or growth inhibitive substances. The mulch shall be free of contamination from noxious weed seed and seed from competitive plants.
- B. The mulch shall have an approved tacking and bonding agent to ensure long lasting stabilization and reduce erosion potential.
- C. The tackifier shall be installed as per the manufacturer's recommendations.

2.04 EQUIPMENT

- A. Equipment shall be hydraulic and capable of uniformly mixing the specified seed in water for uniform distribution. The mulch may be applied simultaneously with the seed and fertilizer, or within 24-hours after application of seed and fertilizer.

PART 3 EXECUTION

3.01 PREPARATION

- A. Verify that prepared topsoil is ready to receive work of this Section.

3.02 SEED BED

- A. Areas to be seeded shall be prepared by thoroughly tilling or discing to break up lumps and clods. Topsoil shall then be raked level and all sod, hard lumps, gravel, concrete, or other debris materials shall be removed.
- B. Large areas shall be power raked with mechanical raking equipment.
- C. Finished surfaces shall be smooth and level.

3.03 SEEDING

- A. Apply grass seed at a rate of 3 lbs/1000 square feet evenly with hydro-mulch. The 20-20-0 shall be applied at a rate assuring 20 lbs. of actual Nitrogen (N) and 20 pounds of actual phosphorus (P₂O₅) per acre. The urea formaldehyde shall be applied at a rate of 60 lbs. per acre assuring 20 lbs. of actual Nitrogen (N) per acre. The mulch shall be uniformly applied at a rate of one ton per acre. The mulch shall permit percolation of water to the underlying soil. Coverage shall be a minimum of 95 percent.
- B. Planting Season: Seed shall occur before June 15 and after September 1. No seed shall be sown when the wind velocity exceeds 15 miles per hour, in standing water, or on frozen ground. Do not sow immediately following rain, when ground is too dry, or during windy periods.
- C. Seeded areas shall be watered a minimum of one month after placement of seed to obtain a minimum of 150 plants (seedlings) per square foot.

- D. Seed all areas affected by Work or as directed by the Owner.
- E. Seeding along lineal footage of replaced curb and gutter shall be a minimum of 3 feet wide behind back of curb.

3.04 MAINTENANCE

- A. Contractor shall be responsible for the establishment and proper maintenance of seeded areas for a period of 8 weeks after completion of all seeding. In instances where seed is placed late in the season, Contractor shall be responsible for maintaining seeded areas the following spring for an equivalent 8-week period if deemed necessary by the Owner. Work shall include watering, mowing, and protection of seeded areas.
- B. Re-seed any areas, determined by the Owner to have insufficient grass cover.
- C. Control growth of weeds. Apply herbicides in accordance with manufacturer's instructions. Remedy damage resulting from improper use of herbicides.

3.05 CLEANUP

- A. All areas shall be cleaned of areas that may hinder maintenance operations and all paved areas over which hauling operations were conducted shall be cleaned of soil or other material that may have been brought upon the surface.

END OF SECTION

DIVISION 2 - SITE WORK
SECTION 02939 - SILT FENCE

PART 1 **GENERAL**

1.01 SUMMARY

- A. Section Includes:
1. Furnishing, installing, maintaining, and removing a geotextile barrier-fence.
 2. The quantities of silt fence shown on the Plans may be increased or decreased at the direction of the Engineer based on weather, construction procedures, and actual site conditions that occur during construction of the Project. Such variations in quantity will not be considered as alterations in the details of construction or a change in the character of Work.
- B. Related Sections include, but are not limited to:
1. Section 01025 – Measurement and Payment.
 2. Section 01300 – Submittals.
 3. Section 01400 – Quality Control.
 4. Section 01600 – Material and Equipment.
 5. Section 01700 – Contract Closeout.
 6. Section 02923 – Landscape Grading.
 7. Section 02936 – Hydroseeding.
- C. References include, but are not limited to:
1. A Guide to Temporary Erosion-Control Measures for Contractors, Designers and Inspectors by North Dakota Department of Health (latest edition).
 2. AASHTO M288 – Standard Specifications for Geotextiles.
 3. ASTM D3786 – Hydraulic Bursting Strength of Textile Fabrics – Diaphragm Bursting Strength Tester Method.
 4. ASTM D4355 – Deterioration of Textile Fabrics by Exposure to Light, Moisture, and Heat in a Xenon Arc Type Apparatus.
 5. ASTM D4491 – Water Permeability of Geotextile by Permittivity.
 6. ASTM D4533 – Trapezoid Tearing Strength of Geotextiles.
 7. ASTM D4632 – Grab Breaking Load and Elongation of Geotextiles.
 8. ASTM D4751 – Determining Apparent Opening Size of a Geotextile.
 9. ASTM D4833 – Puncture Resistance of Geotextiles, Geomembranes, and Related Products.
 10. ND Standard Specifications for Road and Bridge Construction, latest edition.

1.02 DESCRIPTION OF WORK

- A. This section shall include the furnishing of materials, installation, and construction and removal of various erosion control devices at locations as shown on the Drawings and where specified by the Engineer in accordance with the Contract Documents.
- B. The Contractor shall be responsible for accomplishing the required construction work on this project in such a manner as to effectively minimize and control water pollution that might be caused by soil erosion from the Project. It is intended that these features be maintained in appropriate functional condition from initial construction stages to final completion of Project.
- C. Contractor shall be responsible for conformance with local, state, and federal soil erosion and siltation control requirements.

1.03 SUBMITTALS

- A. Submit under the provisions of Section 01300.
- B. Certification of materials used for erosion control devices.

1.04 PROTECTION OF PROPERTY

- A. Protect existing facilities at the site against damage including the following:
 - 1. The Contractor shall take precautions to insure that equipment, vehicles, and construction operations do not disturb or damage existing grades, walls, drives, pavement, utilities, plants, lawns, and other facilities.
 - 2. Verify locations and depths of all underground utilities prior to excavation and report any conflicts with new work to the Engineer.
 - 3. Any damage to existing trees or shrubs branches and root systems to remain and be protected shall be repaired and/or pruned by an experienced tree surgeon or arborist.
 - 4. Repair, replace, and/or return to original condition any damaged item, at no additional cost to the Owner.
- B. The Contractor shall protect adjoining property including public utilities, sanitary and storm drainage systems, and other debris from project site. Repair any damage immediately at no additional cost to the Owner.
- C. The Contractor shall prevent accumulation of earth, siltation, or debris on adjoining public or private property from project site. Remove any accumulation of earth or debris immediately, and take remedial actions for prevention.

1.05 QUALITY CONTROL

- A. Comply with manufacturer's instructions and in accordance with Section 01400.

PART 2 MATERIALS

2.01 POSTS

- A. The posts used to support the silt fence fabric shall be a hardwood material.
- B. Posts shall be a minimum of 1-1/4" square by 4 feet long.

2.02 FILTER FABRIC

- A. Silt fence fabric shall conform to the AASHTO M228 silt fence specification.
- B. Silt fence fabric shall be attached to the wooden posts with staples, wire, zip ties or nails.
- C. Filter fabric shall be composed of polypropylene yarns.
- D. The fibers shall be formed into a network such that the filaments or yarns retain dimensional stability relative to each other.
- E. The filter fiber fabric shall be free of any treatment or coating which might adversely alter its physical properties after installation.
- F. The fabric shall be free of defects or flaws which significantly affect its physical and/or filtering properties.
- G. The fabric shall have a minimum width of 36".
- H. The filter fabric shall be furnished with suitable wrapping for protection against moisture and extended ultraviolet exposure prior to placement.

- I. The filter fabric shall meet the following minimum physical requirements:

PROPERTY	TEST METHOD	UNITS	REQUIRED VALUE
Grab Tensile Strength	ASTM D4632	lbs	124
Grab Tensile Elongation	ASTM D4632	%	15
Mullen Burst Strength	ASTM D3786	psi	300
Trapezoid Tear Strength	ASTM D4533	lbs	65
Puncture Strength	ASTM D4833	lbs	60
Apparent Opening Size (AOS)	ASTM D4751	U.S. Sieve	#30
Permittivity	ASTM D4491	sec ⁻¹	0.1
Water Flow Rate	ASTM D4491	gal/min/ft ²	10
Ultraviolet Resistance (@ 500 hrs)	ASTM D4355	%	70

PART 3 EXECUTION

3.01 INSTALLATION

- A. Silt fences shall be constructed at locations as shown on the Drawings and as directed by the Engineer.
- B. Silt fences shall be in place prior to site clearing and grading.
- C. The bottom of the fence and fabric shall be embedded in the ground a minimum of 12 inches.
- D. Excavate trench a minimum of 12 inches deep and 6 inches wide to facilitate installation of fence.
- E. Position posts on the downstream side of the silt fence.
- F. Line the bottom of the trench with the fabric. Backfill over the fabric in the trench with the excavated soil, and compact. After filling the trench, drive posts into the ground to a depth of at least 18 inches.

3.02 MAINTENANCE

- A. Silt fence shall be inspected by the Contractor immediately after each rainfall and at least daily during prolonged rainfall. Any deficiencies shall be immediately corrected.
- B. Filter fabric shall be removed and replaced whenever it has deteriorated to such extent that it reduces the effectiveness of the silt fence.

- C. The Contractor shall make a daily review of the location of silt fences in areas where construction activities have changed the natural contour and drainage runoff to ensure that the silt fences are properly located for effectiveness. Where deficiencies exist, additional silt fences shall be installed as directed by the Engineer.
- D. If a silt fence, or portion of a fence, is located in an area where removing the sediment is not possible, then a second silt fence shall be installed, if necessary, at the discretion of the Engineer. In this case, both the silt fences and portions involved, will be measured and paid for at the unit price for silt fence.
- E. Silt fences shall remain in place until the Engineer directs that it be removed. Upon removal, the Contractor shall dress the area to give a pleasing appearance, and vegetate all bare areas in accordance with Contract requirements. The fence materials will remain the property of the Contractor and may be used at other locations provided the materials meet the appropriate requirements contained in this Specification and/or in the Plans.

END OF SECTION

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APPENDIX A

Report of Geotechnical Exploration Program

**Proposed 2025 Street & Utility Improvements
New Town, North Dakota
MTS #G24-024**

For

City of New Town

April 10, 2024

April 10, 2024

Attn: Eileen Zaun
City of New Town
PO Box 309
New Town, ND 58763

ref: **Geotechnical Exploration Program**
Proposed 2025 Street & Utility Improvements Project
New Town, North Dakota
Laboratory Number MTS #G24-024

Enclosed is the report of the geotechnical exploration that we recently conducted for the proposed project. We are transmitting this report as an electronic file in pdf format. If you require a hard copy, please contact us. The work was conducted in general accordance with our proposal dated December 4, 2023.

Approximately 50 percent of the soil samples will be stored at the laboratory for a period of approximately 30 days from the date of this report. The samples will then be discarded unless we are requested to store them for a longer period of time.

We appreciate the opportunity to be of service to you on this project. If there are questions about the data or our recommendations, please contact us at 701-852-5553. Also, please contact us when you are ready for excavation observations and compaction test of controlled fill.

Sincerely,

MATERIAL TESTING SERVICES, LLC



Anthony Francis, P.E.
Geotechnical Engineer



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New Town, North Dakota
MTS #G24-024**

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- A.2 Surface Observations
- A.3 Subsurface Conditions
- A.4 Water Levels
- A.5 Soil Sampling
- A.6 Soil Classification Procedure

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Soil Profile Drawing
Boring Logs
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Soil Classification Sheet

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CBR
Mechanical Sieve Analysis

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Report of Geotechnical Exploration

**Proposed 2025 Street & Utility Improvements Project
New Town, North Dakota
MTS #G24-024**

1. INTRODUCTION

1.1. Authorization

This work was conducted in accordance with our proposal dated December 4, 2023. Our proposal was approved, giving us authorization to proceed.

1.2. Scope of Services

The authorized scope of services included soil borings, laboratory testing and an engineering report.

Authorized drilling included a total of twenty-five soil borings drilled to a nominal depth of 15 feet. The boring locations were selected by AE2S. Soil sampling was to be performed using standard penetration test (SPT) procedures. Laboratory tests in the proposal included moisture content, dry density, gradation through a #200 sieve, Atterberg limits (liquid & plastic limits) standard Proctor, and CBR.

The authorized engineering report includes the results of the field and laboratory testing as well as engineering recommendations regarding:

- a. Site preparation
- b. Potential construction difficulties
- c. Potential expansive or compressible soils
- d. Site drainage
- e. Excavation slopes
- f. Pavement Subgrade Preparation
- g. Pavement Section Analysis
- h. Construction monitoring

Determining if there is potential on-site contamination is not included in the scope of services.

2. ENGINEERING REVIEW

2.1. Project Data

If the project information presented below is not correct or has been changed, it is necessary that the correct project data be presented to us for further review.

The proposed project will consist of street and utility improvements along Eagle Loop, 5th Street N, 4th Street N, 2nd Avenue E and Rainbow Drive in New Town. The area of improvements is shown on the site map included in Appendix A. We understand the work will include utility installation and street reconstruction. We assume that the final pavement elevation will be at or near existing grade. We also anticipate that reconstruction may include reclaiming the existing asphalt section for re-use as aggregate base.

The streets are currently surfaced with asphalt pavement. Our borings encountered approximately 3 to 6 inches of asphalt. Given the subsurface soils below the asphalt consisted of mostly sand fill with varying amounts of gravel and were frozen at the time of our exploration, the actual thickness of the aggregate base section may vary from what is listed on the boring logs.

2.2. Special Concerns and Constructability

The CBR at 0.1 inches of penetration was determined to be 4.9 and 8.1 on the two bulk subgrade soil samples tested. The lower CBR value of 4.9 was used for our pavement section analysis.

Generally, it is recommended that any uncontrolled fill be removed below pavements. This is recommended not only to assure the fill was placed in a controlled manner, but to verify that no old construction "pits" are present that were backfilled with unsuitable materials. However, it likely is not practical to remove all the fill below the pavement for this project. In addition, generally fill or backfill placed under city streets has been placed with some level of compaction. However, the owner will be assuming some risk that detrimental settlement

may occur. For the purposes of this report, we assume that the existing fill will be left in place and the owner acknowledges the risk of leaving uncontrolled fill in-place.

The moisture content tests indicated that the subgrade soils ranged from below to above optimum moisture content. Moisture conditioning (drying and wetting) of the existing soils may be necessary during placement of embankment fill or subgrade preparation.

2.3. Excavation and Site Preparation

The existing non-organic soils on the site are generally considered fair to poor as subgrade soils for pavements. In addition, the soils may be frost susceptible; therefore, some frost movement and/or frost damage can be expected during the life of the pavement.

Once the existing asphalt section is removed or reclaimed, the subgrade soils should be scarified a minimum of twelve inches, moisture conditioned as necessary, and re-compacted to a minimum of 95 percent of the standard Proctor density. Fill greater than 1 foot below the final subgrade elevation should be compacted to at least 95 percent. The final subgrade should be compacted to a minimum of 100 percent. In addition, the subgrade should be proof rolled with a heavy wheeled vehicle (such as a loaded dump truck) to detect soft spots. Soft spots should be stabilized prior to placing base course.

The on-site soils that are free of organic material may be used as controlled, compacted fill. Given the upper soils are mostly sand, we recommend any import fill needed for the road subgrade consist of a pit-run sand or sand with gravel. Any gravel in the fill should have 100 percent passing the 2-inch sieve. Sand should be placed at a moisture content to facilitate compaction. Loose lift thicknesses of new fill should be no more than 8 inches.

If earthwork is done during periods of freezing temperatures, we recommend protecting the fill from freezing once it has been placed. No frozen soils should be used as fill and fill should not be placed on frozen ground. Earthwork could be difficult in the spring or late fall when conditions are often cool and wet.

Judging from the moisture condition of the soil samples and moisture content tests that were conducted, some moisture conditioning may be necessary to achieve the recommended moisture content and to properly compact the subgrade.

2.4. Aggregate Base Preparation

The new granular base course needed should meet the specifications as outlined in Section 816 of the North Dakota Department of Transportation's (NDDOT) "Standard Specifications for Road and Bridge Construction" for Class 5 aggregate.

Existing base material and any new base material should be compacted to at least 100% of the maximum density as determined by ASTM D 698 at a moisture content that facilitates compaction.

2.5. Flexible Pavement Section

Flexible Pavement design was based on our experience and in accordance with the "AASHTO Guide of Design of Pavement Structures 1993". A CBR of 4.9 was used along with an assumed 18-kip axle loads (ESAL's) of 50,000 and 100,000 for the pavement.

The pavement design parameters were as follows:

Table 1 – Pavement Design Parameters

Parameter	Value
Reliability	85%
Standard Deviation	0.49
Initial Serviceability	4.5
Terminal Serviceability	2.5
Subgrade CBR	4.9
Resilient Modulus (psi)	7350
HBP Layer Coefficient	0.36
Aggregate Base Layer Coefficient	0.10
Drainage Factor of Base and Subbase	1.0

For the roadbed prepared as outlined, we recommend that the pavement section consist of 5 inches of HBP overlying 10 inches of aggregate base for up to 100,000 ESALS.

For a roadbed designed for up to 50,000 ESALS, we recommend the pavement section consist of 4 inches of HBP overlying 9 inches of aggregate base.

Consideration should be given to incorporating a geogrid in the pavement section. This would likely reduce the required thickness of the aggregate base. Please contact us if you wish to explore this option.

The hot bituminous pavement mixture should be equal to or better than NDDOT FAA 43 as outlined in Section 430 of the NDDOT's "Standard Specifications for Road and Bridge Construction".

We recommend you consider placing a geotextile separation fabric between the subgrade and the aggregate base layer, specifically where the subgrade soil is clay. The geosynthetic should meet or exceed the requirements of ND DOT Type R1 reinforcement fabric.

Adequate drainage should be considered imperative to prolong the life of the pavement. Ditches, general grade, curb and gutter, and storm drains, if necessary, should be used to promote good drainage.

2.6. Excavation Slopes

Safe excavations must be always maintained. The excavation contractor is responsible for the safety of the excavations. Current OSHA requirements should be carefully followed when excavating the back slope of the excavation. The OSHA soil type and excavation requirements must be verified by a competent person for the contractor at the time of construction. MTS does not assume responsibility for site safety or the contractors' activities.

3. CONSTRUCTION OBSERVATION AND TESTING

We recommend that the geotechnical engineer be contacted if unforeseen soil conditions are encountered.

We recommend a representative number of compaction tests be taken during construction on the trench backfill, subgrade soils (if necessary), placement of new fill (if applicable), and base course. The tests should be performed to determine if the recommended compaction was achieved. As a general guideline, tests should be taken approximately every 200 linear feet of roadway, and for each 1 foot of fill thickness. Proof rolling should also be conducted as stated in section 2.3.

We recommend that the hot mix asphalt be tested according to section 430 of the NDDOT Standard Specifications.

4. EXPLORATION LIMITATIONS

The recommendations contained in this report represent our professional opinions. These opinions are in accordance with currently accepted engineering practices at this time and location. Other than this, no warranty is intended or implied.

This report is written by:



Anthony Francis, P.E.
Geotechnical Engineer



Reviewed by:



Steve Wald, P.E.
President



Anthony Francis, P.E.
Date: 4/10/2024

APPENDIX A – FIELD EXPLORATION PROGRAM

- A.1 Exploration Scope
- A.2 Surface Observations
- A.3 Subsurface Conditions
- A.4 Water Levels
- A.5 Soil Sampling
- A.6 Soil Classification Procedure

Attachments to Appendix A

Location Maps
Soil Profile Drawing
Boring Logs
Symbols & Descriptive Terminology on Test Boring Logs
Soil Classification Sheet

A. FIELD EXPLORATION PROGRAM

A.1 Exploration Scope

Twenty-five borings were drilled to a nominal depth of 15 feet for the proposed project. The borings were drilled on February 21 and 23 2024, at the locations marked by AE2S. The site and boring locations are shown on the attached site diagram at the back of this Appendix.

The borings were backfilled with on-site materials and some settlement of these materials can be expected to occur. The final closure of the holes is the responsibility of the client or property owner.

A.2 Surface Observations

The proposed reconstruction includes several city streets on the east side of New Town as shown on the attached site diagram. The existing streets are currently asphalt surfaced. We assigned an assumed surface elevation of 100.0 feet to each boring.

A.3 Subsurface Conditions

The subsurface conditions encountered at the test locations are illustrated by means of the attached boring logs. We wish to point out that the subsurface conditions at other times and locations at the site may differ from those found at our test boring locations. If different conditions are encountered during construction, it is necessary that you contact us so that our recommendations can be reviewed. The test boring logs also shows the possible geologic origin of the materials encountered.

The asphalt surface was measured to be three to six inches thick at the boring locations. Below the asphalt, 2 to 7 feet of fill was encountered in the borings. The fill consisted of mostly silty sand or sandy lean clay with varying amounts of gravel. Below the fill, naturally deposited lean clay, sandy lean clay, sand, silty sand, and silt was encountered in the borings to the termination depths.

Based on the standard penetration resistance ("N" values), the naturally deposited clays were typically very soft to firm in consistency. The sand and silt soils were typically very loose to medium dense.

A.4 Water Levels

Groundwater measurements were made in the test borings during drilling, at completion of drilling and before the borings were backfilled. This information is shown at bottom of the attached boring logs.

Measurable groundwater was not observed in any bore hole prior to backfilling.

Water levels can vary seasonally and annually. The time of year that the borings were drilled and the history of precipitation prior to drilling should be known when using the groundwater readings on the boring logs to extrapolate water levels at other points in time. The water levels at the time of construction could be significantly different than what was recorded on the boring logs.

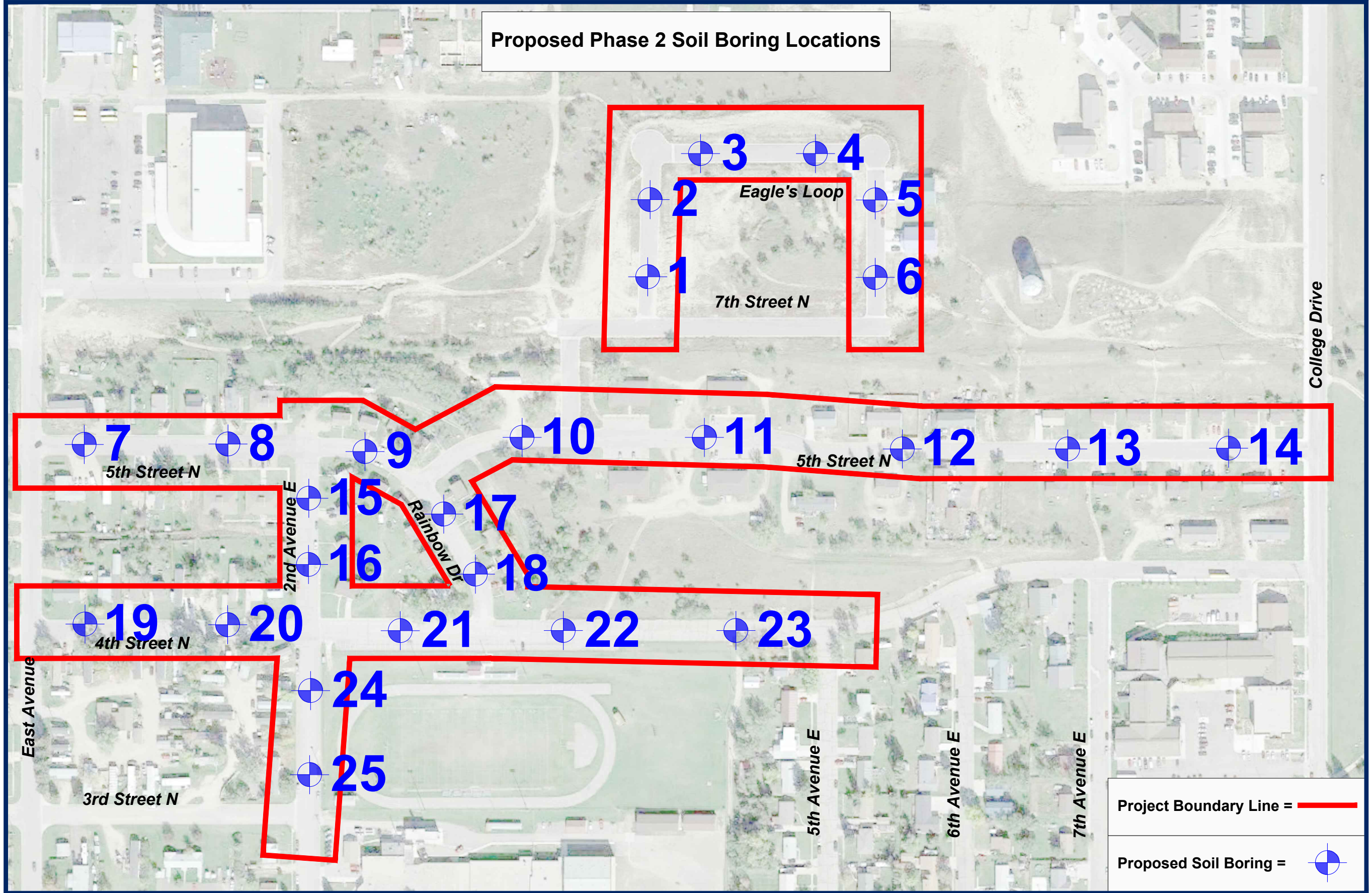
A.5 Soil Sampling


Soil sampling was done according to the procedures described by ASTM D 1586. Using this procedure, a 2-inch O.D. split barrel sampler is driven into the soil by a 140-lb weight falling 30 inches. After an initial set of 6 inches, the number of blows required to drive the sampler an additional 12 inches is known as penetration resistance or "N" value. The "N" value is an index of the relative density of cohesionless soils and the consistency of cohesive soils.


A representative number of samples of the soil obtained during our field operations will be retained for approximately one month. They will then be discarded unless we are notified otherwise.

A.6 Soil Classification Procedure

As the samples were obtained in the field they were visually and manually classified by the crew chief according to ASTM D 2488. Representative portions of all samples were then sealed and returned to the laboratory for further examination and for verification of the field classification. In addition, selected samples were then submitted to a program of laboratory tests. Logs of the borings indicating the depth and identification of the various strata, the "N" value, the laboratory test data, water level information and pertinent information regarding the method of maintaining and advancing the drill holes are also attached. Charts illustrating the soil classification procedures, the descriptive terminology and symbols used on the boring logs are also attached.



Project Boundary Line = 

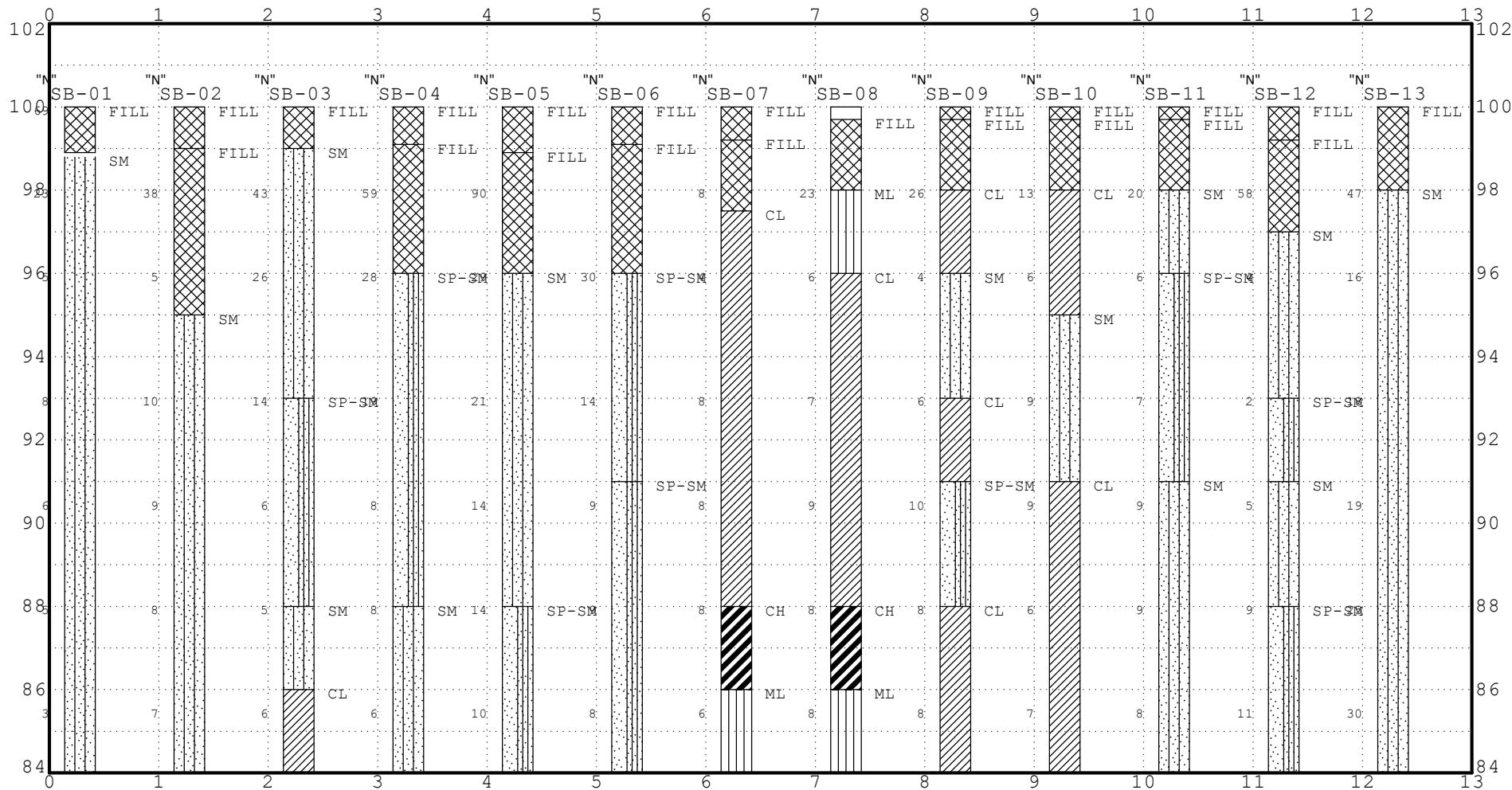
Proposed Soil Boring = 



**PROPOSED PHASE 2 SOIL BORINGS
NEW TOWN, NORTH DAKOTA**

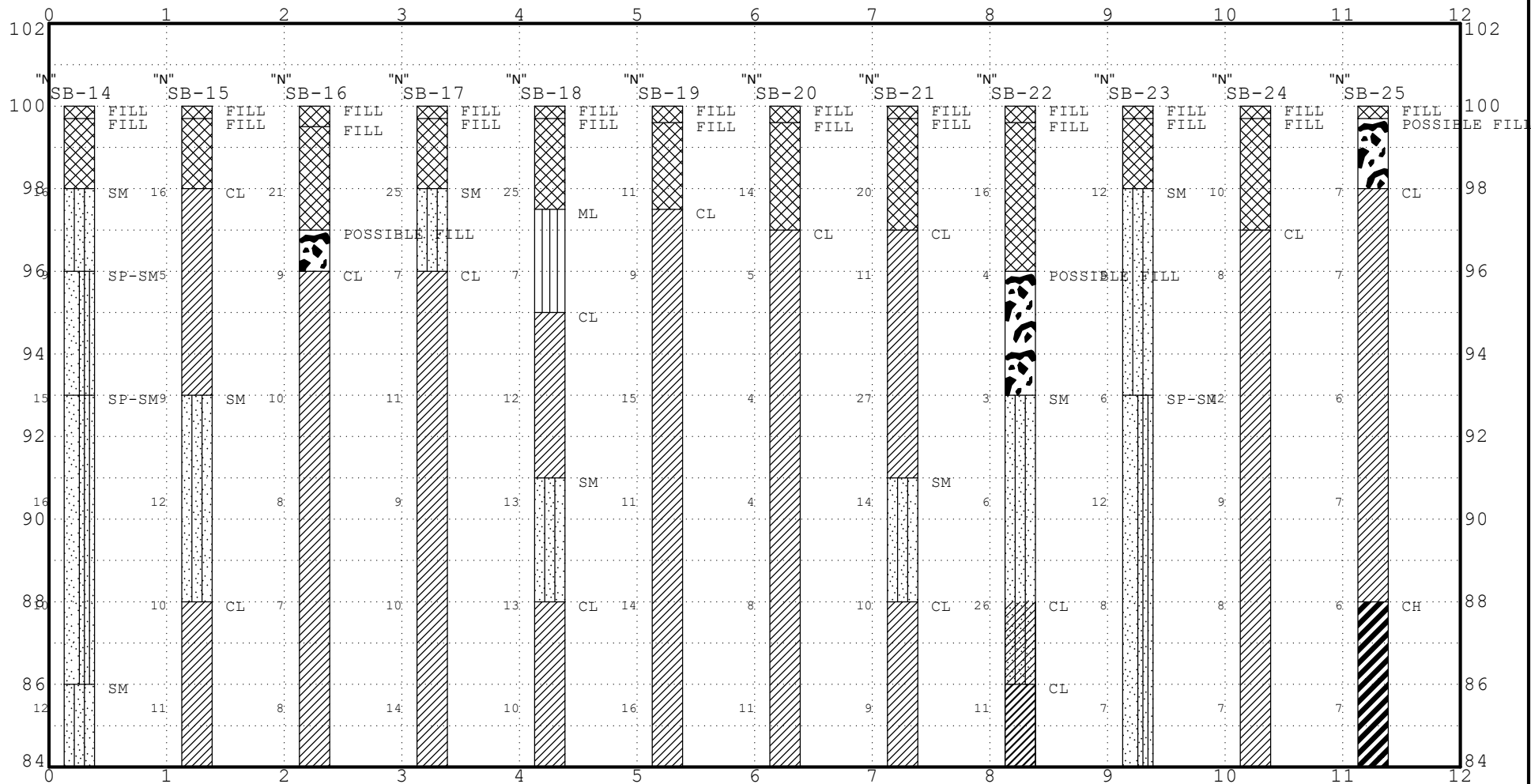


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Boring	North	East	Elev.	Depth
SB-01	0	1	100.0	16.0
SB-02	0	2	100.0	16.0
SB-03	0	3	100.0	16.0
SB-04	0	4	100.0	16.0
SB-05	0	5	100.0	16.0
SB-06	0	6	100.0	16.0
SB-07	0	7	100.0	16.0
SB-08	0	8	100.0	16.0
SB-09	0	9	100.0	16.0
SB-10	0	10	100.0	16.0
SB-11	0	11	100.0	16.0
SB-12	0	12	100.0	16.0

SOIL PROFILE DIAGRAM		
Material Testing Services, LLC		
2025 Street Improvements		
New Town, ND		
PROJECT #	DATE	PLATE
G24-024	Apr 24	1





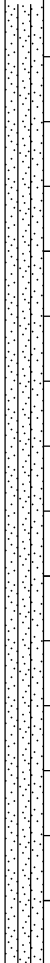






Boring	North	East	Elev.	Depth
SB-14	0	14	100.0	16.0
SB-15	0	15	100.0	16.0
SB-16	0	16	100.0	16.0
SB-17	0	17	100.0	16.0
SB-18	0	18	100.0	16.0
SB-19	0	19	100.0	16.0
SB-20	0	20	100.0	16.0
SB-21	0	21	100.0	16.0
SB-22	0	22	100.0	16.0
SB-23	0	23	100.0	16.0
SB-24	0	24	100.0	16.0
SB-25	0	25	100.0	16.0

SOIL PROFILE DIAGRAM		
Material Testing Services, LLC		
2025 Street Improvements		
New Town, ND		
PROJECT #	DATE	PLATE
G24-024	Apr 24	2

MATERIAL TESTING SERVICES, LLC
Box 634
Minot, North Dakota 58702
(701) 852-5553

SOIL BORING RECORD

BORING NUMBER **SB-01** SHEET **1** OF **1**
PROJECT **2025 Street Improvements**
PROJECT LOCATION **New Town, ND**
PROJECT NUMBER **G24-024**
START DATE **2/21/24** FINISH DATE **2/21/24**

LAYER DEPTH/ ELEVATION (FT)	SOIL DESCRIPTION	SYMBOLIC LOG	ELEVATION/ DEPTH (FT)	GEOLOGY	SAMPLE					TEST RESULTS					
					TYPE	LEGEND	D (pcf)	N VALUES	BLOWS/FT	WATER LEVEL	MOISTURE CONTENT (%)	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	Qu (psf)	
1.1	4" Asphalt, 10" Aggregate Base, Fabric		100.0	Fill	SB				69						
98.9	Silty Sand , with seams of clay, fine grained, brown, moist to wet, very loose to loose (SM)			Coarse Alluvium	SB				23						
			95.0		SB				5						
					SB				8						
			90.0		SB				6						
					SB				5						
			85.0		SB				3						
16.0	End of Boring NM = None Measured Frost depth = 4'														
84.0															

DRILLER	RB	WATER LEVEL MEASUREMENTS	DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING MUD LEVEL	WATER LEVEL
METHOD	4" FA from 0-14.5'		2/21/24	925	16	none	14		NM
LOGGER	JF								
REVIEWER	AF								
DRILL RIG	CME 45								

MATERIAL TESTING SERVICES, LLC
Box 634
Minot, North Dakota 58702
(701) 852-5553

SOIL BORING RECORD

BORING NUMBER **SB-02** SHEET **1** OF **1**
PROJECT **2025 Street Improvements**
PROJECT LOCATION **New Town, ND**
PROJECT NUMBER **G24-024**
START DATE **2/21/24** FINISH DATE **2/21/24**

LAYER DEPTH/ ELEVATION (FT)	SOIL DESCRIPTION	SYMBOLIC LOG	ELEVATION/ DEPTH (FT)	GEOLOGY	SAMPLE					TEST RESULTS						
					TYPE	LEGEND	D (pcf)	N VALUES	BLOWS/FT	WATER LEVEL	MOISTURE CONTENT (%)	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	Qu (psf)		
100.0	4" Asphalt, 8" Aggregate Base, Fabric		100.0	Fill	AU											
99.0	Fill, mostly Silty Sand , fine grained, dark brown				SB			38								
5.0					SB			5								
95.0	Silty Sand , fine grained, brown, moist, loose (SM)		95.0	Coarse Alluvium	SB			10								
					SB			9								
					SB			8								
					SB			7								
16.0			85.0													
84.0	End of Boring NM = None Measured Frost depth = 4'															

DRILLER	RB	WATER LEVEL MEASUREMENTS	DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING MUD LEVEL	WATER LEVEL
METHOD	4" FA from 0-14.5'		2/21/24		16	none	13.9		NM
LOGGER	JF								
REVIEWER	AF								
DRILL RIG	CME 45								

MATERIAL TESTING SERVICES, LLC

Box 634

Minot, North Dakota 58702

(701) 852-5553

SOIL BORING RECORD

BORING NUMBER

SB-03

SHEET 1 OF 1

PROJECT

2025 Street Improvements

PROJECT LOCATION

New Town, ND

PROJECT NUMBER

G24-024

START DATE

2/21/24

FINISH DATE

2/21/24

LAYER DEPTH/ ELEVATION (FT)	SOIL DESCRIPTION	SYMBOLIC LOG	ELEVATION/ DEPTH (FT)	GEOLOGY	SAMPLE					TEST RESULTS						
					TYPE	LEGEND	D (pcf)	N VALUES	BLOWS/FT	WATER LEVEL	MOISTURE CONTENT (%)	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	Qu (psf)		
1.0	5" Asphalt, 7" Aggregate Base, Fabric		100.0	Fill	AU											
99.0	Silty Sand , fine to medium grained, trace gravel, brown, moist, medium dense (SM)			Coarse Alluvium	SB			43								
7.0			95.0		SB			26								
93.0	Sand , with silt, fine to medium grained, brown, moist, loose to medium dense (SP-SM)				SB			14								
12.0			90.0		SB			6								
88.0	Silty Sand , fine grained, brown, moist, loose (SM)				SB			5								
14.0			86.0													
86.0	Lean Clay , with seams of sand, brown, soft (CL)			Fine Alluvium	SB			6								
16.0			85.0													
84.0	End of Boring NM = None Measured Frost depth = 4'															

DRILLER	RB	WATER LEVEL MEASUREMENTS	DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING MUD LEVEL	WATER LEVEL
METHOD	4" FA from 0-14.5'		2/21/24		16	none	14.7		NM
LOGGER	JF								
REVIEWER	AF								
DRILL RIG	CME 45								

MATERIAL TESTING SERVICES, LLC
Box 634
Minot, North Dakota 58702
(701) 852-5553

SOIL BORING RECORD

BORING NUMBER **SB-09** SHEET **1** OF **1**
PROJECT **2025 Street Improvements**
PROJECT LOCATION **New Town, ND**
PROJECT NUMBER **G24-024**
START DATE **2/21/24** FINISH DATE **2/21/24**

LAYER DEPTH/ ELEVATION (FT)	SOIL DESCRIPTION	SYMBOLIC LOG	ELEVATION/ DEPTH (FT)	GEOLOGY	SAMPLE					TEST RESULTS				
					TYPE	LEGEND	D (pcf)	N VALUES	BLOWS/FT	WATER LEVEL	MOISTURE CONTENT (%)	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	Qu (psf)
0.3 99.7	4" Asphalt Fill, Silty Sand , fine to medium grained, a little gravel, brown		100.0	Fill	AU									
2.0 98.0	Sandy Lean Clay , brown			Fine Alluvium	SB			26		13				
4.0 96.0	Silty Sand , fine grained, brown, moist, very loose (SM)			Coarse Alluvium	SB			4						
7.0 93.0	Sandy Lean Clay , brown, soft (CL)		95.0	Fine Alluvium	SB			6						
9.0 91.0	Sand , with silt, fine grained, brown, moist, loose (SP-SM)			Coarse Alluvium	SB			10						
12.0 88.0	Sandy Lean Clay , with seams of sand, brown, soft (CL)		90.0	Fine Alluvium	SB			8						
16.0 84.0	End of Boring NM = None Measured Frost depth = 3'		85.0		SB			8						

DRILLER	RB	WATER LEVEL MEASUREMENTS	DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING MUD LEVEL	WATER LEVEL
METHOD	4" FA from 0-14.5'		2/21/24		16	none	14.9		NM
LOGGER	JF								
REVIEWER	AF								
DRILL RIG	CME 45								

MATERIAL TESTING SERVICES, LLC

**Box 634
Minot, North Dakota 58702
(701) 852-5553**

SOIL BORING RECORD

BORING NUMBER **SB-10**

SHEET **1** OF **1**

PROJECT

2025 Street Improvements

PROJECT LOCATION

New Town, ND

PROJECT NUMBER

G24-024

START DATE

2/21/24

FINISH DATE

2/21/24

LAYER DEPTH/ ELEVATION (FT)	SOIL DESCRIPTION	SYMBOLIC LOG	ELEVATION/ DEPTH (FT)	GEOLOGY	SAMPLE					TEST RESULTS					
					TYPE	LEGEND	D (pcf)	N VALUES	BLOWS/FT	WATER LEVEL	MOISTURE CONTENT (%)	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	Qu (psf)	
0.3 99.7	3" Asphalt Fill, mostly Lean Clay , brown		100.0	Fill	AU										
2.0 98.0	Lean Clay , with seams of sand, brown, soft (CL)			Fine Alluvium	SB			13							
5.0 95.0	Silty Sand , fine grained, brown, moist, loose (SM)			Coarse Alluvium	SB			6							
9.0 91.0	Lean Clay , with seams of sand, brown, soft to firm (CL)			Fine Alluvium	SB			9							
16.0 84.0	End of Boring NM = None Measured Frost depth = 3'		90.10 85.00		SB			6							
					SB			7							

DRILLER	RB	WATER LEVEL MEASUREMENTS	DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING MUD LEVEL	WATER LEVEL
METHOD	4" FA from 0-14.5'		2/21/24		16	none	14.2		NM
LOGGER	JF								
REVIEWER	AF								
DRILL RIG	CME 45								

MATERIAL TESTING SERVICES, LLC

Box 634

Minot, North Dakota 58702

(701) 852-5553

SOIL BORING RECORD

BORING NUMBER

SB-11

SHEET 1 OF 1

PROJECT

2025 Street Improvements

PROJECT LOCATION

New Town, ND

PROJECT NUMBER

G24-024

START DATE

2/21/24

FINISH DATE

2/21/24

LAYER DEPTH/ ELEVATION (FT)	SOIL DESCRIPTION	SYMBOLIC LOG	ELEVATION/ DEPTH (FT)	GEOLOGY	SAMPLE					TEST RESULTS					
					TYPE	LEGEND	D (pcf)	N VALUES	BLOWS/FT	WATER LEVEL	MOISTURE CONTENT (%)	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	Qu (psf)	
0.3	3.5" Asphalt		100.0	Fill	AU										
99.7	<u>Fill, mostly Silty Sand</u> , fine to medium grained, some gravel, brown														
2.0															
98.0	<u>Silty Sand</u> , fine grained, brown, moist (SM)			Coarse Alluvium	SB			20							
4.0															
96.0	<u>Sand</u> , with silt, fine to medium grained, brown, moist, loose (SP-SM)				SB			6							
			95.0												
					SB			7							
9.0															
91.0	<u>Silty Sand</u> , fine grained, brown, moist, loose (SM)				SB			9							
			90.0												
					SB			9							
					SB			8							
			85.0												
16.0															
84.0	End of Boring NM = None Measured Frost depth = 3'														

DRILLER	RB	WATER LEVEL MEASUREMENTS	DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING MUD LEVEL	WATER LEVEL
METHOD	4" FA from 0-14.5'		2/21/24		16	none	13.9		NM
LOGGER	JF								
REVIEWER	AF								
DRILL RIG	CME 45								

MATERIAL TESTING SERVICES, LLC
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SOIL BORING RECORD

BORING NUMBER **SB-12** SHEET **1** OF **1**
PROJECT **2025 Street Improvements**
PROJECT LOCATION **New Town, ND**
PROJECT NUMBER **G24-024**
START DATE **2/21/24** FINISH DATE **2/21/24**

LAYER DEPTH/ ELEVATION (FT)	SOIL DESCRIPTION	SYMBOLIC LOG	ELEVATION/ DEPTH (FT)	GEOLOGY	SAMPLE					TEST RESULTS				
					TYPE	LEGEND	D (pcf)	N VALUES	BLOWS/FT	WATER LEVEL	MOISTURE CONTENT (%)	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	Qu (psf)
0.8	3" Asphalt, 6" Aggregate Base		100.0	Fill	AU									
99.2	Fill, mostly Silty Sand , fine grained, dark brown				SB			58						
3.0														
97.0	Silty Sand , fine to medium grained, brown, very loose (SM)			Coarse Alluvium	SB			4						
7.0														
93.0	Sand , with silt, fine to medium grained, trace gravel, brown, moist, very loose (SP-SM)		95.0		SB			2						
9.0														
91.0	Silty Sand , fine grained, brown, moist, loose (SM)		90.0		SB			5						
12.0														
88.0	Sand , with silt, fine grained, brown, moist, loose to medium dense (SP-SM)				SB			9						
16.0														
84.0	End of Boring NM = None Measured Frost depth = 4'		85.0		SB			11						

DRILLER	RB	WATER LEVEL MEASUREMENTS	DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING MUD LEVEL	WATER LEVEL
METHOD	4" FA from 0-14.5'		2/21/24		16	none	14		NM
LOGGER	JF								
REVIEWER	AF								
DRILL RIG	CME 45								

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SOIL BORING RECORD

BORING NUMBER **SB-13**

SHEET **1** OF **1**

PROJECT

2025 Street Improvements

PROJECT LOCATION

New Town, ND

PROJECT NUMBER



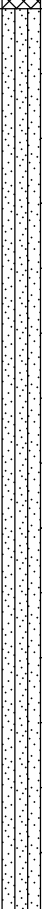







G24-024

START DATE

2/23/24

FINISH DATE

2/23/24

LAYER DEPTH/ ELEVATION (FT)	SOIL DESCRIPTION	SYMBOLIC LOG	ELEVATION/ DEPTH (FT)	GEOLOGY	SAMPLE					TEST RESULTS					
					TYPE	LEGEND	D (pcf)	N VALUES	BLOWS/FT	WATER LEVEL	MOISTURE CONTENT (%)	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	Qu (psf)	
100.0	Fill, mostly Silty Sand , fine to medium grained, with gravel, brown		100.0		AU										
2.0															
98.0	Silty Sand , fine grained, brown, moist, medium dense (SM)		98.0		SB			47				13			
					SB			16				8			
			95.5												
			95.0		SB			18							
					SB			19							
			90.10		SB			25							
					SB			30							
			85.15		SB										
16.0															
84.0	End of Boring NM = None Measured Frost depth = 3'														

DRILLER	RB	WATER LEVEL MEASUREMENTS	DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING MUD LEVEL	WATER LEVEL
METHOD	4" FA from 0-14.5'		2/23/24		16	none	14.1		NM
LOGGER	JF								
REVIEWER	AF								
DRILL RIG	CME 45								

MATERIAL TESTING SERVICES, LLC

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SOIL BORING RECORD

BORING NUMBER

SB-14

SHEET **1** OF **1**

PROJECT

2025 Street Improvements

PROJECT LOCATION

New Town, ND

PROJECT NUMBER













G24-024

START DATE

2/23/24

FINISH DATE

2/23/24

LAYER DEPTH/ ELEVATION (FT)	SOIL DESCRIPTION	SYMBOLIC LOG	ELEVATION/ DEPTH (FT)	GEOLOGY	SAMPLE					TEST RESULTS					
					TYPE	LEGEND	D (pcf)	N VALUES	BLOWS/FT	WATER LEVEL	MOISTURE CONTENT (%)	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	Qu (psf)	
0.3 99.7	4" Asphalt Fill, mostly Silty Sand , fine grained, trace gravel, brown		100.0	Fill	AU										
2.0 98.0	Silty Sand , fine to medium grained, trace gravel, brown (SM)			Coarse Alluvium	SB			16							
4.0 96.0	Sand , with silt, fine to medium grained, trace gravel, brown, moist, loose (SP-SM)				SB			9							
7.0 93.0	Silty Sand , fine to medium grained, a little gravel, brown, moist, loose to medium dense (SP-SM)		95.5		SB			15							
10.0 90.0			90.0		SB			16							
14.0 86.0	Silty Sand , fine grained, brown, moist, medium dense (SM)				SB			10							
16.0 84.0	End of Boring NM = None Measured Frost depth = 3'		85.0		SB			12							

DRILLER	RB	WATER LEVEL MEASUREMENTS	DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING MUD LEVEL	WATER LEVEL
METHOD	4" FA from 0-14.5'		2/23/24		16	none	14.9		NM
LOGGER	JF								
REVIEWER	AF								
DRILL RIG	CME 45								

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SOIL BORING RECORD

BORING NUMBER **SB-15** SHEET **1** OF **1**
PROJECT **2025 Street Improvements**
PROJECT LOCATION **New Town, ND**
PROJECT NUMBER **G24-024**
START DATE **2/23/24** FINISH DATE **2/23/24**

LAYER DEPTH/ ELEVATION (FT)	SOIL DESCRIPTION	SYMBOLIC LOG	ELEVATION/ DEPTH (FT)	GEOLOGY	SAMPLE					TEST RESULTS				
					TYPE	LEGEND	D (pcf)	N VALUES	BLOWS/FT	WATER LEVEL	MOISTURE CONTENT (%)	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	Qu (psf)
0.0 99.7	4" Asphalt <u>Fill, mostly Silty Sand</u> , fine grained, trace gravel, dark brown		100.0	Fill	AU									
2.0 98.0	<u>Sandy Lean Clay</u> , with seams of sand, brown, soft (CL)			Fine Alluvium	SB			16						
					SB			5						
7.0 93.0	<u>Silty Sand</u> , fine grained, brown, moist, loose to medium dense (SM)		95.0	Coarse Alluvium	SB			9						
					SB			12						
12.0 88.0	<u>Lean Clay</u> , brown, firm (CL)		90.0	Fine Alluvium	SB			10						
					SB			11						
16.0 84.0	End of Boring NM = None Measured Frost depth = 3'		85.0											

DRILLER	RB	WATER LEVEL MEASUREMENTS	DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING MUD LEVEL	WATER LEVEL
METHOD	4" FA from 0-14.5'		2/23/24		16	none	14		NM
LOGGER	JF								
REVIEWER	AF								
DRILL RIG	CME 45								

MATERIAL TESTING SERVICES, LLC

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SOIL BORING RECORD

BORING NUMBER

SB-16

SHEET 1 OF 1

PROJECT

2025 Street Improvements

PROJECT LOCATION

New Town, ND

PROJECT NUMBER

G24-024

START DATE

2/23/24

FINISH DATE

2/23/24

LAYER DEPTH/ ELEVATION (FT)	SOIL DESCRIPTION	SYMBOLIC LOG	ELEVATION/ DEPTH (FT)	GEOLOGY	SAMPLE					TEST RESULTS				
					TYPE	LEGEND	D (pcf)	N VALUES	BLOWS/FT	WATER LEVEL	MOISTURE CONTENT (%)	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	Qu (psf)
0.5	6" Asphalt		100.0	Fill	AU									
99.5	<u>Fill, mostly Silty Sand</u> , fine to medium grained, trace gravel, brown				SB			21						
3.0														
97.0	<u>Possible Fill, mostly Sandy Lean Clay</u> , dark brown			Possible Fill										
4.0														
96.0	<u>Lean Clay</u> , with seams of sand, brown, soft to firm (CL)			Fine Alluvium	SB			9						
			95.5											
					SB			10						
			90.10		SB			8						
			90.0											
					SB			7						
			85.15		SB			8						
			85.0											
16.0														
84.0	End of Boring NM = None Measured Frost depth = 3'													

DRILLER	RB	WATER LEVEL MEASUREMENTS	DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING MUD LEVEL	WATER LEVEL
METHOD	4" FA from 0-14.5'		2/23/24		16	none	14.1		NM
LOGGER	JF								
REVIEWER	AF								
DRILL RIG	CME 45								

MATERIAL TESTING SERVICES, LLC

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SOIL BORING RECORD

BORING NUMBER **SB-17**

SHEET **1** OF **1**

PROJECT

2025 Street Improvements

PROJECT LOCATION

New Town, ND

PROJECT NUMBER

G24-024

START DATE

2/21/24

FINISH DATE

2/21/24

LAYER DEPTH/ ELEVATION (FT)	SOIL DESCRIPTION	SYMBOLIC LOG	ELEVATION/ DEPTH (FT)	GEOLOGY	SAMPLE					TEST RESULTS							
					TYPE	LEGEND	D (pcf)	N VALUES	BLOWS/FT	WATER LEVEL	MOISTURE CONTENT (%)	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	Qu (psf)			
0.0 99.7	4" Asphalt Fill, mostly Lean Clay, dark brown	[Cross-hatched pattern]	100.0	Fill	AU	[Solid black]											
2.0 98.0	Silty Sand, fine grained, brown, moist (SM)	[Dotted pattern]		Coarse Alluvium	SB	[X-pattern]		25									
4.0 96.0	Lean Clay, with seams of silt and sand, brown, soft to firm (CL)	[Diagonal hatching]		Fine Alluvium	SB	[X-pattern]		7				19	31	21			
			95.5														
					SB	[X-pattern]		11									
			90.10														
			90.0		SB	[X-pattern]		9									
					SB	[X-pattern]		10									
					SB	[X-pattern]		14									
16.0 84.0	End of Boring NM = None Measured Frost depth = 3'		85.0														

DRILLER	RB	WATER LEVEL MEASUREMENTS	DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING MUD LEVEL	WATER LEVEL
METHOD	4" FA from 0-14.5'		2/21/24		16	none	13.9		NM
LOGGER	JF								
REVIEWER	AF								
DRILL RIG	CME 45								

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SOIL BORING RECORD

BORING NUMBER **SB-18** SHEET **1** OF **1**
PROJECT **2025 Street Improvements**
PROJECT LOCATION **New Town, ND**
PROJECT NUMBER **G24-024**
START DATE **2/21/24** FINISH DATE **2/21/24**

LAYER DEPTH/ ELEVATION (FT)	SOIL DESCRIPTION	SYMBOLIC LOG	ELEVATION/ DEPTH (FT)	GEOLOGY	SAMPLE					TEST RESULTS							
					TYPE	LEGEND	D (pcf)	N VALUES	BLOWS/FT	WATER LEVEL	MOISTURE CONTENT (%)	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	Qu (psf)			
0.3 99.7	4" Asphalt Fill, mostly Sandy Lean Clay , trace gravel, dark brown		100.0	Fill	AU												
2.5 97.5	Sandy Silt , brown, moist (ML)			Fine Alluvium	SB			25									
5.0 95.0	Lean Clay , with seams of sand and silt, brown, soft to firm (CL)		95.0		SB			7									
9.0 91.0	Silty Sand , fine grained, brown, moist, medium dense (SM)			Coarse Alluvium	SB			12									
12.0 88.0	Lean Clay , brown, firm (CL)		90.10		SB			13									
16.0 84.0	Lean Clay , brown, firm (CL)		85.15		SB			10									
	End of Boring NM = None Measured Frost depth = 3'																

DRILLER	RB	WATER LEVEL MEASUREMENTS	DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING MUD LEVEL	WATER LEVEL
METHOD	4" FA from 0-14.5'		2/21/24		16	none	14.1		NM
LOGGER	JF								
REVIEWER	AF								
DRILL RIG	CME 45								

MATERIAL TESTING SERVICES, LLC
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SOIL BORING RECORD

BORING NUMBER **SB-19** SHEET **1** OF **1**
PROJECT **2025 Street Improvements**
PROJECT LOCATION **New Town, ND**
PROJECT NUMBER **G24-024**
START DATE **2/23/24** FINISH DATE **2/23/24**

LAYER DEPTH/ ELEVATION (FT)	SOIL DESCRIPTION	SYMBOLIC LOG	ELEVATION/ DEPTH (FT)	GEOLOGY	SAMPLE					TEST RESULTS							
					TYPE	LEGEND	D (pcf)	N VALUES	BLOWS/FT	WATER LEVEL	MOISTURE CONTENT (%)	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	Qu (psf)			
0.4	5" Asphalt		100.0	Fill	AU												
99.6	<u>Fill, mostly Sandy Lean Clay</u> , trace gravel, dark brown																
2.5					SB				11								
97.5	<u>Lean Clay</u> , with seams of sand and silt, brown, soft to firm (CL)			Fine Alluvium													
			95.0		SB				9								
					SB				15								
			90.0		SB				11								
					SB				14								
			85.0		SB				16								
16.0																	
84.0	End of Boring NM = None Measured Frost depth = 3'																

DRILLER	RB	WATER LEVEL MEASUREMENTS	DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING MUD LEVEL	WATER LEVEL
METHOD	4" FA from 0-14.5'		2/23/24		16	none	13.9		NM
LOGGER	JF								
REVIEWER	AF								
DRILL RIG	CME 45								

MATERIAL TESTING SERVICES, LLC

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SOIL BORING RECORD

BORING NUMBER **SB-20**

SHEET **1** OF **1**

PROJECT

2025 Street Improvements

PROJECT LOCATION

New Town, ND

PROJECT NUMBER

G24-024

START DATE

2/23/24

FINISH DATE

2/23/24

LAYER DEPTH/ ELEVATION (FT)	SOIL DESCRIPTION	SYMBOLIC LOG	ELEVATION/ DEPTH (FT)	GEOLOGY	SAMPLE					TEST RESULTS					
					TYPE	LEGEND	D (pcf)	N VALUES	BLOWS/FT	WATER LEVEL	MOISTURE CONTENT (%)	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	Qu (psf)	
0.4 99.6	5" Asphalt Fill, mostly Sandy Lean Clay , trace gravel, dark brown		100.0	Fill	AU										
3.0 97.0	Lean Clay , with seams of sand and silt, brown, very soft to firm (CL)			Fine Alluvium	SB			14							
			95.5		SB			5							
					SB			4							
			90.10		SB			4							
					SB			8							
			85.15		SB			11							
16.0 84.0	End of Boring NM = None Measured Frost depth = 2'														

DRILLER	RB	WATER LEVEL MEASUREMENTS	DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING MUD LEVEL	WATER LEVEL
METHOD	4" FA from 0-14.5'		2/23/24		16	none	14.1		NM
LOGGER	JF								
REVIEWER	AF								
DRILL RIG	CME 45								

MATERIAL TESTING SERVICES, LLC
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SOIL BORING RECORD

BORING NUMBER **SB-22** SHEET **1** OF **1**
PROJECT **2025 Street Improvements**
PROJECT LOCATION **New Town, ND**
PROJECT NUMBER **G24-024**
START DATE **2/23/24** FINISH DATE **2/23/24**

LAYER DEPTH/ ELEVATION (FT)	SOIL DESCRIPTION	SYMBOLIC LOG	ELEVATION/ DEPTH (FT)	GEOLOGY	SAMPLE					TEST RESULTS						
					TYPE	LEGEND	D (pcf)	N VALUES	BLOWS/FT	WATER LEVEL	MOISTURE CONTENT (%)	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	Qu (psf)		
0.4 99.6	4.5" Asphalt Fill, mostly Sandy Lean Clay , dark brown		100.0	Fill	AU											
4.0 96.0	Possible Fill, Silty Sand , fine grained, dark brown		95.0	Possible Fill	SB			16	4							
7.0 93.0	Silty Sand , fine grained, brown, moist, very loose to medium dense (SM)			Coarse Alluvium	SB			3								
	Lean Clay , brown, firm (CL)		10.0 90.0		SB			6								
14.0 86.0	Lean Clay , with seams of sand, brown, soft to firm (CL)		15.0 85.0	Fine Alluvium	SB			26	11							
16.0 84.0	End of Boring NM = None Measured Frost depth = 3'															

DRILLER	RB	WATER LEVEL MEASUREMENTS	DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING MUD LEVEL	WATER LEVEL
METHOD	4" FA from 0-14.5'		2/23/24		16	none	14.5		NM
LOGGER	JF								
REVIEWER	AF								
DRILL RIG	CME 45								

MATERIAL TESTING SERVICES, LLC

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SOIL BORING RECORD

BORING NUMBER

SB-23

SHEET 1 OF 1

PROJECT

2025 Street Improvements

PROJECT LOCATION

New Town, ND

PROJECT NUMBER

G24-024

START DATE

2/23/24

FINISH DATE

2/23/24

LAYER DEPTH/ ELEVATION (FT)	SOIL DESCRIPTION	SYMBOLIC LOG	ELEVATION/ DEPTH (FT)	GEOLOGY	SAMPLE					TEST RESULTS						
					TYPE	LEGEND	D (pcf)	N VALUES	BLOWS/FT	WATER LEVEL	MOISTURE CONTENT (%)	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	Qu (psf)		
0.3	3" Asphalt		100.0	Fill	AU											
99.7	<u>Fill, mostly Silty Sand</u> , fine grained, trace gravel, dark brown															
2.0																
98.0	<u>Silty Sand</u> , fine grained, brown, moist, loose (SM)			Coarse Alluvium	SB			12								
					SB			5								
			95.0													
7.0																
93.0	<u>Sand</u> , with silt, fine grained, brown, moist, loose to medium dense (SP-SM)				SB			6								
			90.0		SB			12								
					SB			8								
			85.0		SB			7								
16.0																
84.0	End of Boring NM = None Measured Frost depth = 3'															

DRILLER	RB	WATER LEVEL MEASUREMENTS	DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING MUD LEVEL	WATER LEVEL
METHOD	4" FA from 0-14.5'		2/23/24		16	none	14.2		NM
LOGGER	JF								
REVIEWER	AF								
DRILL RIG	CME 45								

MATERIAL TESTING SERVICES, LLC
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SOIL BORING RECORD

BORING NUMBER **SB-24** SHEET **1** OF **1**
PROJECT **2025 Street Improvements**
PROJECT LOCATION **New Town, ND**
PROJECT NUMBER **G24-024**
START DATE **2/23/24** FINISH DATE **2/23/24**

LAYER DEPTH/ ELEVATION (FT)	SOIL DESCRIPTION	SYMBOLIC LOG	ELEVATION/ DEPTH (FT)	GEOLOGY	SAMPLE					TEST RESULTS						
					TYPE	LEGEND	D (pcf)	N VALUES	BLOWS/FT	WATER LEVEL	MOISTURE CONTENT (%)	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	Qu (psf)		
0.0	4" Asphalt		100.0	Fill	AU											
99.7	<u>Fill, mostly Sandy Lean Clay</u> , brown to dark brown				SB			10								
3.0					SB			8								
97.0	<u>Lean Clay</u> , with seams of sand and silt, brown, soft to firm (CL)			Fine Alluvium	SB			12								
			95.5		SB			9								
			90.0		SB			8								
			85.0		SB			7								
16.0	End of Boring															
84.0	NM = None Measured Frost depth = 3'															

DRILLER	RB	WATER LEVEL MEASUREMENTS	DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING MUD LEVEL	WATER LEVEL
METHOD	4" FA from 0-14.5'		2/23/24		16	none	14.4		NM
LOGGER	JF								
REVIEWER	AF								
DRILL RIG	CME 45								

MATERIAL TESTING SERVICES, LLC
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SOIL BORING RECORD

BORING NUMBER **SB-25** SHEET **1** OF **1**
PROJECT **2025 Street Improvements**
PROJECT LOCATION **New Town, ND**
PROJECT NUMBER **G24-024**
START DATE **2/23/24** FINISH DATE **2/23/24**

LAYER DEPTH/ ELEVATION (FT)	SOIL DESCRIPTION	SYMBOLIC LOG	ELEVATION/ DEPTH (FT)	GEOLOGY	SAMPLE					TEST RESULTS						
					TYPE	LEGEND	D (pcf)	N VALUES	BLOWS/FT	WATER LEVEL	MOISTURE CONTENT (%)	LIQUID LIMIT (%)	PLASTIC LIMIT (%)	Qu (psf)		
100.0	4" Asphalt	XXXX	100.0	Fill	AU											
99.7	Possible Fill, mostly Lean Clay, dark brown			Possible Fill												
2.0																
98.0	Lean Clay, with seams of sand and silt, brown, soft to firm (CL)			Fine Alluvium	SB			7								
					SB			7								
			95.0													
					SB			6								
					SB			7								
			90.0													
12.0					SB			6								
88.0	Fat Clay, brown, soft (CH)				SB			7								
					SB			7								
			85.0													
16.0																
84.0	End of Boring NM = None Measured Frost depth = 3'															

DRILLER	RB	WATER LEVEL MEASUREMENTS	DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING MUD LEVEL	WATER LEVEL
METHOD	4" FA from 0-14.5'		2/23/24		16	none	14.1		NM
LOGGER	JF								
REVIEWER	AF								
DRILL RIG	CME 45								

**SYMBOLS AND DESCRIPTIVE TERMINOLOGY
ON TEST BORING LOG**

SYMBOLS FOR DRILLING AND SAMPLING		SYMBOLS FOR LABORATORY TESTS																																																																																																																			
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DESCRIPTIONS OF N-VALUES VS. SOIL PROPERTIES				DESCRIPTIONS OF SOIL CONDITIONS	
N Value	Density	N Value	Consistency	Condition	Description
0 - 4	Very loose	0 - 4	Very soft	Lamination	Up to 1/2" thick stratum
5 - 10	Loose	5 - 8	Soft	Layer	1/2" to 6" thick stratum
11 - 30	Medium dense	9 - 15	Firm	Dry	Powdery, no noticeable water
31 - 50	Dense	16 - 30	Hard	Moist	Below saturation
Over 50	Very dense	Over 30	Very hard	Wet	Saturated, above liquid limit
				Waterbearing	Pervious soil below water
				Varved	Alternating laminations of any combinations of clay, silt and fine grained sand

DESCRIPTIONS OF GRAVEL PROPORTIONS IN SOILS			DESCRIPTIONS OF PARTICLE SIZES	
Soil Type	Description	Range, %	Material Type	Size
Coarse grained soils	A little gravel	2 - 14	Boulders	Over 12"
Coarse grained soils	With gravel	15 - 49	Cobbles	3" - 12"
Fine grained soils:			Coarse gravel	3/4" - 3"
71-85% passing #200 sieve	A little gravel	2 - 7	Fine gravel	#4 sieve - 3/4"
71-85% passing #200 sieve	With gravel	8 - 29	Coarse sand	#4 - #10 sieve
70% passing #200 sieve	A little gravel	2 - 14	Medium sand	#10 - #40 sieve
70% passing #200 sieve	With gravel	15 - 24	Fine sand	#40 - #200 sieve
70% passing #200 sieve	Gravelly	16 - 49	Silt	100% passing #200 sieve and > 0.002mm
			Clay	100% passing #200 sieve and < 0.002mm

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS		TYPICAL DESCRIPTIONS	
			GRAPH	LETTER		
COARSE GRAINED SOILS MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES	
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES	
		CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES	
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES	
	FINE GRAINED SOILS MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50	CLEAN SANDS (LITTLE OR NO FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
			SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SC	CLAYEY SANDS, SAND - CLAY MIXTURES
			SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
		SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50	SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
			SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
			SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		CH	INORGANIC CLAYS OF HIGH PLASTICITY
HIGHLY ORGANIC SOILS				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS	
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS	

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NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

APPENDIX B – LABORATORY TEST PROGRAM

- B.1 Testing Scope
- B.2 Test Methods

Attachments to Appendix B

Standard Proctor
CBR
Mechanical Sieve Analysis

B. LABORATORY TEST RESULTS

B.1 Testing Scope

Laboratory testing was conducted to characterize soil properties including Atterberg limits (liquid and plastic limits), mechanical sieve analysis, moisture contents, moisture-density relationship (Proctor), and CBR.

B.1. Test Methods

Testing and classification of soils was performed in accordance with the following standards as applicable:

Description	ASTM Method
Unified soil classification system	D 2487
Atterberg limits	D 4318
In-situ moisture content	D 2216
Sieve analysis	D 422, C 117, C 136
Moisture-density relationship	D 698 or D 1557
In-situ dry density	Direct measurement
Unconfined compression, Qu	D 2166
CBR	D 1883

MATERIAL TESTING SERVICES, LLC

P.O. Box 634
Minot, ND 58702
(701) 852-5553

MOISTURE-DENSITY RELATIONSHIP

7101 W 2nd Avenue
Williston, ND 58801
(701) 572-4226

PROJECT: 2025 STREET IMPROVEMENTS
NEW TOWN, ND

DATE: 8-Apr-24

COPIES TO:

REPORTED TO: City of New Town
c/o AES2
601 18th Ave SE, Suite 102
Minot, ND 58701

Laboratory Number G24-024

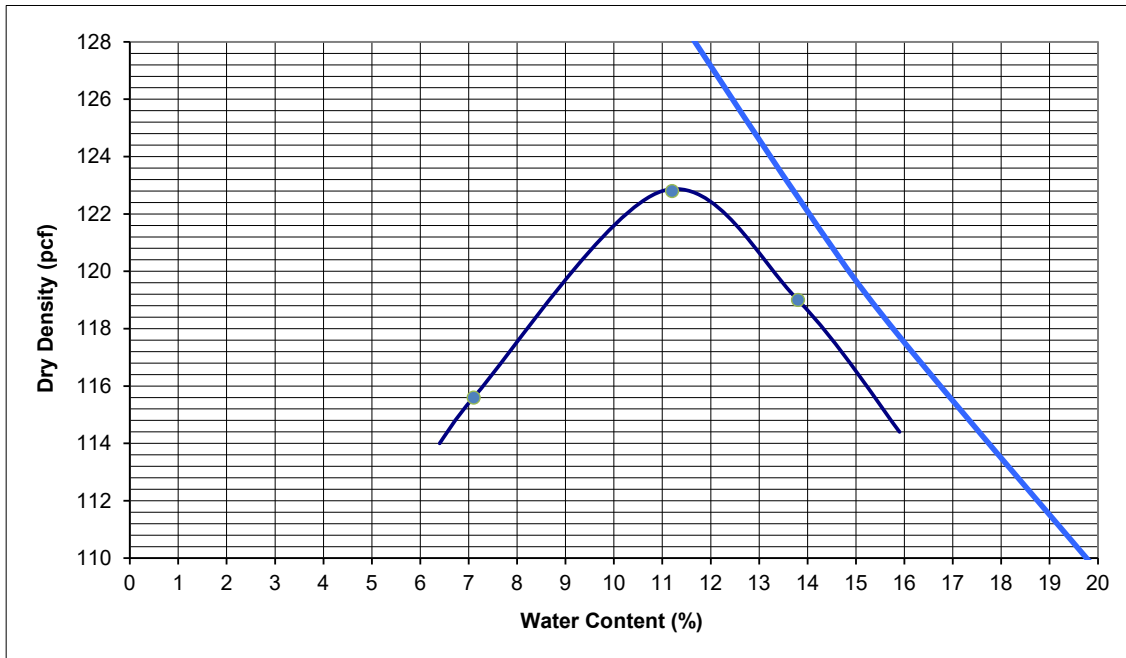
Sample Number: Bulk 1
Sample ID: Composite Sample - SB-1-4, 1-5'
Sampled 26-Jan-24
Tested 21-Feb-24
Soil Description: Silty Sand, brown
Soil Classification: SM

Sieve Analysis	
ASTM D422, D1140	
<u>% Passing</u>	
3/8"	100
#4	98
#8	95
#16	92
#30	85
#40	80
#50	70
#100	48
#200	32

Results:

Method **ASTM D 698, Method B**
Maximum Dry Density **122.8** pcf
Optimum Moisture Content **11.0** %

Specific Gravity (estimated): 2.70



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Material Testing Services, LLC

by

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601 18th Ave SE, Suite 102
Minot, ND 58701

Laboratory Number G24-024

Sample Number: Bulk 2
Sample ID: Composite Sample - SB-18, 20, 21, 23, 1-5'
Sampled 26-Jan-24
Tested 21-Feb-24
Soil Description: Silty Clayey Sand, brown
Soil Classification: SM-SC

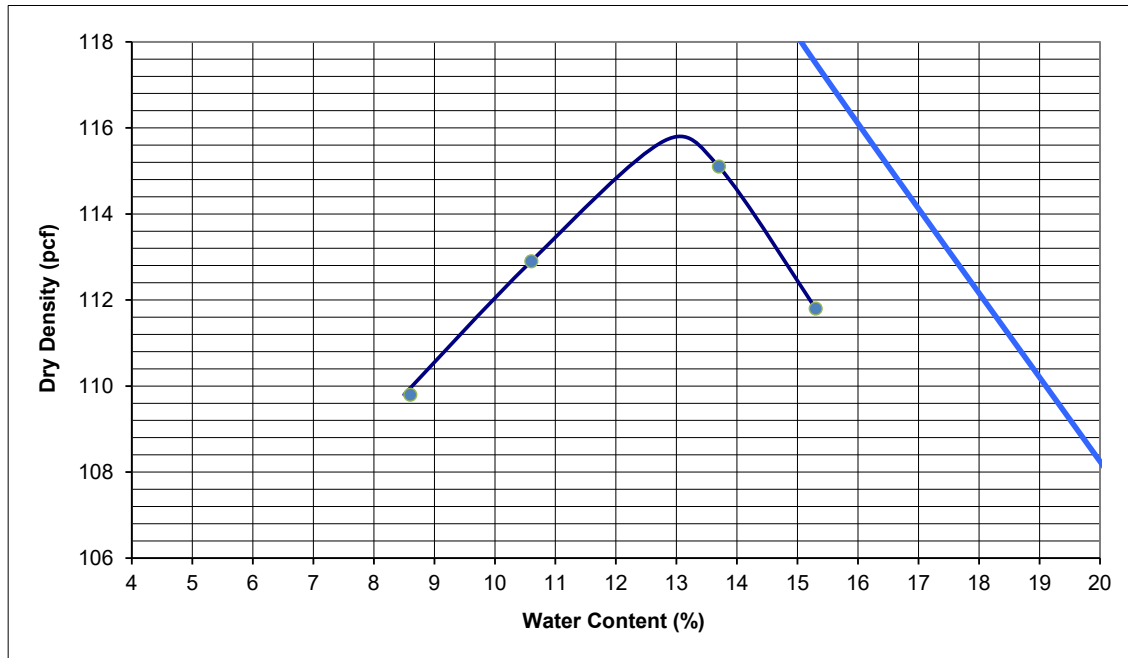
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ASTM D422, D1140	
<u>% Passing</u>	
3/8"	100
#4	99
#8	97
#16	96
#30	92
#40	89
#50	82
#100	60
#200	44

Results:

Method **ASTM D 698, Method B**
Maximum Dry Density **115.7** pcf
Optimum Moisture Content **12.8** %

Atterberg Limits	
<u>ASTM D4318</u>	
LL	23
PL	16
PI	7

Specific Gravity (estimated): 2.65



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(701) 852-5553

CALIFORNIA BEARING RATIO - ASTM D 1883

P.O. Box 1093
Williston, ND 58802
(701) 572-4226

PROJECT: 2025 STREET IMPROVEMENTS
NEW TOWN, ND

DATE: 8-Apr-24

REPORTED TO: City of New Town
c/o AE2S
601 18th Ave SE, Suite 102
Minot, ND 58701

Laboratory Number G24-024

TEST TRIAL: **Bulk 1**

SAMPLE IDENTIFICATION: SB-1-4,

1-5'

SOIL DESCRIPTION: SM

MOISTURE-DENSITY RELATION (ASTM D698)

Maximum Density (pcf) 122.8

Optimum Moisture Content (%) 11.0

Dry Density, at molding 116.9

Moisture Content, at molding 11.0

% of Maximum Dry Density 95.2

Moisture Content after soaking 12.6

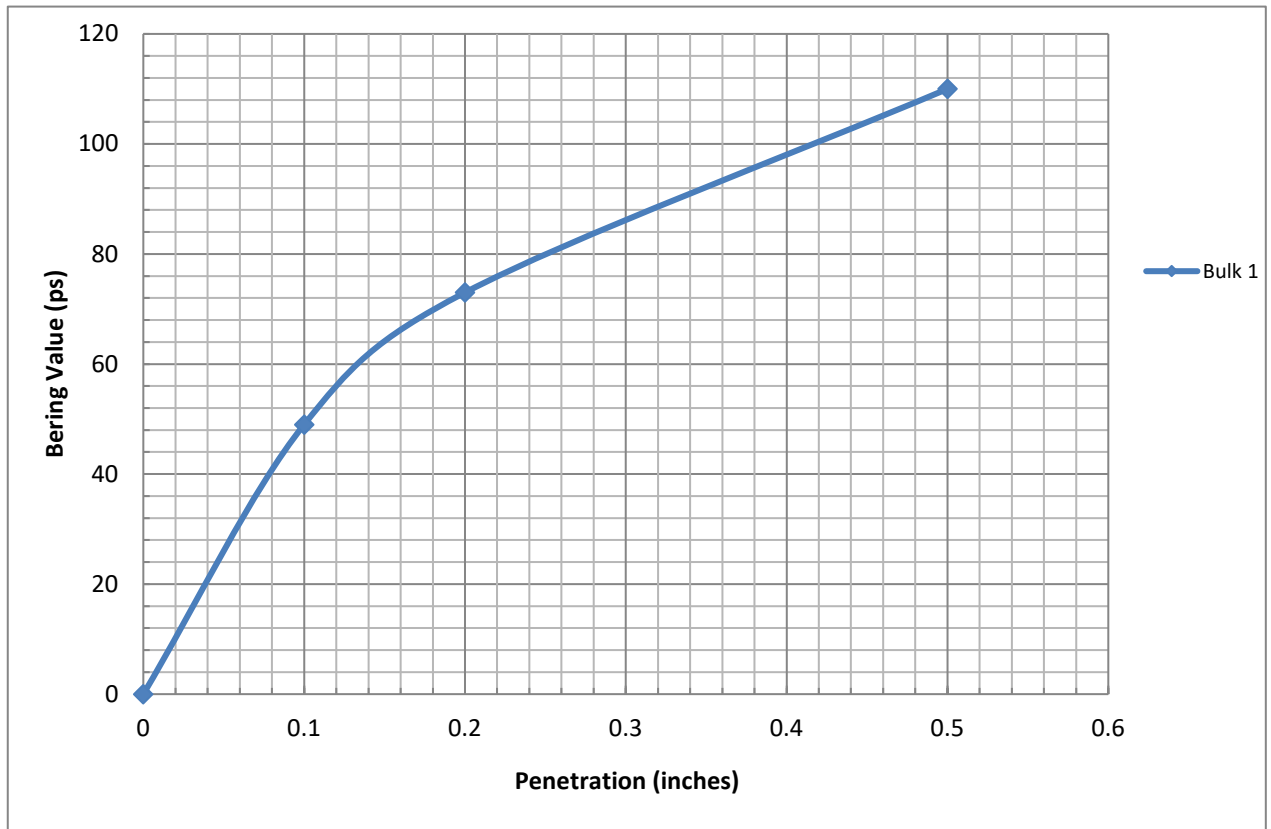
CORRECTED BEARING RATIO:

at 0.1" penetration 4.9

at 0.2" penetration 4.9

SWELL, % of initial heights 2.00

SURCHARGE WEIGHT (pounds): 10.00



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NEW TOWN, ND

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REPORTED TO: City of New Town
c/o AE2S
601 18th Ave SE, Suite 102
Minot, ND 58701

Laboratory Number G24-024

TEST TRIAL: **Bulk 2**

SAMPLE IDENTIFICATION: SB-18, 20, 21, 23,
1-5'

SOIL DESCRIPTION: SM-SC

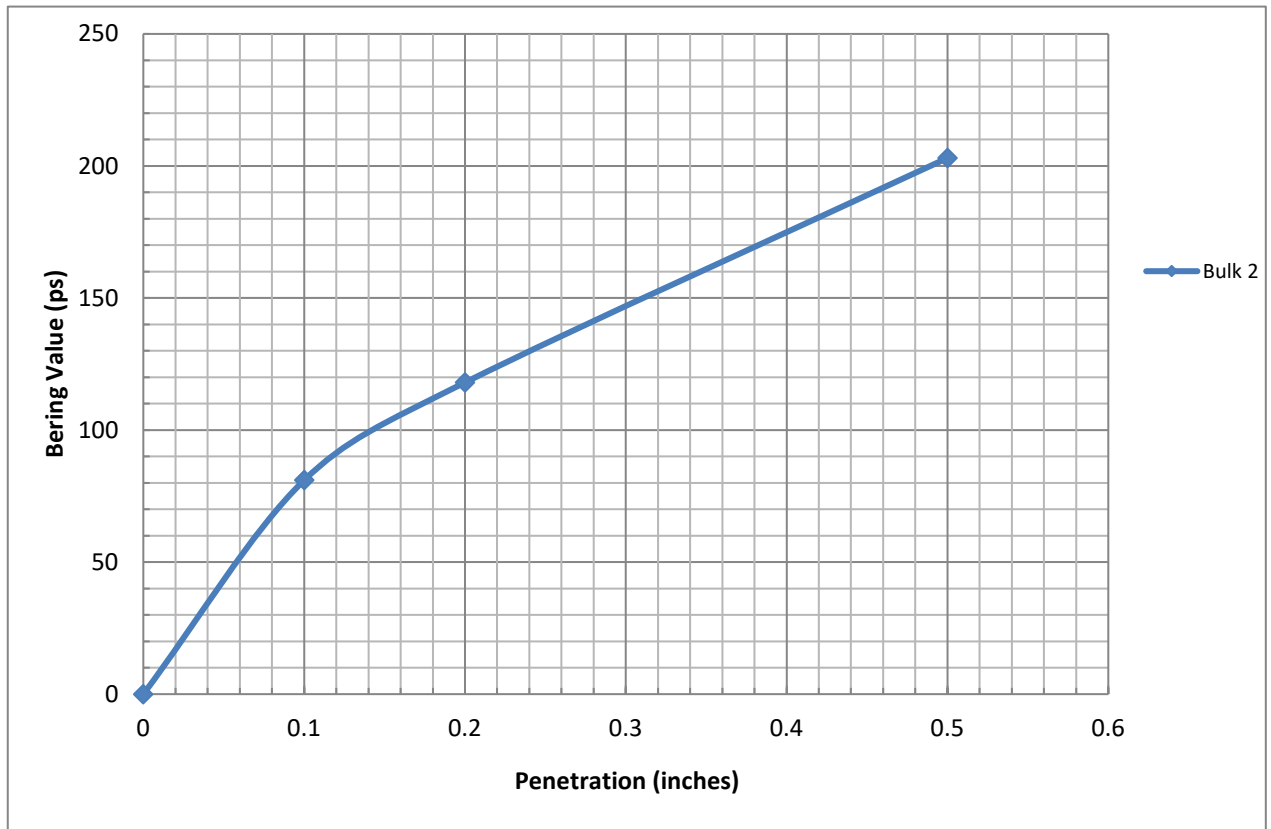
MOISTURE-DENSITY RELATION (ASTM D698)

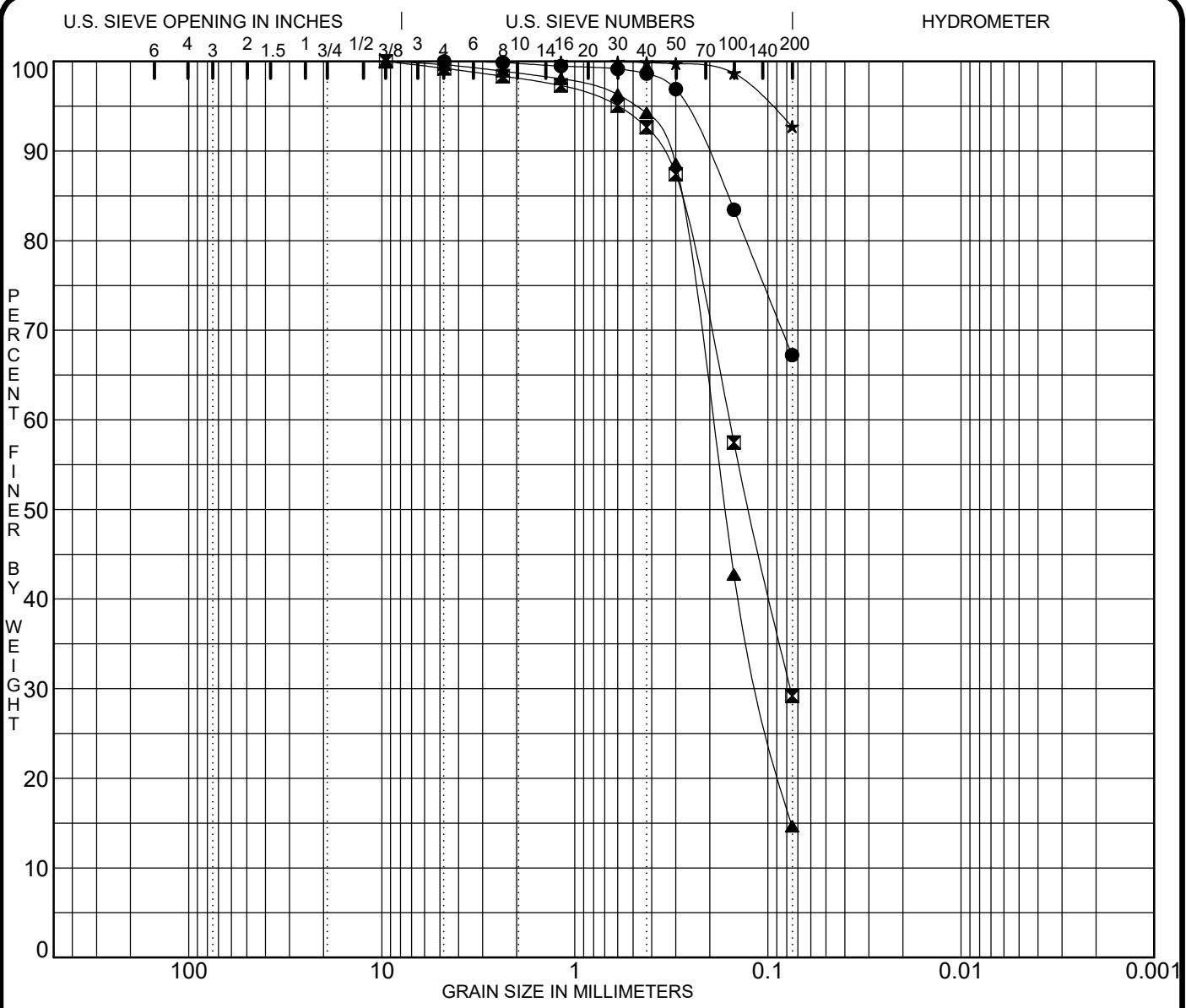
Maximum Density (pcf)	115.7
Optimum Moisture Content (%)	12.8
Dry Density, at molding	111.6
Moisture Content, at molding	11.0
% of Maximum Dry Density	96.4
Moisture Content after soaking	14.8

CORRECTED BEARING RATIO:
at 0.1" penetration 8.1
at 0.2" penetration 7.9

SWELL, % of initial heights 0.11

SURCHARGE WEIGHT (pounds): 10.00





COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Boring No.	Depth (ft)	Classification	MC%	LL	PL	PI	Cc	Cu
● SB-09	2.0	SANDY LEAN CLAY CL	13					
☒ SB-13	2.0	SILTY SAND SM	13					
▲ SB-13	4.0	SILTY SAND SM	8					
★ SB-17	5.0	LEAN CLAY CL	19	31	21	10		

Boring No.	Depth (ft)	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● SB-09	2.0	4.75				0.0	32.8		67.2
☒ SB-13	2.0	9.50	0.16	0.076		0.8	70.0		29.2
▲ SB-13	4.0	9.50	0.19	0.110		0.4	85.0		14.6
★ SB-17	5.0	2.36				0.0	7.3		92.7

PROJECT 2025 Street Improvements, New Town, ND JOB NO. G24-024
 DATE 4/9/24

PARTICLE SIZE ANALYSIS

Material Testing Services, LLC

APPENDIX C

Precautions for Excavating & Refilling During Cold Weather

PRECAUTIONS FOR EXCAVATING AND REFILLING DURING COLD WEATHER

The winter season North Dakota presents specific problems for foundation construction. Soils which are allowed to freeze undergo a moisture volume expansion, resulting in a loss of density. These frost-expanded soils will consolidate upon thawing, causing settlement of any structure supported on them. To prevent this settlement, frost should not be allowed to penetrate the soils below any proposed structure.

Ideally, winter excavation should be limited to areas small enough to be refilled to a grade higher than footing grade on the same day. Typically, these areas should be filled to floor grade. Trenching back down to unfrozen soils for foundation construction can then be performed just prior to footing placement. The excavated trenches should be protected from freezing by means of insulating or heating during foundation construction. Backfilling of the foundation trenches should be performed immediately after the below-grade foundation construction is finished. In addition, any interior footings, or footings designed without frost protection should be extended below frost depth, unless adequate precautions are taken to prevent frost intrusion until the building can be enclosed and heated.

In many cases, final grade cannot be attained in one day's time, even though small areas are worked. In the event final grade cannot be attained in one day's time, frost can be expected to develop overnight. The depth of frost penetration can be minimized by leaving a layer of loose soil on top of the compacted material overnight. However, any frost which forms in this loose layer, or snow, should never be used as fill material.

After the structure has been enclosed, all floor slab areas should be subjected to ample periods of heating to allow thawing of the soil system. Alternatively, the frozen soils can be completely removed and be replaced with an engineered fill. The floor slab areas should be checked at random and representative locations for remnant areas of frost, and density tests should be performed to document fill compaction prior to slab placement.

Due to the potential problems associated with fill placement during cold weather, any filling operations should be monitored by a full-time, on-site soils technician. Full-time monitoring aids in detecting areas of frozen material, or potential problems with frozen material within the fill, so that appropriate measures can be taken. The choice of fill material is particularly important during cold weather, since clean granular fill materials can be placed and compacted more efficiently than silty or clayey soils. In addition, greater magnitudes of heaving can be expected with freezing of the more frost susceptible silts and clays.

If more specific frost information or cold weather data concerning other construction materials is required, please contact us.